Office of Utilities Regulation

Determination Notice

Estimate of the Weighted Average Cost of Capital for Telecommunications Carriers

2016 November 15

OFFICE OF UTILITIES REGULATION

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DOCUMENT TITLE AND APPROVAL PAGE

1. DOCUMENT NUMBER:

2. DOCUMENT TITLE: Determination Notice - Estimate of the Weighted Average Cost of Capital for Telecommunications Carriers

3. PURPOSE OF DOCUMENT

This document contains the main decisions of the Office of Utilities Regulation (OUR) regarding the estimation of a weighted average cost of capital for telecommunications carriers.

4. ANTECEDENT PUBLICATIONS

Publication Number	Publication Title	Publication Date
2016/TEL/006/CON.001	Consultation Document for Estimate of the Weighted Average Cost of Capital for Telecommunications Carriers in Jamaica.	2016 April 29

5. Approval

This document is approved by the Office of Utilities Regulation and the decisions therein become effective on 2016 November 28.

On behalf of the Office:

.....

Joseph Matalon
Chairman

2016 November 15
.....
Date

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ABBREVIATIONS

ATWACC	–	After-tax Weighted Average Cost of Capital
CAPM	–	Capital Asset Pricing Mechanism
CRP	–	Country Risk Premium
ERP	–	Equity Risk Premium
GOJ	–	Government of Jamaica
LRIC	–	Long-Run Incremental Cost model
MRP	–	Market Risk Premium
OUR	–	Office of Utilities Regulation
WACC	–	Weighted Average Cost of Capital

ABSTRACT

The previous estimate of the weighted average cost of capital (WACC) for the industry was done in 2010 and has been updated. This Determination Notice contains the Office of Utilities Regulation's (OUR) approach to updating the various parameters that are involved in estimating the WACC. The approach used in this Determination Notice is largely consistent with the methodology that was determined by the OUR in the previous estimate of the WACC. As such, the cost of debt is estimated through imputation. The Capital Asset Pricing Model (CAPM) continues to be used as the preferred method to determine the cost of equity.

CHAPTER 1: INTRODUCTION

1.0 The Office of Utilities Regulation ("OUR" or "Office") published a Consultation Document "*Estimate of the Weighted Average Cost of Capital for Telecommunications Carriers*" Document No: 2016/TEL/06/CON.001 on 2016 April 29 ("Consultation Document"). The Consultation Document outlined the OUR's proposed methodology for estimating the weighted average cost of capital (WACC) for the fixed and mobile sectors. The methodology was largely consistent with previous estimation of the WACC in "*Determination Notice for Estimate of the Weighted Average Cost of Capital for Telecommunications Carrier in Jamaica*" (Document No. TEL2009005_DET001) published 2010 December 09 ("2010 Determination Notice"). The Consultation Document did not explore in great detail the various approaches which exist for estimating the value of a particular parameter as this was already done in the aforementioned Determination Notice which serves as a reference document for future WACC estimates. The current process is essentially an update of the WACC with some amendments to align the methodology with regulatory best practices.

1.1 In carrying out the cost of capital estimation, the preference of the Office is to use market data from operators where available and appropriate. As such, the Office may use data from the Annual Reports of licensees in the estimate. It should be noted that the process is not aimed at determining the cost of capital specifically for any of the existing operators but rather that of an efficient operator.

1.2 Stakeholders were asked to review the Consultation Document and indicate if they agreed with the approach used to estimate the value for the various parameters needed to calculate the WACC. Where stakeholders had a preference for a different approach to that used by the OUR, they were asked to provide a detailed explanation and supporting evidence. In this regard comments were received from:

- Cable and Wireless (Jamaica) Limited ("C&WJ");
- Consumer Advisory Committee on Utilities ("CACU"); and
- Digicel (Jamaica) Limited ("Digicel")

Purpose of Document

1.3 It is important that an appropriate cost of capital be estimated for the sector as it serves as an important input into the long run incremental cost (LRIC) models used by the OUR to determine cost oriented rates for wholesale fixed and mobile interconnection services. The estimate of the WACC will be needed as an input into any pricing model to be developed or approved by the OUR as it serves as a measure of the

return on capital which telecommunications companies are allowed to earn.

Legislative Framework

1.4 Section 29 of the Telecommunications Act 2000, as amended by the Telecommunications (Amendment) Act, 2012 (the "Act"), deals with the obligation of carriers to grant interconnection and states that:

> *"29. - (1) Each carrier shall, upon request in accordance with this Part, permit interconnection of its public network with the public network of any other carrier for the provision of telecommunications services. ...*
>
> *(4) The Office may –*
> *(a) on its own initiative in assessing an interconnection agreement, make a determination of the terms and conditions including charges; or*
>
> *(b) in resolving post-contract disputes; and in resolving such disputes brought by a licensee before the Office for resolution –*
>
> *(i) make such determination as it thinks fir; and*
> *(ii) the provisions of subsection (2) and (3) of section 34 apply, with such modifications as are appropriate, as they apply to pre-contract disputes.*
>
> *(5) When making a determination of an operator's call termination charges, the Office shall have regard to*
>
> *(a) the principle of cost orientation or reciprocity;*
> *(b) local or international benchmarks; or*
> *(c) any other approach that is relevant to the determination of interconnection charges."*

1.5 In accordance with Section 29 (4) and (5) of the Act, the WACC will be used by the Office when making a determination on call termination charges with a view of maintaining the principle of cost orientation.

1.6 The rest of the Determination Notice is structured in the following manner, Chapter 2 outlines the general framework for estimating the WACC, and Chapter 3 discusses the issue of the appropriate gearing for telecommunications carriers. Chapter 4 estimates the cost of debt and Chapter 5 estimates the cost of equity. Chapter 6 deals with how

to convert the estimated U.S. dollar (US$) WACC to a Jamaican dollar (J$) equivalent. Chapter 7 presents the estimated WACC.

CHAPTER 2: GENERAL FRAMEWORK FOR ESTIMATING THE COST OF CAPITAL

2.0 In general, companies usually obtain capital from debt or equity sources to fund their investments. The WACC is a proportional mix of the cost of acquiring funds from the different sources. The cost of acquiring equity investment is typically higher than the cost of obtaining debt investment because shareholders are paid after debtholders and are subject to more risks. As the risk of the company increases, there will be an increase in the cost of obtaining capital from one or all of the sources of capital. Therefore, a higher WACC for one company relative to another company indicates that the company with the higher WACC is perceived as more risky by investors. The higher the perceived risk by investors, the higher the return they expect to receive for investing in the company. For the purposes of regulation, the WACC is a measure of the return that companies, and by extension their investors, are allowed to make on their investments. This return is not guaranteed and is a function of the efficient operation of the company and the extent of changes in market conditions among other things.

2.1 The cost of capital is derived from estimating the values for a number of financial variables with an expectation that these estimated values will continue to hold for a period in the future. The future cannot be predicted with certainty, the Office therefore considers it prudent that cost of capital be updated periodically to ensure that operators are allowed to earn a return that is aligned with market conditions. In this regard, the OUR in the Consultation Document proposed that the WACC be updated every five (5) years. This period is long enough to manage the cost of regulation but short enough to present some level of certainty that the estimates will remain valid. The cost models for termination rates also produce estimates that are to remain in place for a five-year period. Ideally, the WACC and cost models should be updated at the same time. However, having a set revision date is a good alternative which provides operators with regulatory certainty.

2.2 Digicel indicated that setting the expectation for a periodic update of the WACC, for example every five (5) years, is good regulatory practice.

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The WACC will be updated every five (5) years from the effective date of this Determination Notice.

2.3 The OUR indicated in the Consultation Document that it intended to use a methodology consistent with that approved in the 2010 Determination Notice unless there was a compelling reason to deviate. As such, separate WACCs were estimated for the fixed line and mobile sections of the industry to account for the difference in risk which exists in the two lines of the business. The WACC was also calculated within a range to determine for the highest and lowest return that would be appropriate. Further, where the OUR used data from the operators, it was suggested that maximum figures would be used to ensure the WACC serves as a maximum cost of capital for any firm in the industry. Therefore, none of the companies in the industry would be at a disadvantage if the industry WACC is used in determining their prices.

2.4 CACU's position was that as long as the fixed line and mobile remained separate networks then they should have separate costs of capital. Digicel stated that the OUR was correct in estimating separate WACCs for the fixed and mobile sections of the industry as the use of distinct WACCs for the two sections of the industry is best practice. It also indicated that it is possible for the two sections to converge over time but convergence was not complete in Jamaica because there are still major differences in segmentation between fixed-line and mobile users at present. C&WJ did not agree with the OUR utilising a different WACC for fixed and mobile network sections of the industry. Its view is that there is no reason to believe that the cost of capital is different for the mobile and fixed networks as they have similar services and there is already technology convergence. C&WJ indicated that presently the companies will be viewed as having similar portfolios when sourcing capital for investment. It also suggested that given the uncertainty concerning fixed broadband take up, the cost of capital for fixed networks will be higher than that of mobile networks. Nonetheless, C&WJ's position is that there should be a single estimate of the WACC for all telecommunications operators to promote efficiency and level the playing field especially given the emphasis placed on establishing a forward-looking estimate of the WACC. Finally, C&WJ also indicated that although termination rates are reciprocal, the OUR's position for preferring higher values for variables within the WACC is unfounded. This is because payments for interconnection services are not equivalent amongst operators which leads to net-payers of interconnection payments being disadvantaged by the use of maximum input values.

2.5 The Office agrees that the industry is experiencing some level of convergence in the technology being used to offer fixed and mobile services in Jamaica. The Office also agrees that the service offerings of the two operators are somewhat similar with both providing fixed and mobile services. However, as pointed out in the Consultation Document, the principal use of the cost of capital is to be an input in the respective fixed and mobile cost models. One of the fundamental distinctions between the regulation of fixed and mobile carriers in

Jamaica stems from the fact that they have been determined to be in separate markets. This is the reason why there are different cost models for calculating fixed and mobile termination rates. The OUR is currently engaged in a market review process, which will determine whether fixed and mobile networks are still to be considered as separate markets. As long as this remains the case, there will continue to be differences in how the two markets are regulated. The Office finds no support for C&WJ's suggestion that arguably the WACC for fixed line should be higher than that for mobile where separate WACCs are derived. The Office has found no evidence of regulators establishing a higher WACC for fixed relative to mobile. In all cases, the Office found that regulators established a WACC for mobile carriers that was either the same or higher than the WACC for fixed carriers.

2.6 The reference in the Consultation Document regarding the use of maximum values across all operators is limited specifically to values which are taken from the Annual Reports of the operators and not to the general process of calculating the WACC. As indicated in the Consultation Document, in most cases where parameters were estimated in a range, a value lower than the maximum was used. The Office accepts C&WJ's general point regarding the need to establish efficient forward looking estimates for the WACC. The Office has sought to do this by checking its estimates for the parameters against those used by other regulators to ensure they remain reasonable. However, the Office retains the view that the possible negative effects of underestimating the WACC, outweighs the negative effect of an overestimation and will continue to exercise caution in this regard.

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The Office will estimate separate WACCs for fixed line and mobile carriers.

2.7 The nominal vanilla WACC is estimated using Equation 1.

$$WACC = w_d * k_d + w_e * k_e \quad \text{..... (Equation 1)}$$

where,

w_d - is the fraction of debt in the capital structure,
k_d - is the forward-looking cost of debt,
w_e - is the fraction of equity in the capital structure,

k_e - is the forward-looking cost of equity.

TAX ADJUSTMENT

2.8 An after-tax cost of capital and a pre-tax cost of capital will also be estimated. The after-tax cost of capital reflects the fact that interest paid to debt holders is tax deductible (that is, corporate taxes are applicable after interest is deducted). Thus, the cost of debt is also calculated as an after-tax cost to ensure that it is comparable with the cost of equity, which is calculated after-tax. The after-tax nominal weighted average cost of capital (ATWACC) is calculated as shown in Equation 2.

$$ATWACC = w_d * k_d(1-t) + w_e * k_e \quad \ldots\ldots\ldots\ldots\ldots\ldots \text{(Equation 2)}$$

where,

w_d - is the fraction of debt in the capital structure,
k_d - is the forward-looking cost of debt,
w_e - is the fraction of equity in the capital structure,
k_e - is the forward-looking cost of equity.
t_e - is the tax rate

2.9 The nominal pre-tax cost of capital represents a grossing up of the calculated ATWACC such that the return allowed to the regulated company before it pays taxes is equivalent to the return allowed after it pays taxes. This is estimated as follows:

$$Pre-Tax\ WACC = ATWACC/(1-t) \quad \ldots\ldots\ldots\ldots \text{(Equation 3)}$$

2.10 CACU noted that the current corporation tax rate is 25% which it has been since 2014 as opposed to the 33.33% used in the Consultation Document. Digicel indicated its general agreement that the cost of capital should be estimated as the WACC as this is typically the approach used by operators and regulators. It also agreed that the two major classes of investors are equity holders and debt holders and the WACC may be calculated as a before or after tax return as well as in nominal or real terms. However, Digicel indicated that the OUR in its Consultation Document used the official tax rate rather than the effective tax rate. It indicated that while this is not necessarily wrong, the use of the official tax rate is a conservative assumption.

2.11 It should be noted that the statutory (official) corporate income tax rate for companies regulated by the OUR is 33.33%. The corporate income tax rate for unregulated companies is 25% which is not the appropriate rate for use in the WACC estimate. The effective tax rate is the tax rate that is actually paid by companies which may be different from the statutory rate for a number of reasons such as tax structure, profitability, and accounting practices. A company may be the beneficiary of a government incentive which results in its effective rate being lower than its statutory rate. A company making losses will likely have an effective tax rate of zero while a company making profit could conceivable have an effective tax rate greater than the statutory tax rate. However, in the long run, the effective and statutory tax rate for an efficient company should be equivalent. The Office does not agree that the effective tax rate is the appropriate tax rate to use in the WACC estimation. Using the effective tax rate may be warranted in instances where the tax structure is tiered with a different tax rate applied to different levels of income. In our case, the tax rate is proportional (flat tax). This also seems to be a position shared by most regulators as ANCOM states that "due to the benefits of the statutory tax rate, the effective tax rate approach is generally not used by regulators[1]". The Office will use the statutory tax rate of 33.33% in the estimation of the WACC.

[1] National Authority for Management and Regulation in Communications (ANCOM), TERA Consultants, 2012, WACC Calculation for Fixed-Line and Mobile Operators in Romania.

CHAPTER 3: GEARING

3.0 Gearing is a measure of the degree of leverage of a company. It measures the amount of debt financing used by a company relative to the company's total value. Here, value is estimated as debt plus owner's equity.

3.1 There are three approaches to determining the level gearing to use in the WACC estimate - book-value gearing, market value gearing, and optimal gearing. The OUR prefers the use of a market determined value of a company's gearing. This is because the market value of gearing is transparent and reflects the true capital structure of the company as determined by market forces. However, market value gearing may reflect inefficient decisions by a company with respect to the level of leverage used to fund its investments or the level of the interest rate paid on borrowed funds. Where inefficiency is a concern, then it is better to use optimal gearing in the estimation. This is especially relevant given that the WACC is an input in the LRIC model which is based on the network of a hypothetical efficient operator.

3.2 The market value of debt when a company borrows by issuing bonds is the total value of these bonds. However, when a company borrows using non-traded debt such as bank loans and related party transactions then determining the market value for debt is extremely difficult. This is generally the case for local telecoms companies which tend to borrow using related party transactions.

3.3 The market value of equity for a publicly traded company, is the same as its market capitalisation. That is, the number of shares outstanding multiplied by the market price of the shares. Estimating the market value of a private company is a complicated financial exercise which is beyond the scope of this exercise. In our case, CW&J is a publicly traded company and Digicel is a private company. In any case, C&WJ's audited financials are for the consolidated company rather than disaggregated into the various lines of business.

3.4 As such, the OUR indicated its intention to continue using the optimal gearing approach and maintain the gearing ranges used in the 2010 Determination Notice.

3.5 CACU agreed with the proposed gearing approach and believes that it levels the playing field. Digicel stated that an optimal gearing exists in theory but is difficult to determine in practice. It also indicated that there is market inefficiency that arises as a result of the relatively high local inflation which causes debtholders to attach stricter covenants to low cost loans or to not be interested in lending to local companies. Therefore, companies rely primarily on equity funding. However, Digicel conceded that the use of optimal gearing is transparent where

the benchmark data is based on financing structure of operators assumed to be efficient. It also surmises that the OUR's choice of majority equity funding for its optimal gearing approach is consistent with the limited borrowing options available to local companies. C&WJ disagreed with the use of an optimal gearing approach, with the range of values chosen by the OUR, and with having different gearing values for fixed and mobile carriers. It argued that the gearing chosen by the OUR seems to be based on stale data and provided the latest gearing figures of 26.75% and 26.16% from Professor Damodaran for emerging market fixed and mobile telecommunications companies, respectively. C&WJ also noted that the regulator in Curacao in its recent WACC study used a gearing of 30% for both fixed and mobile. It stated that there is no robust evidence that there is a difference in gearing for fixed and mobile or that the low gearing used by the OUR reflects current data. A single gearing of 26.75% be used for both fixed and mobile was therefore proposed.

3.6 Although C&WJ disagreed with the use of the optimal gearing approach used by the OUR however, its proposal regarding the gearing to be used in the estimation is consistent with an optimal gearing approach. C&WJ is correct that the data in the Consultation Document is now 'stale'. This was acknowledged in the Consultation Document and it was indicated therein that "prior to the issuance of its determination notice on this matter, the OUR will update the data used to estimate all parameters to a more recent period".

3.7 With respect to gearing for fixed and mobile segments, there is actually substantial evidence suggesting that there is a difference between the gearing for fixed and mobile companies. The regional data on gearing from Damodaran shows that there is a difference, in some cases significant, in the financing structure of fixed and mobile operators (see Table 1 below). The data also shows that in emerging markets, the level of debt in the capital structure may be as low as 11.04% to as high as 42.07%. The OUR proposed to keep the gearing of 10% - 30% for fixed and 10% - 20% for mobile that was outlined in the 2010 Determination Notice. These ranges were informed by a table submitted by C&WJ in response to the OUR's Second Consultation Document "*Estimate of the Weighted Average Cost of Capital for Telecommunications Carriers in Jamaica*" published 2009 August 31. In that document, the gearing for comparators to C&WJ in emerging markets was presented and a range of 13% - 32% for fixed line operators and 6% - 31% for mobile operators was indicated.

Table 1 Market Value Gearing by Region

Industry Group	Telecom Services Fixed	Telecom (Wireless) Mobile
US	43.85%	60.09%
Europe	44.72%	39.60%
Japan	31.18%	38.27%
Emerging	26.75%	26.16%
China	34.27%	11.04%
India	41.98%	42.07%
Global	39.41%	35.64%

Source: http://pages.stern.nyu.edu/~adamodar/New_Home_Page

3.8 Since 2010, interest rates have generally fallen and global economic conditions have been fairly stable which may have resulted in greater availability and use of debt financing. This does not change the fact that local companies are still likely to be primarily equity financed. However, in keeping with the improved conditions, the Office will revise the optimal gearing to 15% - 30% for fixed line and 15% - 25% for mobile operators. This has the dual effect of increasing the optimal gearing for both segments of the industry and reducing the differential between the values used for fixed and mobile carriers. These ranges are still in line with those used by other regulators as shown in Table 2 below. The point estimate for gearing used in estimating the cost of capital will be 22.5% for fixed line carriers and 20.0% for mobile carriers.

Table 2 Recent Regulatory Decisions on Gearing

Regulators	Fixed	Mobile
ANCOM - 2012[2]	40.20%	34.50%
MCA - 2012[3]	40% - 50%	25% - 35%
ictQatar - 2013[4]	20%	20%
TRA - 2013[5]	0% - 23%	0% - 23%
ComReg - 2014[6]	40%	30%
PTS - 2014[7]		35%
ACM - 2015[8]	42%	42%
BIPT - 2015[9]	36% - 45%	36% - 45%
OUR - 2015	10% - 30%	10% - 20%

Determination 3

The gearing for fixed line carriers will be 22.5% and for mobile carriers it will be 20.0%.

2 National Authority for Management and Regulation in Communications (ANCOM), TERA Consultants, 2012, WACC Calculation for Fixed-Line and Mobile Operators in Romania.

3 Malta Communications Authority (MCA), 2012, Estimating the Cost of Capital - Response to Consultation and Decision.

4 Supreme Council for Information and Communications Technology (ictQatar), 2012, Definition of the Relevant Cost of Capital for Qatar Telecom(Qtel) Q.S.C. for the Purposes of Regulatory Accounting Response Document Consultation – Second Stage.

5 Telecommunications Regulatory Authority (TRA), 2013, Cost of Capital - Final Determination.

6 Europe Economics, 2014, Cost of Capital for Mobile, Fixed Line and Broadcasting Price Controls Report for ComReg.

7 Post and Tele Authority (PTA), 2014, Consultation on Return Rates for Mobile Networks – An Update.

8 Harris D., Fischietti C., Chou Y., 2015, The WACC for KPN and FttH.

9 Belgian Institute for Postal services and Telecommunications (BIPT), 2015, BIPT Council Decision of 26 February 2015 Regarding the Cost of Capital for Operators with a Significant Market Power in Belgium.

CHAPTER 4: COST OF DEBT

4.0 The cost of debt for a company is the rate it pays its creditors when borrowing money. This is the sum of the risk free rate and the premium which creditors require for taking the risk of lending to a company. Companies may borrow long term in various ways such as issuing bonds, getting a loan from a bank, or borrowing from related parties, among other things. Where funds are sourced by issuing bonds, then the cost of debt is the yield to maturity of the bonds. Digicel's parent company does issue bonds but C&WJ does not. As such, the Office indicated that it will continue to estimate the cost of debt using the implied approach. The cost of debt will be estimated using Equation 5.

$$k_d = r_f + CRP + D_p \quad \text{..... (Equation 4)}$$

where,

r_f - is the risk free rate

CRP - is the sovereign default spread

D_p - is the debt premium

4.1 This approach is similar to that used in the 2010 Determination Notice and is consistent with the approach used by other regulators in recent regulatory decisions as show in Table 3 below.

RISK FREE RATE

4.2 The risk free asset is associated with an asset with essentially no risk of default by the borrower, that is, no credit risk. In reality there is no instrument which meets this criterion. As such, a debt instrument which is closest to being free of default risk is generally used as the risk free rate. Sovereign debt instruments with the highest quality credit rating (AAA) are generally considered appropriate proxies for risk free assets. In this regard, a United States of America (US) Government Treasury security will be used as the risk free asset. The risk free rate is an important variable as it is used in the estimate of both the cost of debt and the cost of equity.

4.3 In determining the risk free rate, one of the things that needs to be determined is the tenure of the debt instrument that will be used to represent the risk free security. One option is to use a security with a tenure that matches the length of the review period. Another option is to use a security with a tenure that matches the investment horizon of the companies being regulated. Another choice is to use a security with a tenure in line with the duration of the regulated companies' assets and liabilities.

4.4 In evaluating each of the options for determining the appropriate tenure of the risk free security we know that:

a. As indicated earlier, the length of the review period for the WACC will be five (5) years.
b. All of Digicel's outstanding bond issues will mature within the next ten (10) years.
c. Data from the most recently available audited Annual Reports of telecommunications companies shows that with the exception of buildings, the average useful life of assets is three (3) to fifteen (15) years.

4.5 Given the data on assets and liabilities, the OUR proposed in the Consultation Document to use a security with a ten (10) year maturity period as the risk free security. This is also the tenure of the security most widely used as the risk free security by other regulators in recent decisions, as shown in Table 3 below. As such, the market yield on U.S. ten (10) year Treasury Bonds at constant maturity was used as the risk free security (See Figure 1 below).

4.6 The OUR proposed to average the yield for the risk free security over a recent period in order to determine the risk free rate. This is consistent with the approach used by the majority of the regulators in the sample of recent regulatory decisions. These regulators averaged over a period of two (2) to seven (7) years. The OUR proposed to average over a period of five (5) years to increase the chances of nullifying the effect of outliers on the estimate.

4.7 All respondents agreed that the approach used by the OUR was reasonable and appropriate.

4.8 Using the market yield on U.S. ten (10) year Treasury Bonds at constant maturity averaged over the most recent five (5) years using monthly data, the risk free rate is determined to be 2.15%.

Table 3 Recent Regulatory Decisions on Risk Free Rate

Regulator	Method	Length of Period Averaged	Tenure (Years)	Rate
ANCOM - 2012	Historical Average	2 years	10	3.19
MCA - 2012	Current	Not Applicable	5 - 10	3.3 - 4.3
ictQatar - 2013	Historical Average	Slightly less than 2 years	10	4.70
TRA - 2013	Current	Not Applicable	7	4.65
ComReg - 2014	Historical Average	Not Specific	10	2.30
PTS - 2014	Historical Average	7 years	10	2.92
ACM - 2015	Historical Average	3 years	10	1.49
BIPT - 2015	Historical Average	3 years	10	2.15 - 3.48
OUR - 2015	Historical Average	5 years	10	2.15

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The estimated risk free rate is 2.15%.

COUNTRY RISK PREMIUM

4.7 The country risk premium (CRP) is a measure of the additional risk premium that investors require for investing in Government of Jamaica (GOJ) securities relative to comparable risk free securities. The CRP is a measure of the specific risk associated with investing in Jamaica. Some regulators have chosen to include a CRP in their estimate of the WACC but there is still no consensus as to the need for its inclusion.

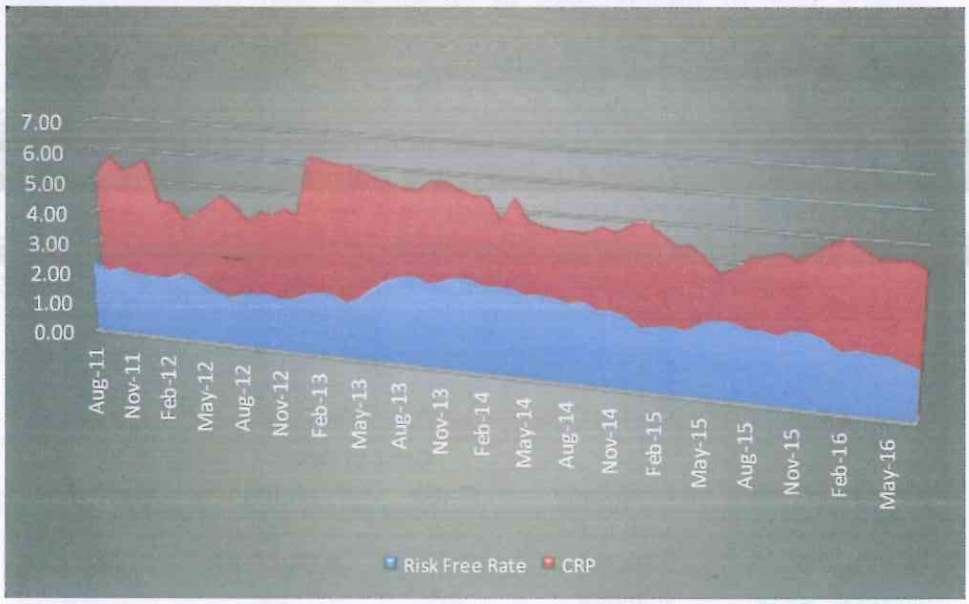
4.8 The most widely used measure of CRP is the bond default spread. This is the difference between the yield to maturity of a debt instrument issued by an AAA rated (risk free) government and the yield to maturity of an internationally traded debt instrument with comparable features issued by the government of the country for whom the CRP is being calculated. This approach is consistent with the OUR preference for using market determined values for the parameters to be included in the WACC estimate. In our case, this is the difference between the yield to maturity on GOJ ten (10) year Euro bonds and the risk free security discussed previously.

4.9 Digicel stated that the OUR has correctly identified the need for a CRP. It also stated that a WACC calculation in developed markets would not include a CRP because it is not relevant. It suggested that some regulators may not explicitly include a CRP because it is already included in risk premiums. Digicel also explained that Jamaica's CRP could be as high as 13.42% depending on the particular method used to drive the premium. It concluded that the inclusion of a CRP is reasonable and consistent with the intention of compensating international investors for the higher risk associated with investing in

Jamaica relative to a more developed market. Its position is that the proposed CRP estimated by the OUR is reasonable.

4.10 To be consistent with the estimation of the risk free rate, the CRP (see Figure 1 below) will be calculated by averaging the premium over the most recent five (5) year period. This results in a CRP of 4.87%.

Figure 1 Risk Free Rate and Country Risk Premium



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OUR estimation

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The estimated country risk premium is 4.87%.

DEBT PREMIUM

4.11 The debt premium is company specific and represents the average excess premium on the company's bond relative to the yield on a comparable sovereign bond of the country in which the company operates. A market based approach would involve taking the difference between the yield to maturity on ten (10) year US dollar corporate bonds issued by local telecommunications companies and the yield to maturity on ten (10) year US dollar GOJ bonds. Only Digicel has issued

any bonds and they all have a tenure of less than ten (10) years. It is possible to interpolate a ten (10) year yield but the OUR has limited information on these bonds at this time. As such, the OUR proposed in the Consultation Document to benchmark the debt premium using information from recent regulatory decisions. This is consistent with the approach used in the 2010 Determination Notice.

4.12 None of the respondents indicated any disagreement with the approach used to arrive at the debt premium. Digicel indicated that the OUR's use of benchmarks is consistent with the optimal gearing approach and the decision to use values at the upper end of the spectrum is conservative but justified.

4.13 The average of the debt premiums from recent regulatory decisions is 1.37 – 1.74 (see Table 4 below). It is our view that the upper limit of this average may be too low given our local contexts. As such, the Office will use the average lower limit for the debt premium from the recent regulatory decisions and the maximum. This gives a range of 1.37 – 2.25 for the debt premium.

Table 4 Recent Regulatory Decisions on Debt Premium and Cost of Debt

		Cost of Debt		
Regulator	**Methodology**	**Fixed**	**Mobile**	**Debt Premium**
ANCOM - 2012	Imputed	7.9	7.9	1.4 - 1.5
MCA - 2012	Imputed	2.96 - 4.26	2.96 - 4.26	1.25 - 2.25
ictQatar - 2013	Imputed	5.4	5.4	0.5
TRA - 2013	Imputed	0	0	0
ComReg - 2014	Imputed	4.8 - 5.8	4.8 - 5.8	1.5 - 2.25
PTS - 2014	Imputed		5.21	2.2
ACM - 2015	Actual	5.3	5.3	
BIPT - 2015	Imputed	3.72 – 6.4	3.97 – 7.31	
OUR - 2015	Imputed	8.39 - 9.27	8.39 - 9.27	1.37 - 2.25

4.14 The combination of the risk free rate, the CRP, and the debt premium result in an estimated cost of debt of 8.39% – 9.27% as shown in Table 5 below. The point estimate used in determining the cost of capital will be 8.83% for fixed and mobile carriers.

Table 5 Imputed Cost of Debt

	Minimum	Maximum
Risk Free Rate	2.15	2.15
CRP	4.87	4.87
Debt Premium	1.37	2.25
Cost of Debt	**8.39**	**9.27**

Determination 6

The estimated cost of debt is 8.83% for both fixed and mobile carriers.

CHAPTER 5: COST OF EQUITY

CAPITAL ASSET PRICING MODEL

5.0 The cost of equity is the return that is required by shareholders for their investment in a company. There are various approaches that can be used to estimate the cost of equity. The merits of each method were discussed in the 2010 Determination Notice. The capital asset pricing model (CAPM) is the preferred method for estimating the cost of equity.

5.1 The CAPM is a theory that describes the relationship between a security or a portfolio of securities risk and the expected rate of return associated with that risk. The theory is based on the assumption that security markets are efficient and investors are willing to trade risk for a higher expected return. As such, the CAPM estimates a cost of equity that is above the risk free rate. CAPM only factors systematic (undiversifiable) risk as it is thought that all other risks can be eliminated through proper diversification. That is, only risks that affect the entire market are considered rather than risks specific to a particular company. For this reason, the CAPM does not include any firm specific risk premiums. Using CAPM, the cost of equity is calculated as shown in Equation 6.

$$k_e = r_f + \beta_e(MRP + CRP) \quad \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots \textit{(Equation 6)}$$

where,

k_e - is the forward-looking cost of equity,
r_f - is the risk free rate,
β_e - is the equity beta,
MRP - is the market risk premium.
CRP - is the country risk premium

BETA

5.2 The beta coefficient for a company measures the systematic risk of investing in that company's equity relative to the market. Specifically, beta measures the risk that a stock adds to a diversified market portfolio. A stock with more risk than the market will have a beta greater than one and a stock with less risk will have a beta lower than one.

5.3 Due to the thin nature of the Jamaica Stock Exchange and the fact that C&WJ is the only publicly traded telecommunications company in Jamaica, it is proposed that beta be estimated by benchmarking comparable fixed and mobile companies from more developed markets

where the required data is available. In choosing the set of comparable companies, there were three main criteria used:

a. The comparable companies were either fixed line operators or mobile network but not both. In many cases, the fixed network companies were triple play (fixed line, internet, and entertainment/cable) companies.

b. The comparable companies should be fairly small in terms of market capitalization. In most cases, the comparable fixed line operators were smaller that their comparable mobile operators.

c. The companies chosen must be publicly traded on a major stock exchange so that reliable and extensive data for the company can be obtained.

5.4 While it would have been ideal to include only companies from Latin America who may be exposed to similar circumstances as our local companies, this was not possible because in many cases they did not meet one of the three criteria discussed earlier. The comparable companies can be seen in Table 6 below.

5.5 The beta coefficient for the comparable companies was estimated by regressing the returns from the stock for the company against the returns from the market. The OUR has chosen to use the S&P 500 Index as the proxy for the market. The regression was estimated using five (5) years of monthly returns. The resultant betas were then unlevered[10] to neutralise the effect of the companies gearing on the estimate. The unlevered betas are then relevered using the optimal gearing chosen by the OUR. Finally, the relevered betas were adjusted using the Blume adjustment. The Blume adjustment is a forward looking approach based on the assumption that over time the beta of all companies tends towards one. As such, the adjustment pushes the regression betas closer to one, i.e. those below one are increased and those above one are decreased. Although the set of comparable companies primarily comprised small and medium cap companies, the OUR proposed to continue using the upper 95% confidence interval of the estimated comparable betas for the upper limit of the beta estimate and the lowest mean value as the lower limit of the beta estimate. This is to minimise the possible effects of underestimating the true risk faced by local carriers.

5.6 CACU agreed with the approach proposed by the OUR indicating that it was consistent with a forward-looking approach used to estimate the WACC. Digicel concurred with the choice of the CAPM as the most widely used method of estimating the cost of equity. Its position is that the OUR's conservative approach of using estimates closer to the

[10] Beta is unlevered using the Modigliani formula.

upper level of the benchmarks is justified given that the comparable companies all operate in more developed countries. It acknowledged that a lack of available data makes it difficult to benchmark the betas using comparators more aligned with local operators. Digicel also pointed out that the convergence within the industry will make it more difficult to find appropriate comparators. Its position is that the use of the Blume adjustment in the estimation is common but not universal. Digicel concludes that the range estimated for beta of 0.6 – 0.9 reflects slightly lower volatility than the stock market average beta of 1. C&WJ disagreed with the approach used to arrive at the betas as its view is that technology convergence has led to the significant disappearance of differences between the WACC inputs for fixed and mobile networks. It believes that there is substantial regulatory precedent towards the use of a single beta for fixed and mobile networks as a result of it becoming more difficult to find reasonable pure play operators. C&WJ's proposal is that the Office use a single range for beta comprised of the lower average beta value for the comparable mobile operators and the upper confidence interval beta for comparable fixed operators (0.67 – 0.75).

5.7 The Office agrees with the point made by Digicel and C&WJ that it is becoming more difficult to find appropriate pure play operators to use for benchmarking. However, the Office disagrees that there is substantial regulator precedent for the use of a common beta for fixed and mobile. Table 7 below which shows recent regulatory precedent on beta, suggests a fairly even split between the use of a single beta and the use of separate betas for fixed and mobile. On the matter of similar service offerings between Digicel and C&WJ, as discussed in paragraph 2.5, "the fundamental distinction between the regulation of fixed and mobile in Jamaica is that they have been determined to be in separate markets". Notwithstanding the fact that we do not agree with the use of a single beta for fixed and mobile at this time, we also disagree with the approach proposed by C&WJ for arriving at the single beta. If a single beta were to be used, it would be more appropriate to derive the estimate using the data of converged operators rather than randomly combining the beta derived from pure play fixed and mobile operators.

5.8 The Office will continue to estimate separate betas for fixed and mobile as shown in Table 6 below[11]. In the Consultation Document, the OUR used point estimates for beta that were at the top of the range estimated for beta. That was to ensure that the chosen beta values were in line with those used by other regulators. The use of a mid-range value for beta for fixed carriers of 0.668 would have been lower than the minimum range value used by three of the regulators in our

[11] Some of the comparable companies used in the Consultation Document were removed because they are no longer in operation or because the required data could not be sourced.

sample and lower than the maximum value used by all these regulators. While the betas estimated for mobile in the Consultation Document did not present the same issue as with the fixed beta, the use of the maximum value from the range meant that the approach was consistent for both fixed and mobile. The current range for beta of 0.619 – 0.832 for fixed and 0.738 – 0.985 for mobile is now higher than the range of 0.585 – 0.751 for fixed and 0.665 – 0.867 for mobile used in the Consultation Document. Using the current upper limit as the point estimate for beta in the estimation runs the risk of overestimating beta particularly in the case of mobile where the maximum value exceeds the upper estimate for beta used by all the regulators in the sample of recent regulatory decisions. It should be noted that the Office's upper estimate for beta is based on the upper 95% of the beta for comparable companies rather than a simple arithmetic average of those betas. As such, to reduce the risk of overestimation, the Office will maintain its point estimate for beta of 0.751 for fixed carriers and 0.86 for mobile carriers as stated in the Consultation Document. The point estimates are higher than the mid-point of the ranges and consistent with the Office's approach of erring on the side of caution. The estimated ranges for beta are higher than those used in Consultation Document but still appear reasonable in reference to the betas used in recent regulatory decisions as shown in Table 7 below.

Table 6 Beta

FIXED LINE	Country	Debt US$m	Debt/Equity	Tax Rate	Market Cap (US$M)	Levered Beta	Unlevered Beta	Re-levered Beta (15% Gearing)	Re-levered Beta (30% Gearing)	Blume Adjusted Beta (15% Gearing)	Blume Adjusted Beta (30% Gearing)
Alaska Communications Systems Group Inc	United States	$185.02	2.12	0.400	$87.30	0.609	0.268	0.296	0.337	0.529	0.556
Cincinnati Bell	United States	$1,231.80	1.29	0.400	$954.20	1.532	0.863	0.955	1.085	0.970	1.057
Consolidated Communications Holdings Inc	United States	$1,377.89	1.06	0.400	$1,300.00	1.063	0.650	0.719	0.817	0.811	0.877
FAIRPOINT COMMUNICATIONS, INC.	United States	$901.37	2.33	0.400	$387.00	0.958	0.400	0.442	0.502	0.626	0.667
Frontier Communications Corporation	United States	$15,508.00	2.72	0.400	$5,700.00	0.770	0.293	0.323	0.368	0.547	0.576
Otelco	United States	$97.05	6.79	0.400	$14.30	1.061	0.209	0.231	0.263	0.485	0.506
Windstream Holdings, Inc.	United States	$10,165.00	11.85	0.400	$857.90	0.386	0.048	0.053	0.060	0.365	0.370
Average		**$4,209.45**			**$1,328.67**	**0.911**	**0.390**	**0.431**	**0.490**	**0.619**	**0.658**
Minimum						**0.386**	**0.048**	**0.053**	**0.060**	**0.365**	**0.370**
Maximum						**1.532**	**0.863**	**0.955**	**1.085**	**0.970**	**1.057**
Standard Deviation						**0.370**	**0.279**	**0.308**	**0.350**	**0.206**	**0.235**
Count						**7**	**7**	**7**	**7**	**7**	**7**
Upper 95% Confidence Interval						**1.185**	**0.596**	**0.660**	**0.750**	**0.772**	**0.832**

MOBILE	Country	Debt US$m	Debt/Equity	Tax Rate	Market Cap (US$M)	Levered Beta	Unlevered Beta	Re-levered Beta (15% Gearing)	Re-levered Beta (25% Gearing)	Blume Adjusted Beta (15% Gearing)	Blume Adjusted Beta (25% Gearing)
Far Eastone Telecommunications	Taiwan	$1,243.87	0.16	0.170	$7,710.00	0.159	0.140	0.161	0.179	0.438	0.450
Idea Cellular	India	$5,485.28	1.08	0.346	$5,070.00	0.559	0.327	0.365	0.399	0.575	0.597
Millicom International Cellular S.A.	Sweden	$423.24	0.07	0.220	$5,700.00	0.998	0.943	1.073	1.189	1.049	1.126
SK Telecom Co. Ltd.	South Korea	$6,167.00	0.43	0.242	$14,510.00	0.697	0.527	0.598	0.660	0.730	0.772
Smartone Telecommunications Holdings Limited	Hong Kong	$423.64	0.23	0.165	$1,850.00	0.966	0.811	0.930	1.037	0.953	1.025
United States Cellular Corporation	United States	$1,623.00	0.50	0.400	$3,270.00	0.622	0.479	0.530	0.575	0.685	0.715
Average		**$2,307.29**			**$5,551.79**	**0.667**	**0.538**	**0.610**	**0.673**	**0.738**	**0.781**
Minimum						**0.159**	**0.140**	**0.161**	**0.179**	**0.438**	**0.450**
Maximum						**0.998**	**0.943**	**1.073**	**1.189**	**1.049**	**1.126**
Standard Deviation						**0.307**	**0.298**	**0.342**	**0.381**	**0.229**	**0.255**
Count						**6**	**6**	**6**	**6**	**6**	**6**
Upper 95% Confidence Interval						**0.913**	**0.777**	**0.883**	**0.978**	**0.922**	**0.985**

Table 7 Recent Regulatory Decisions on Beta

	Blume Adjusted	Fixed	Mobile
ANCOM - 2012	Yes	0.71	0.74
MCA - 2012	No	0.57 - 0.99	0.61 - 0.95
ictQatar - 2013	Yes	0.69 – 0.75	0.69 – 0.75
TRA - 2013	Yes	0.75 – 0.85	0.75 – 0.85
ComReg - 2014	No	0.67 – 1.00	0.57 – 0.86
PTS - 2014	Yes		0.77
ACM - 2015	Yes[1]	0.69	0.69
BIPT - 2015	Yes[1]	0.71 – 0.77	0.70 – 0.77
OUR - 2015	Yes	0.619 - 0.832	0.738 - 0.985

[1]Used Vasicek adjustment rather than Blume adjustment. They both assume that beta should be closer to 1

Determination 7

The beta for the fixed network is 0.751 and the beta for the mobile network is 0.867.

MARKET RISK PREMIUM

5.9 The market risk premium (MRP) also referred to as the equity risk premium (ERP) is the additional return that an investor requires above the risk free rate for investing in equities. In the Consultation Document, the OUR proposed to use the average excess historical returns from an appropriate stock market over the risk free rate to estimate the MRP. The OUR used the return from the S&P 500 index to estimate the MRP. Despite the uncertainties associated with the period over which the returns should be estimated, and the method of averaging that should be used, it has been shown that this historical approach is more likely to overestimate the actual premium rather than underestimate it[12]. As can be seen in Table 8 below, most regulators have tended to use the MRP from independent studies like that of Damodaran. However, it should be noted that in most cases the independent studies were derived from a historical average.

5.10 CACU agreed with the approach used by the OUR to estimate the MRP. Digicel found the OUR's approach to be reasonable as the resultant values are within the range of recent regulatory decisions.

12 This is due to what is termed the equity risk puzzle where it is argued that historical equity risk premiums are higher than the amount which would be suggested using typical utility models for wealth.

C&WJ did not agree with the approach used to calculate the MRP. It stated that using an inflated WACC distorted efficiency and competition within the industry. C&WJ suggested that the OUR should use its lower bound estimate of 4.86% to counteract the overestimation bias.

5.11 The Office would like to make it clear that the use of historical returns to estimate the MRP does not automatically mean that the MRP is overestimated. The Office was merely indicating that despite the uncertainties associated with estimating the MRP using historical returns, the approach is still preferred to alternatives approaches as it is less likely to underestimate the true premium. The Office would also like to point out that the use of the historical estimate appears to be properly estimated since as Digicel indicated, the estimated MRP used by the OUR is consistent with the range chosen by other regulators. C&WJ did not put forward any evidence to justify its position that the MRP used by the OUR was overestimated. Further, its suggestion to use the lower bound value of 4.86% to counter the overestimation bias was not grounded in evidence or facts to highlight an actual overestimation. C&WJ's proposal could result in an underestimation of the true premium which could potentially have a dire effect on the industry if it results in a lack of investment. If there is indeed a market failure which is distorting the level of competition in the industry, underestimating the WACC will not correct the problem. The OUR is currently engaged in a process of assessing the state of competition in the industry. The results of this process should indicate if and where there is a market failure that needs to be addressed through regulation.

5.12 The Office will use the historical MRP calculated by Damodaran[13]. The method of estimation is consistent with the approach used by the OUR in the 2010 Determination Notice. The premium is derived using data from 1928 – 2015 which is a sufficiently long enough time period to neutralise the effects of outliers on both sides of the estimate. The range will be the geometric average of 4.45% and the arithmetic average of 6.18% for the stated period. The range still remains consistent with that of other regulators as can be seen in Table 8 below. The point estimate used in determining the cost of capital will be 5.36%.

[13] http://pages.stern.nyu.edu/~adamodar/

Table 8 Recent Regulatory Decisions on Beta

Regulators	Type	MRP
ANCOM - 2012	Independent Studies	5.85
MCA - 2012	Independent Studies	6.01 - 6.1
ictQatar - 2013	Various	6.3 - 6.8
TRA - 2013	Independent Studies	5.5-6.5
ComReg - 2014	Independent Studies	4.6 - 5.25
PTS - 2014	Various	5.4
ACM - 2015	Historical	5
BIPT - 2015	Various	5.1 – 5.6
OUR - 2015	Historical	4.54 - 6.18

Determination 8

The market risk premium used in estimating the WACC will be 5.36%.

5.13 The resulting cost of equity estimate for fixed carriers is 7.97% - 11.34% with a point estimate of 9.83%. For mobile carriers, the cost of equity capital is 9.09% - 13.03% with a point estimate of 11.02%.

Determination 9

The cost of equity for fixed line carriers is 9.83% while the corresponding value for mobile carriers is 11.02%.

CHAPTER 6: CONVERTING US$ WACC TO JAMAICAN DOLLAR WACC

6.0 In order to convert the parameters from US$ in which they were estimated to their J$ equivalent, the OUR will use the following Equation 7.

$$Parameter_{J\$} = (1 + Parameter_{US\$}) * \frac{(1 + Expected\ Inflation_{J})}{(1 + Expected\ Inflation_{US})} - 1 \quad \text{...(Equation 7)}$$

6.1 The point at which the conversion takes place is important. If the nominal, pre-tax, and after-tax WACC are all estimated in U.S. dollars and then converted to Jamaican dollars the resultant Jamaican dollar estimates will not equate to each other. In order to obtain consistent results, Equation 7 will be used to convert the cost of debt and cost of equity from US$ to J$. This produces consistent results when converting the various WACC measures between the US$ and J$ equivalent.

6.2 In the Consultation Document, the OUR proposed to use data from the International Monetary Fund (IMF) to obtain the projected inflation for Jamaica and data from the Federal Reserve Bank of Philadelphia for the projected inflation for the USA.

6.3 CACU stated that the sources of the inflation data were credible so it had no objection to the inflation projections. C&WJ also did not disagree with the projections. Digicel indicated that it would be incorrect to convert from a US$ cost to the local currency cost using exchange rate as the rate of return to be applied already includes long term inflation expectations. It stated that the OUR has correctly avoided this issue in its conversion by using inflation expectations. It presented IMF data for annual inflation projections[14] for the US and Jamaica up to year 2021 which resulted in an average projected inflation which was slightly different from that used by the OUR in the Consultation Document. The period chosen for the projection matches the review period for the WACC. Digicel recommended that the OUR use a projected inflation of 1.7% and 5.7% for the US and Jamaica, respectively.

6.4 The Office is inclined to use the inflation projections data presented by Digicel because the data for both countries are from the same source. This suggests that the methodology used to arrive at the projection is consistent for both countries. The source of the data, the IMF, is

[14] The source of the data used by Digicel is the IMF World Economic Outlook Database, 2016.

considered credible and is one of the sources already utilised by the OUR in the Consultation Document. However, the Office will exclude the data for 2015 and instead use data for the period 2016 – 2021. This results in a projected inflation of 5.91% for Jamaica and 2.0% for the US.

Determination 10

The projected inflation for Jamaica is 5.91% and the projected inflation for the US 2.0%.

CHAPTER 7: RESULTS

7.0 CACU indicated that it agreed with the estimated WACC for fixed and mobile of 13.85% and 15.69%, respectively. Similarly, Digicel highlighted that regulators sometimes include additional factors[15] which in their estimate would account for issues that specifically affect small markets. Digicel however indicated that where these factors are included, it should be evidence based. It suggested that the OUR's use of values closer to the top of the range, mimics the effect of a small company premium. Digicel stated that it could be argued that the use of the upper limit values could be to the advantage of larger operators but pointed out Ofcom's[16] position that the downside risk of setting the market risk premium too low outweighed the downside risk of setting the market risk too high. Digicel's only proposed adjustment to the estimate is to the values used for expected inflation. C&WJ disagreed with the estimated WACC for fixed and mobile and favoured the use of a single WACC for both networks. C&WJ suggested that the gearing should be set to 26.75% for both fixed and mobile carriers, the lower limit value of 4.86 should be used for the MRP, and beta should be equivalent for fixed and mobile networks.

7.1 It should be noted that the WACC values stated by CACU are different from those published in the Consultation Document. However, the error is immaterial as CACU agreed with the overall process used by OUR to estimate the WACC. The Office has responded to the various changes proposed by Digicel and C&WJ in the relevant sections of this Determination Notice. In summary:

a. The values used for expected inflation have been adjusted (Chapter 6);
b. The Office will continue to use a separate WACC for fixed and mobile networks (Chapter 2);
c. The gearing used in the estimate has been adjusted but still remains distinct for fixed and mobile carriers (Chapter 3); and
d. The mid-point value for the MRP will continue to be used as the point estimate in the model (Chapter 5).

7.2 Combining the various parameters estimated in the previous Chapters results in a nominal pre-tax WACC for fixed line of 13.42% in US$ terms and 19.25% in J$ terms as shown in Table 9 below. For mobile,

[15] Digicel stated the following: 1) small company risk premium; 2) cost of financing in the cost of debt (borrowing costs); 3) sophisticated tax adjustment to reflect the effect of the actual tax regime or investment incentives for foreign companies; and 4) the impact of macroeconomic issues on local debt markets.

[16] Office of Communications (UK)

the US$ pre-tax WACC is 14.99% and 20.93% in J$ terms as shown in Table 10 below.

Table 9 Fixed Line WACC

FIXED LINE	Minimum	Maximum	Point Estimate
Risk Free Rate	2.15%	2.15%	2.15%
Gearing	15.00%	30.00%	22.50%
Country Risk Premium	4.87%	4.87%	4.87%
Cost of Debt	8.39%	9.27%	8.83%
Cost of Debt - J$	12.54%	13.46%	13.00%
Market Risk Premium	4.54%	6.18%	5.36%
Equity Beta	0.62	0.83	0.751
Tax Rate	33.33%	33.33%	33.33%
Expected Inflation - Jamaica	5.91%	5.91%	5.91%
Expected Inflation - U.S.	2.00%	2.00%	2.00%
Cost of Equity	7.97%	11.34%	9.83%
Cost of Equity - J$	12.11%	15.61%	14.04%
Nominal WACC - US$	8.04%	10.72%	9.61%
Nominal After-Tax WACC - US$	7.62%	9.79%	8.94%
Nominal Pre-Tax WACC - US$	11.43%	14.69%	13.42%
Nominal WACC - J$	12.18%	14.97%	13.81%
Nominal After-Tax WACC - J$	11.55%	13.62%	12.83%
Nominal Pre-Tax WACC - J$	17.33%	20.43%	19.25%

Table 10 Mobile WACC

MOBILE	Minimum	Maximum	Point Estimate
Risk Free Rate	2.15%	2.15%	2.15%
Gearing	15.00%	25.00%	20.00%
Country Risk Premium	4.87%	4.87%	4.87%
Cost of Debt	8.39%	9.27%	8.83%
Cost of Debt - J$	12.54%	13.46%	13.00%
Market Risk Premium	4.54%	6.18%	5.36%
Equity Beta	0.74	0.99	0.867
Tax Rate	33.33%	33.33%	33.33%
Expected Inflation - Jamaica	5.91%	5.91%	5.91%
Expected Inflation - U.S.	2.00%	2.00%	2.00%
Cost of Equity	9.09%	13.03%	11.02%
Cost of Equity - J$	13.28%	17.37%	15.28%
Nominal WACC - US$	8.99%	12.09%	10.58%
Nominal After-Tax WACC - US$	8.57%	11.32%	9.99%
Nominal Pre-Tax WACC - US$	12.85%	16.98%	14.99%
Nominal WACC - J$	13.17%	16.39%	14.82%
Nominal After-Tax WACC - J$	12.54%	15.27%	13.95%
Nominal Pre-Tax WACC - J$	18.81%	22.90%	20.93%

7.3 Table 11 shows that the nominal pre-tax WACC estimated for Jamaica is significantly above the nominal pre-tax WACC allowed in the other countries where a WACC has recently been estimated. This is in line with expectation, due primarily to the inclusion of the country risk premium for Jamaica. The estimated cost of capital should adequately compensate local carriers for the higher risk of operating in Jamaica relative to more developed countries.

Table 11 Mobile WACC

Regulators	Fixed	Mobile
ANCOM - 2012	10.70%	11.10%
MCA - 2012	9.65%	10.80%
ictQatar - 2013	9.30%	9.30%
TRA - 2013	9.50%	9.50%
ComReg - 2014	8.50%	8.70%
PST - 2014		7.80%
ACM - 2015	6.06%	6.06%
BIPT - 2015	8.32%	8.32%
OUR (US$) - 2015	13.42%	14.99%

Determination 11

The estimated nominal pre-tax WACC for fixed line carriers in J$ terms is 19.25%. The estimated nominal pre-tax WACC for mobile carriers in J$ terms is 20.93%.

APPENDIX – LIST OF DETERMINATIONS

Determination 1

The WACC will be updated every five (5) years from the effective date of this Determination Notice.

Determination 2

The Office will estimate separate WACCs for fixed line and mobile carriers.

Determination 3

The gearing for fixed line carriers will be 22.5% and for mobile carriers it will be 20.0%.

Determination 4

The estimated risk free rate is 2.15%.

Determination 5

The estimated country risk premium is 4.87%.

Determination 6

The estimated cost of debt is 8.83% for both fixed and mobile carriers.

Determination 7

The beta for the fixed network is 0.751 and the beta for the mobile network is 0.867.

Determination 8

The market risk premium used in estimating the WACC will be 5.36%.

Determination 9

The cost of equity for fixed line carriers is 9.83% while the corresponding value for mobile carriers is 11.02%.

Determination 10

The projected inflation for Jamaica is 5.91% and the projected inflation for the USA is 2.0%.

Determination 11

The estimated nominal pre-tax WACC for fixed line carriers in J$ terms is 19.25%. The estimated nominal pre-tax WACC for mobile carriers in J$ terms is 20.93%.