Commission for
Communications Regulation

Review of Cost of Capital

- **Mobile Telecommunications**
- **Fixed Line Telecommunications**
- **Broadcasting (Market A and Market B)**

All responses to this consultation should be clearly marked: -

"Reference: Submission re ComReg 14/28", and sent by post, facsimile or e-mail to arrive on or before 5p.m., 9 May 2014, to:

Ms. Claire Kelly
Commission for Communications Regulation
Irish Life Centre, Abbey Street,
Dublin 1, Ireland

Ph: + 353 – 1 804 9600 Fax: + 353 – 1 – 804 9680
Email: **Wholesaleconsult@comreg.ie**

Please note ComReg will publish all respondents' submissions with the Response to this Consultation, subject to the provisions of ComReg's guidelines on the treatment of confidential information – ComReg 05/24

Consultation and Draft Decision

Reference: ComReg 14/28

Date: 11/04/2014

Redacted Information

Please note that this is a non-confidential version of the Consultation and Draft Decision. Certain information within the Consultation and Draft Decision has been redacted for reasons of confidentiality and commercial sensitivity, with such redactions indicated by the symbol ✂. In some cases, ComReg has presented information in an aggregated fashion in order to strike a balance between preserving the confidentiality of operator-specific information whilst enabling interested parties to respond in a meaningful way to the Consultation and Draft Decision.

Legal Disclaimer

This Consultation and Draft Decision is not a binding legal document and also does not contain legal, commercial, financial, technical or other advice. The Commission for Communications Regulation is not bound by it, nor does it necessarily set out the Commission's final or definitive position on particular matters. To the extent that there might be any inconsistency between the contents of this document and the due exercise by it of its functions and powers, and the carrying out by it of its duties and the achievement of relevant objectives under law, such contents are without prejudice to the legal position of the Commission for Communications Regulation. Inappropriate reliance ought not therefore to be placed on the contents of this document.

Content

Annex

Section **Page**

Table of Figures

Section Page

Chapter 1

1 Introduction

1.1 This consultation document details the Commission for Communications Regulation's ("ComReg") approach to estimating the cost of capital in three sectors namely:

- Mobile telecommunications;
- Fixed line telecommunications; and
- Broadcasting.

1.2 In these sectors there are markets where undertakings have been designated as having significant market power ("SMP"). It is proposed that the cost of capital will be used as an input to price controls for the following:

- Mobile Service Providers ("MSP") deemed to have SMP in relation to wholesale voice call termination on individual mobile networks in Ireland [1], namely Hutchison 3G Ireland Limited, Lycamobile Ireland Limited, Meteor Mobile Communications Limited, Telefónica Ireland Limited, Tesco Mobile Ireland Limited and Vodafone Ireland Limited. The cost of capital is estimated for a Hypothetical Efficient Mobile Operator in an Irish context.
- Fixed telecommunications operators deemed to have SMP[2], namely Eircom Limited's ("Eircom") fixed line telecommunications business, and BT Communications Ireland Limited, Colt Technology Services Limited, Magnet Networks Limited, Smart Telecom Holdings Limited, UPC Communications Ireland Limited and Verizon Ireland Limited. The fixed line cost of capital is estimated for a Hypothetical Efficient Fixed Line Operator in an Irish context.

[1] ComReg identified six separate markets relating to the market identified by the European Commission for voice call termination on individual mobile networks as outlined in Section 4.2 of the *"Market Review: Voice Call Termination on Individual Mobile Networks, Response to Consultation and Decision"*, ComReg Document 12/124, Decision Number. D 11/12.

[2] In the following markets, Call origination services on the public telephone network at a fixed location and wholesale national call transit services on the public telephone network at a fixed location (contained in ComReg Decision No. D04/07), Wholesale call termination services used to provide retail calls to end users on each public telephone network provided at a fixed location (contained in ComReg Decision No. D06/07), Wholesale (physical) network infrastructure access (including shared or fully unbundled access) at a fixed location (contained in ComReg Decision No. D05/10), Wholesale broadband access (contained in ComReg Decision No. D06/11), Wholesale terminating segments of leased lines (contained in ComReg Decision No. D06/08).

- Broadcasters deemed to have SMP in broadcasting transmission services[3], namely RTÉ Transmission Network Limited ("2rn") and RTÉ. The broadcasting costs of capital are estimated for a Hypothetical Efficient Broadcaster in an Irish context.

1.3 The cost of capital is an important component in pricing regulated activities as it reflects the rate of return to be allowed to a company on its investments.

1.4 This document begins with a discussion of the key objectives of the cost of capital reviews. This is followed by an overview of the proposed methodology for calculating each cost of capital. The subsequent chapters explain ComReg's position on the individual parameters used in the calculation of the cost of capital and on the basis of this analysis identify an appropriate range for each cost of capital. ComReg then proposes a specific cost of capital for each of the regulated markets.

1.5 ComReg has conducted extensive analysis with the assistance of expert advisers European Economic Research Limited ("Europe Economics")[4]. On the basis of this analysis, ComReg's preliminary views are that:

- The Weighted Average Cost of Capital ("WACC") using the Capital Asset Pricing Model ("CAPM") formula[5] is the most appropriate means to estimate the cost of capital in the mobile, fixed and broadcasting sectors.
- Each of the respective WACC estimations should be on a nominal pre-tax basis.
- Broadcasters in Market A and Market B should have the same WACC, as there appears to be no practical means of distinguishing between RTÉ and 2rn in this context.

[3] The market for wholesale access to national terrestrial broadcast transmission services in which RTÉ Transmission Networks Limited ("2rn") is designated as having SMP ("Market A") and the market for wholesale access to DTT Multiplexing services in which RTÉ is designated as having SMP ("Market B"), *"Market Review, Broadcasting Transmission Services in Ireland, Response to consultation and Decision Notice"*, Reference ComReg 13/71, Decision D11/13" ("ComReg 13/71").
[4] The report prepared by Europe Economics entitled *"Cost of capital for Mobile Termination Rates, Fixed-Line and Broadcasting Price Controls"* February 2014 ("Europe Economics' Technical Report") is included as an Annex to this document.
[5] Please refer to sections 3.4 to 3.4 for a detailed description of the WACC-CAPM.

1.6 The preliminary costs of capital for each sector is as follows:

Table 1: Preliminary nominal pre-tax WACC %	
Mobile Telecommunications[6]	8.66%
Fixed Line Telecommunications	8.48%
Broadcasting (Market A)	8.68%
Broadcasting (Market B)	8.68%

1.7 This document is structured as follows:

- **Chapter 2** – Executive Summary: This chapter summarises ComReg's rationale and overall objectives and the main points of the consultation.
- **Chapter 3** – Methodological Framework: This chapter discusses the various methodologies that can be used to calculate a cost of capital, and ComReg's preferred approach.
- **Chapter 4** – Generic WACC Parameters: This chapter discusses the parameters that are applicable to each of the four WACC estimations.
- **Chapter 5** – Mobile Telecommunications: This chapter discusses the parameters that are required to estimate a cost of capital specific to Mobile Telecommunications.
- **Chapter 6** – Fixed Line Telecommunications: This chapter discusses the parameters that are required to estimate the WACC that is applicable to Fixed Line Telecommunications.
- **Chapter 7** – Broadcasting (Market A and Market B): This chapter discusses the parameters that are required to estimate the WACC applicable to Broadcasting – Market A and Market B.
- **Chapter 8** – Other issues regarding the WACC: This chapter outlines in which circumstances it may be necessary to revisit the WACC during the period of the price control.
- **Chapter 9** – Submitting comments: This chapter sets out the timelines for responding to the consultation and how confidential information will be dealt with.
- **Annexes 1-4** – Draft decision instruments.
- **Annex 5** – Legal Basis
- **Annex 6** – Glossary of Terms

[6] As noted, this preliminary WACC is based on a Hypothetical Efficient Mobile Operator and applicable to each of the six MSPs with SMP.

Chapter 2

2 Executive Summary

2.1 ComReg is the regulator for the electronic communications sector in Ireland. The European Commission has recommended a number of markets as being susceptible to *ex ante* regulation[7]. These markets have been reviewed by ComReg in an Irish context and obligations have been imposed in such instances where undertakings are designated with SMP.

2.2 This consultation initiates a process to determine the appropriate cost of capital to be included in price controls in the mobile telecommunications, fixed line telecommunications and broadcasting sectors:

2.3 Following the designation of SMP on undertakings in their respective markets in the aforementioned sectors, ComReg imposed remedies of price control via cost orientation on the SMP undertakings. The cost of capital is a component of a "cost oriented" price control. Simply put, the cost of capital is the amount the firm must pay to equity investors and lenders to compensate them for the use of money, given the risk of investment.

2.4 The correct determination of the cost of capital is a crucial element in the regulatory process. It is central to any price-setting process (determining a large part of the prices a regulated entity is allowed to charge by setting the allowed return on capital employed), and has an important impact on the regulated firm's investment incentives. It also has important implications for the tariffs other operators must pay for access, the overall competitive process, and ultimately end prices for consumers[8]. Consequently ComReg is approaching the setting of the cost of capital with care and following detailed analysis.

2.5 ComReg considers it appropriate to undertake these reviews of the cost of capital at this time for the following reasons:

- Having imposed SMP on six MSPs in the market for wholesale mobile call termination, ComReg is currently developing a cost model for the determination of Mobile Termination Rates ("MTRs"). It is proposed that an input into this cost model is an estimate of the cost of capital;

[7] Commission Recommendation of 17 December 2007 on relevant product and service markets within the electronic communications sector susceptible to ex ante regulation in accordance with Directive 2002/21/EC of the European Parliament and of the Council on a common regulatory framework for electronic communications networks and services (OJ L 344, 28.12.2007, p. 65).

[8] IRG – Regulatory Accounting (2007), Principles of Implementation and Best Practice for WACC calculation, February, http://erg.eu.int/doc/publications/erg_07_05_pib_s_on_wacc.pdf,

- The cost of capital for fixed line telecommunication services (Eircom's cost of capital) was last reviewed in 2008; and
- 2rn and RTÉ have recently been designated with SMP in Market A and Market B respectively. Cost models have been developed for the calculation of the respective tariffs and one of the inputs to these models is an estimate of the cost of capital.

2.6 ComReg is also mindful that several jurisdictions have reviewed the cost of capital for regulated mobile telecoms businesses, for regulated fixed line telecoms businesses, and for end-to-end broadcasting services.

2.7 ComReg market reviews are currently in progress or planned in which the cost of capital could constitute a key building block in any future price controls.

2.8 Reviews of regulated tariffs across all markets are continuously being undertaken by ComReg and many of these require the input of the cost of capital.

2.9 It is envisaged that the cost of capital calculated as a result of this consultation will be used as follows:

- In the market for wholesale mobile call termination, it is proposed that the cost of capital will be a key input into the model used to calculate the rate charged for that service.
- In certain fixed line telecommunications markets it is proposed that the cost of capital will be a key input into price controls for Eircom and certain other fixed line operators[9]. This consultation proposes that Eircom's regulated tariffs will be subject to the revised cost of capital after the effective date of the proposed decision. Therefore Eircom's regulated tariffs in place prior to the effective date remain in force unchanged until amended or replaced by further price control reviews.
- In the market for broadcasting transmission services in Ireland, ComReg recently conducted a market analysis on this market and both 2rn and RTÉ were found to have SMP in Market A and Market B respectively.

2.10 This is the first time that a cost of capital has been set for the broadcasting transmission market. However, as noted in ComReg 13/71 the tariffs of 2rn and RTÉ are to be applied

[9] BT Communications Ireland Limited, Colt Technology Services Limited, Magnet Networks Limited, Smart Telecom Holdings Limited, UPC Communications Ireland Limited and Verizon Ireland Limited.(Ref: ComReg Document 12/15 (D12/12))

"[…] on an interim basis and, following the completion of ComReg's […] review of the WACC […], may be adjusted (either upwards or downwards) as appropriate"[10].

Key Objectives of the Cost of Capital Reviews

2.11 Section 12 of the Communications Regulation Acts 2002 to 2011 provides that the objectives of ComReg in exercising its functions in relation to the provision of electronic communications networks, electronic communications services and associated facilities are:

- *"to promote competition"*;
- *"to contribute to the development of the internal market"*; and
- *"to promote the interests of users within the Community"*.

2.12 Section 16(2)(d) of the European Communities (Electronic Communications Networks and Services) (Framework) Regulations 2011 provides that in pursuit of its objectives under section 12 of the Communications Regulation Act ComReg shall "*apply objective, transparent, non-discriminatory and proportionate regulatory principles by, amongst other things…promoting efficient investment and innovation in new and enhanced infrastructures…".*

2.13 Regulation 13(2) of the European Communities (Electronic Communications Networks and Services) (Access) Regulations 2011 provides that *"To encourage investments by the operator, including in next generation networks, the Regulator shall, when considering the imposition of obligations under paragraph (1), take into account the investment made by the operator which the Regulator considers relevant and allow the operator a reasonable rate of return on adequate capital employed, taking into account any risks involved specific to a particular new investment network project."*

2.14 In this context it is important that the following goals are achieved with regard to the calculation of the cost of capital:

- Avoiding excessive prices being charged by SMP operators, thereby protecting consumers;
- Incentivising efficient network investment by SMP operators and other operators; and
- Ensuring that existing and future levels of competition in wholesale and retail markets is not negatively impacted by the cost of capital in the form of excessive wholesale prices.

[10] Paragraph 2.20 of ComReg Document No. 13/71

2.15 A key objective for ComReg in setting an appropriate cost of capital is to ensure that the regulated firm achieves a return sufficient to recover the opportunity cost of the capital invested in the production of the regulated services so as to provide appropriate investment incentives.[11] ComReg is mindful of the need to promote a favourable climate for efficient and timely investment and to stimulate innovation in telecommunications and broadcasting infrastructure and services in Ireland. Setting a rate of return that is too low could make future investment unattractive to investors. Similarly, setting it too high would allow the regulated company to earn excessive returns at the expense of its wholesale and retail customers while also potentially distorting pricing signals to investors. It is important that regulated returns reflect the risks that companies face in making investments and that the relevant cost of capital encourages future efficient investment in telecommunications and broadcasting infrastructure in Ireland. It is therefore important that the current cost of capital review not only considers current market conditions but also any potential developments, and financeability of future investments, over the period of the review.

Proposed Approach

2.16 ComReg is of the preliminary view that it is appropriate to estimate the costs of capital in the mobile, fixed and broadcasting sectors using the WACC-CAPM methodology. ComReg considers that this is the most appropriate method of estimating the cost of capital and the reasons for this conclusion are set out in detail in chapter 3 of this document.

2.17 In particular ComReg notes that WACC-CAPM is the standard approach in estimating the cost of capital across regulated industries in Ireland, and for electronic communications services in many countries.

2.18 ComReg is of the preliminary view that the WACC should be calculated on a nominal pre-tax basis using the CAPM approach as discussed in chapter 4. The formula is as follows:

Where:

r_{debt} = *Cost of Debt. The Cost of Debt is equal to the sum of two components, the 'risk free rate' plus any premium applied to the debt incurred i.e. (r_f + Debt Premium).*

[11] This means that the regulated rate of return should be set at a level that is consistent with the level that investors would receive for investing in alternative assets with the same level of riskiness as regulated assets.

*r_{equity} = According to the CAPM, the Cost of Equity is obtained by adding the risk free rate to the product of the equity beta and the equity risk premium i.e. (r_f + ß * Equity Risk Premium)*

r_f = nominal Risk-Free Rate ("RFR"), which is the theoretical rate at which investors can borrow and lend funds with zero risk.

ß = Equity Beta. This is a measure of asset's exposure to systematic risks. The equity beta indicates the sensitivity of the returns on the stock that is being examined to the entire equity market.

Equity Risk Premium. This is the additional return demanded by investors for investing in the entire equity market.

g = gearing, which is the proposed capital structure or the efficient debt level and is measured as follows: Net Debt ÷ (Net Debt + Equity).[12]

t = tax rate; ComReg proposes to apply the Irish statutory corporation tax rate of 12.5 per cent when calculating a pre-tax WACC.

2.19 The availability of reliable data is paramount in setting the WACC. ComReg is mindful that any estimate of the WACC is based on a best estimate, even with the availability of good quality data. As the WACC is effectively formulated based on historical data (with consideration given to likely future trends), ComReg acknowledges that there is a risk that the actual outturn of the various WACC components may be different to what is currently expected[13]. ComReg has attempted to minimise this risk insofar as it is possible by basing its approach on international precedent and availing of reliable comparable data.

2.20 In estimating the four sector-specific costs of capital, certain parameters are generic across each of the sectors[14]. These parameters include:

- the risk-free rate;
- the Equity Risk Premium ("ERP"); and
- the tax rate.

[12] Gearing is defined as the ratio of debt to the sum of debt plus equity.
[13] It is proposed that the WACC will be revised after a three-year period,
[14] Strictly speaking, four costs of capital are estimated, but as the two broadcasting costs of capital are based on the same methodology, the result is that three costs of capital are effectively estimated in this consultation.

2.21 The same values for these generic parameters are therefore used in estimating the costs of capital for Mobile Telecommunications, Fixed Line Telecommunications and Broadcasting (Market A and Market B). ComReg has therefore grouped these generic parameters into one chapter in this consultation (chapter 4).

2.22 There are other parameters that are specific to calculating the respective costs of capital due to inherent sector specific characteristics. For example, the preliminary point estimate chosen for gearing when calculating the cost of capital for fixed line telecommunications is different to that of mobile and broadcasting. The characteristics of these sectors are considered in separate chapters, with the point estimates for the sector specific parameters determined accordingly. The sector specific chapters are as follows:

- Mobile Telecommunications – chapter 5
- Fixed Line Telecommunications – chapter 6
- Broadcasting (Market A and Market B) – chapter 7

2.23 For comparative purposes and to ensure consistency in its own analysis, ComReg considered data from other regulated sectors in Ireland (including the Irish energy and aviation industries[15]), data from other European countries and, where considered necessary, data from countries outside of Europe

2.24 In carrying out a comparative analysis of calculation of the cost of capital across Europe, ComReg and Europe Economics examined a report published by The Body of European Regulators for Electronic Communications, ("BEREC") comparing the methodologies in calculating WACCs across 27 member states[16].

2.25 In light of the foregoing, ComReg has explored a number of issues in detail with Europe Economics regarding the calculation of the costs of capital[17]. The associated implications on incentives and ability to invest deriving from a preliminary WACC estimate(s) have also been examined.

[15] http://www.cer.ie/docs/000801/cer13222-mid-term-review-of-electricity-networks-wacc---cer-consultation-paper.pdf
[16] http://berec.europa.eu/eng/document_register/subject_matter/berec/reports/1451-berec-report-on-the-regulatory-accounting-in-practice-2013
[17] See chapter 3.

2.26 ComReg proposes to "aim-up" the initial pre-tax nominal WACC to reflect the asymmetry of consequences between setting the cost of capital too low and setting it too high. The proposal is on the basis that the negative consequences of setting the WACC too low are potentially greater that the negative consequences of setting it too high. The process of aiming up involves estimating the variance of key parameters[18] and aiming up the point estimates of these parameters to confidence intervals that reflect one standard deviation above the mean[19]. Similar aiming up methodologies has been used in regulatory decisions in Ireland and other jurisdictions[20].

2.27 ComReg also explores a number of other possible mechanisms for the purposes of promoting investment incentives and public interest considerations going forward, such as capital incentives and trigger mechanisms. ComReg is of the preliminary view that trigger mechanisms are unlikely to be necessary in light of the proposed periodic reviews of the WACCs.

2.28 ComReg is of the preliminary view that the respective estimations of WACC should be based on the parameter ranges presented below, from which preliminary point estimates are derived and subsequently aimed up to reflect the asymmetries in consequences of underestimating the WACC. ComReg notes that the preliminary costs of capital are based on a hypothetical efficient operator in each of the respective sectors.

[18] The parameters of the WACC that are aimed up using this methodology include the nominal risk free rate and the asset beta. Similarly, the debt premium is aimed up using Europe Economics judgement on the variance as a proxy for one standard deviation above the mean. The ERP is not aimed up however to reflect the notion that it would not tend to move in line with the risk free rate.

[19] With various components of the respective WACC estimations aimed up by one standard deviation (i.e. at the 66th percentile), it would not be entirely accurate to infer that the baseline WACCs have been aimed up by precisely one standard deviation above the mean. Rather, Europe Economics has confirmed that the aiming up methodology that has been applied results in an uplift of the WACC by more than one standard deviation i.e. above the 66th percentile and that in principle, the precise confidence interval at which it lies could be estimated.

[20] See Vector – Submission to Commerce Commission on whether the Commission should review or amend the cost of capital input methodologies – Appendix 1: International Regulatory Practice (13 March 2014). See paragraph 150 of this UK Competition Commission document https://www.caa.co.uk/docs/5/ergdocs/ccreport_appf.pdf

Table 2: Ranges for WACC parameters			
WACC parameter	Mobile Telecommunications	Fixed Line Telecommunications	Broadcasting (Market A and Market B)
Cost of Debt			
Nominal risk-free rate	3.28% – 4.55%	3.28% – 4.55%	3.28% – 4.55%
Debt premium	1.50% - 2.25%	1.50% - 2.25%	1.50% - 2.25%
Cost of Equity			
Nominal risk-free rate	3.28% – 4.55%	3.28% – 4.55%	3.28% – 4.55%
Asset beta	0.40 - 0.60	0.40 - 0.60	0.40 - 0.60
Gearing	30%	40%	25%
Equity beta	0.57-0.86	0.67 – 1.00	0.53 – 0.80
Equity Risk Premium	4.60% - 5.25%	4.60% - 5.25%	4.60% - 5.25%
Corporation tax rate	12.5%	12.5%	12.5%

2.29 In calculating the respective WACCs ComReg proceeds to choose a point estimate from each of the parameter ranges above. It is important to note that the midpoint of these ranges may not be an appropriate choice as it may not be representative of a hypothetical efficient operator in each of these sectors. The rationale behind each of the preliminary point estimates chosen is explained in detail in chapters 4 to 7.

Table 3: Point Estimates for WACC parameters			
WACC parameter	Mobile Telecommunications	Fixed Line Telecommunications	Broadcasting (Market A and Market B)
Cost of Debt			
Nominal risk-free rate	4.09%	4.09%	4.09%
Debt premium	1.75%	1.75%	1.75%
Cost of Equity			
Nominal risk-free rate	4.09%	4.09%	4.09%
Asset beta	0.55	0.50	0.55
Gearing	30%	40%	25%
Equity beta	0.79	0.83	0.73
Equity Risk Premium	5.00%	5.00%	5.00%
Corporation tax rate	12.50%	12.50%	12.50%

2.30 The preliminary nominal pre-tax WACC estimations, based on a hypothetical efficient operator in each sector and incorporating the aforementioned aiming up methodology, are as follows:

- 8.66% for the Mobile Telecommunications;
- 8.48% for Fixed Line Telecommunications;
- 8.68% for Broadcasting (Market A); and
- 8.68% for Broadcasting (Market B).

2.31 These point estimates and the ranges that they fall within are described in subsequent chapters of this document and are also detailed in Europe Economics' Technical Report.

Chapter 3

3 Methodological Framework

3.1 The cost of capital assessment is not a mechanical process, and while modern finance theory provides useful tools, many exercises of regulatory judgement are needed. One such judgement is the selection of the methodology for estimating the cost of capital.

3.2 ComReg notes that the application of the selected methodology should have regard to the prevailing conditions in the financial markets and consider the likely developments in these markets over the duration of price control period. Since the regulated prices are set on a forward looking basis, the estimate for the cost of capital should also incorporate a forward looking assessment of the cost of equity, cost of debt and appropriate mix of equity and debt financing.

3.3 This chapter assesses the most commonly used methods for estimating the cost of capital. Firstly, the framework of WACC and the CAPM is explained. This is followed by a description of alternative methods for estimating the cost of equity. ComReg's proposed methodology for estimating the cost of capital is then identified.

WACC and CAPM

3.4 The WACC methodology estimates the aggregated cost of capital for a firm by calculating an appropriately weighted average of the cost of debt and the cost of equity. When defined on a nominal pre-tax basis, a firm's cost of capital is calculated according to the following formula:

3.5 The cost of debt r_{debt} which is the price paid for fixed-payment liabilities such as bonds and loans can be calculated as:

[21]

Where: r_f = nominal risk-free rate i.e. the return that would be required for a perfectly risk-free asset, and, d_p = debt premium i.e. an additional return that investors would require when investing in corporate securities.

3.6 The most common way to estimate the cost of equity (opportunity costs of employing capital such as public shares) is by using the CAPM[22]. The CAPM relates the cost of equity of a particular company to its exposure to systematic or non-diversifiable equity market risk. The central principle of the CAPM is that investors hold a broad portfolio of assets which removes, by diversification, the company-specific risk of each asset in the portfolio, thus leaving only non-diversifiable or systematic risk. Assuming this is correct, the expected return on an asset can be derived as:

Where: r_f = nominal risk-free rate i.e. the return that would be required for a perfectly risk-free asset;

$(E[r_m] - r_f)$ = Equity Risk Premium (''ERP'') i.e. the additional return demanded by investors for investing in the entire equity market;

β_E = equity beta i.e. the correlation between the risk in analysed asset's return and the returns of the entire equity market. The equity beta is derived from the following formula;

Where: β_A = asset beta which similarly to equity beta (β_E) measures company's exposure to systematic risk, but abstracts from the capital structure;

[21] See section 3 of the Europe Economics' Technical Report for a more detailed discussion of the relationship between this formula and CAPM.

[22] For example, see Sudarsanam, S., Kaltenbronn, U. and Park, P. (2011) "Cost of Equity for Regulated Companies: An international Comparison of Regulatory Practices", Working Paper. The survey of regulatory practices indicated a widespread preference for CAPM.

β_D = debt beta i.e. a parameter which measures the extent to which the probability of examined company's default is correlated with the wider economy[23]; and

g = gearing (explained in paragraph 3.4 above)

3.7 ComReg notes that inherent payments on bonds and loans are more certain than discretionary payments of dividends. Therefore, a considerable number of assumptions must be made when estimating the cost of equity as evidenced from the number of approaches to calculating cost of capital offered by finance theory.

Alternative methods for estimating the cost of equity

3.8 Besides the CAPM, there are a number of alternative models such as the Dividend Growth Model ('DGM') and Fama-French three factor model[24] that can be used for the cost of equity estimation.

3.9 In contrast to the CAPM, the DGM provides no explicit guidance on the risks that are to be compensated through the cost of capital. In its simplest form (assuming constant rate of dividend growth) the required return on equity under the DGM can be expressed as:

Where: r = required return on equity;

$E(D_1)$ = the expected dividends next period;

P_0 = estimate of equity value; and

g = dividend growth rate.

[23] The wider economy means the market as a whole, which is composed of all possible assets. The equity market is used as a proxy for the market as a whole (see section 3 of Europe Economics' Technical Report).

[24] See Fama, E.F. and French, K.R. (1993), 'Common Risk Factors in the Returns on Stocks and Bonds', *Journal of Financial Economics*, 33, 3-56.

3.10 The application of the DGM is relatively simple, in a technical sense, and it has been frequently used in the United States of America[25]. However, as is evident from the formulae above, having good forecasts of future dividends and the long run dividend growth rate (which is unobservable and is usually based on some assumption such as matching the expected growth rate in the economy) are critical to the estimated value of the cost of equity, and subsequently, the cost of capital. Such forecasts are not straightforward to obtain.

3.11 The Fama-French model is an extension of the CAPM and seeks to explain returns on equity in terms of the following three risk factors:

- ERP or the market factor, defined as the difference between the return on the whole stock market and the return on a risk-free security such as government bonds;
- The size factor, Small [market capitalization] minus big ("SMB") i.e. the difference between a return on a portfolio of large-cap stocks and the return on the portfolio of small-cap stocks; and
- The book-to-value factor, high [book-to-value ratio] minus low ("HML"), i.e. the difference between the return on a portfolio of high book-to-value stocks ('value' stocks) and a portfolio of low book-to-value stocks ('growth' stocks).

3.12 Other multi-factor models explore additional factors. For example, the Cahart model[26] incorporates winners minus losers ("WML") factor, defined as the return on the past 'winner' portfolio minus the return on the past 'loser' portfolio. While the Fama-French and other multi-factor models extend the CAPM framework by taking into consideration additional risks that investors face when holding a portfolio of assets, multi-factor models also require additional reliable data in order to estimate the magnitude of these risks. ComReg notes that there is little evidence of use of multi-factor models in the cost of equity estimations by regulatory agencies.

3.13 Europe Economics' Technical Report also presents models such as Residual Income Model and third moment CAPM. These models expand the frameworks of traditional DGM and CAPM models.

[25] For example, see New York State Public Service Commission, Case 08-E-539, Order Setting Electric Rates, 24 April 2009.
[26] Cahart, M. (1997) 'On Persistence in Mutual Fund Performance', *Journal of Finance*, 52, 57-82.

What methodology should be used by ComReg for the cost of equity and overall cost of capital estimation?

3.14 The CAPM is the preferred methodology for the cost of equity estimation amongst national regulatory authorities in Europe[27] and it has been used in the past two revisions of Eircom's cost of capital[28]. Nevertheless ComReg asked Europe Economics to assess (including a review of academic literature) whether ComReg should use an alternative methodology.

3.15 ComReg is of the view that the most appropriate methodology should have the least amount of uncertainty when estimating the forward looking cost of capital and should reflect the efficient rate of return that will be required by the regulated firms in order to finance their investments during the forthcoming price control period.

The CAPM

3.16 As noted in paragraph 2.16, the CAPM has been ComReg's preferred methodology in the assessment of the cost of capital and it is widely used by both regulators[29] and businesses[30]. Europe Economics' Technical Report highlights the fact that the CAPM has clear theoretical foundations and that it is well integrated with the rest of the finance theory[31]. Moreover, Europe Economics' Technical Report notes that among the possible models, the CAPM is the best empirically performing model when explaining asset prices in the long run.

3.17 Potential shortcomings of the CAPM have also been extensively debated. For example, Roll[32] (1977) highlights the fact that the market portfolio in the CAPM must include all assets including traded and non-traded assets. Since, in practice, the CAPM includes only traded assets, the return on these assets may be sensitive to additional factors not captured by the CAPM.

[27] See BEREC document BoR (13) 110 Regulatory Accounting in Practice 2013 where all 27 national regulatory authorities ("NRAs") indicated the usage of CAPM to calculate the rate of return on regulated assets in the market for wholesale (physical) network infrastructure access at a fixed location.
[28] *"Response to Consultation and Decision Notice, Eircom's Cost of Capital"* Decision No. D01/08, Document No: 08/35, dated 22 May 2008. In particular see paragraphs 3.6 to 3.8 of this document.
[29] For example, see Sudarsanam, S., Kaltenbronn, U. and Park, P. (2011) "Cost of Equity for Regulated Companies: An international Comparison of Regulatory Practices", Working Paper. The survey of regulatory practices indicated a widespread preference for CAPM..
[30] See Graham, J and C Harvey (2001), 'The theory and practice of corporate finance: Evidence from the field', *Journal of Financial Economics*, 60, 187–243. The results of the survey indicated that generally the CAPM is used more widely than other models including multifactor models by corporate managers to calculate their firms' cost of capital.
[31] For example, the Modigliani-Miller theorem can be proved using the CAPM.
[32] Roll, R., 1977, A Critique of the Asset Pricing Theory's Tests Part I: On Past and Potential Testability of the Theory, Journal of Financial Economics, 4, 129-176.

3.18 Another area of the CAPM application that is widely documented is the use of historic data versus forecast data. The CAPM is forward looking as it defines the future expected returns but deriving forward looking estimates of the CAPM parameters is particularly challenging. In practice, historic estimates are relied upon as proxies for forward-looking estimates. Thus, the quality of the historic data often determines the reliability of the CAPM's estimated return on equity.

3.19 In view of these criticisms, ComReg has examined alternative models for estimating the cost of equity but has not found any convincing arguments for switching away from the CAPM approach, used in ComReg's previous determinations of the cost of capital.

The DGM

3.20 As noted in paragraph 3.10 above, the DGM requires reliable and unbiased forecasts of future dividends and their growth rate. These forecasts are critical for the estimation of implied return on equity. Sudarsanam, Kaltenbronn and Park (2011) identify a number of sources of bias and inaccuracy in such forecasts including ''optimism bias'' which relates to overly optimistic assumptions about the growth rate and 'circularity problem' which reflects the fact that analysts may anticipate the regulator-determined cost of equity in their dividend growth forecasts which in turn influences the estimated cost of equity. Europe Economics' Technical Report also notes that estimates from the DGM model ''*...are less precise than those given by the CAPM*''.

3.21 Moreover, the simplest form of the DGM assumes that future dividends will grow at a constant rate which is unlikely to be realistic. Regulatory precedence shows that in instances in which regulators relied on the DGM, more complicated versions of the model tended to be used. For example, the US regulators preferred the two-step model[33] while assuming that the long-term dividend growth rate will match the GDP growth rate.

[33] See footnote 25 above.

Multi-factor models

3.22 Multi-factor models address some of the CAPM shortcomings by including additional factors, but despite this, there is no compelling evidence suggesting a switch from the CAPM approach to more complex models for the purpose of regulatory determination. For example, McKenzie and Partington (2013)[34] conclude that practical implementation of the Fama-French model *''requires significant effort in estimating factor risk premiums and factor loadings with no clear evidence that an improved estimate of the cost of capital results relative to the simpler CAPM".*

3.23 Gregory and Michou (2009)[35] compare the CAPM and Multi-factor models using UK data. Their results show that the SMB and HML factor coefficients in the Fama-French model are very unstable over time. Europe Economics' Technical Report notes the Fama-French model's lack of a clear basis for including the additional factors. Finally, Oxera's analysis[36] on the alternative methodologies to the CAPM indicated that the lack of Irish-specific versions of the additional factors (such as SMB and HML) reduces the efficacy of the Fama-French methodology.

Conclusion

3.24 Weighing up the strengths and weaknesses of the aforementioned methodologies applied to cost of capital estimation, ComReg proposes to continue to use the WACC methodology, on the basis of CAPM estimation, to determine the costs of capital in this review.

3.25 ComReg is of the preliminary view that the WACC and CAPM continues to be the most straightforward framework for estimating the cost of capital for each of the sectors. It has a number of advantages, including clear theoretical foundations, a history of regulatory precedent and superior performance to other models in explaining asset prices over the long-run. Although a number of potential CAPM's shortcomings have been identified, other available models have their own drawbacks. This view is further supported by Europe Economics' Technical Report which notes that the switch from the CAPM would represent a significant departure from regulatory precedent thus requiring significant justification to endorse such a move. ComReg is of the preliminary view that the available evidence does not provide such justification and thus the CAPM should continue to be used as the theoretical framework for estimating the WACC given its advantages.

[34] See McKenzie, M and Partington, G (2013), ' Risk, Asset Pricing Models and WACC', Report to the AER.
[35] Gregory, A and Michou, M (2009), 'Industry cost of equity capital: UK evidence', Journal of Business Finance and Accounting, 36, 5 & 6, 679–704.
[36] *"Eircom's Cost of Capital prepared for the Commission for Communications Regulation",* November 2007, ComReg Document no. 07/88a.

3.26 For the reasons set out above, ComReg sees no persuasive evidence to depart from taking the same approach in the current cost of capital review. ComReg also proposes to maintain a consistent methodological approach for each of the WACC estimations.

Q. 1	Do you agree that the CAPM-based WACC methodology continues to be the most appropriate basis for separately estimating the cost of capital to be used in price controls for (i) wholesale mobile call termination, (ii) fixed line telecommunications and (iii) broadcasting services? Please explain the reasons for your answer, clearly indicating the relevant paragraph numbers to which your comments refer, along with all relevant factual evidence supporting your views.

Chapter 4

4 Generic WACC Parameters

4.1 In this chapter ComReg sets out the preliminary proposals for the values of parameters that are considered to be common across each of the sector specific WACC estimations. These generic parameters are as follows:

- The risk-free rate;
- The ERP; and
- Taxation.

4.2 The preliminary proposals for the values of each generic parameter are discussed under the separate headings below.

The risk-free rate

4.3 The risk-free rate measures the expected return on an investment free of default and systematic risk (i.e. where the realised return on the investment will be equal to the expected return). ComReg notes that although a risk-free asset does not exist in practice, in economies with minimal sovereign default risk the risk-free rate is typically estimated with reference to the yield to maturity on government issued bonds (typically government bonds with a triple A rating). These yields are assumed to be the closest proxy to the return on a theoretical risk-free rate.

The nominal versus real risk-free rate

4.4 ComReg notes that in the previous three reviews of Eircom's cost of capital the nominal risk-free rate was used to derive a nominal WACC estimate in order to be consistent with non-indexed historical asset valuation in the pricing model. While a WACC estimated using a real risk-free rate combined with indexed asset values can also be applied (real WACC), ComReg is of the preliminary view that the nominal risk-free rate should continue to be used in order to maintain the consistent approach to the WACC estimation. ComReg notes that the two approaches yield the same returns over the whole asset life, but the returns are more front-loaded (larger share of total returns are paid earlier), under the nominal WACC.

4.5 Europe Economics' Technical Report outlines that ComReg should estimate the real risk-free rate and inflation separately, before deriving the nominal risk-free rate using the Fisher equation[37]. Since changes in the nominal risk-free rate can occur due to changes in the real risk-free rate or changes in inflation, Europe Economics considers the separate estimation of these parameters to be more appropriate. ComReg is of the preliminary view that the nominal risk-free rate should be estimated in this manner.

The real risk-free rate

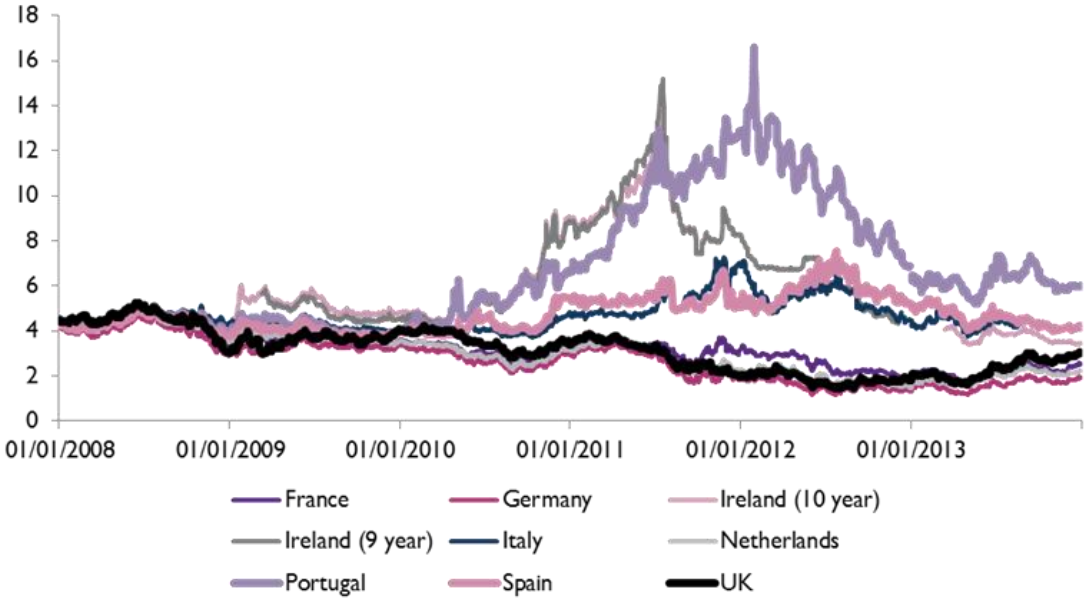
4.6 As noted in paragraph 4.3 above, the estimation of the risk-free rate has generally been done with reference to yields on sovereign debt with strong credit ratings. These yields should not be affected by risks for which investors require a premium on the risk-free rate. Europe Economics identify four broad categories of such risks:

- Credit or default risk;
- Currency risk;
- Inflation Risk; and
- Reinvestment Risk.

4.7 Europe Economics' Technical Report recommends that ComReg should restrict the analysis of risk free-rate alternatives to Eurozone countries, because Ireland is a member of the Eurozone. This should eliminate any currency risk associated with bonds issued by countries with different currencies. However, as the UK is Ireland's closest neighbour and one of its major trading partners an analysis of its risk free-rate is also considered. ComReg is of the preliminary view that this approach should be taken. The Europe Economics' Technical Report presents the yields of 10 year government bonds in eight Eurozone countries and the UK. Figure 1 below highlights the differential between the yields on Irish government and German government bonds, thus indicating a continuing demand for a premium on Irish government bonds to January 2013 due to the perceived default risk.

[37] The Fisher Equation can be expressed as:

Figure 1: Nominal yields on European sovereign 10 year bonds (per cent)



Source: Bloomberg

4.8 Since ComReg considers that at present Irish government bonds do not meet the risk-free asset criteria, ComReg is of the preliminary view that it is appropriate to use German government bonds as the main source of market evidence in informing its view on the risk-free rate[38]. The German economy has exhibited signs of stability over recent years with minimal risk of default or inflation risk and has the same currency as Ireland (thus, reducing currency risk). Moreover, the yields on its government bonds had the least yield volatility indicating low reinvestment risk. The relatively low risk of German sovereign bonds is also indicated by triple A credit rating given by all major credit rating companies[39]. Hence, German sovereign bonds can be considered as the closest proxy to what is considered to be a risk-free Irish asset.

4.9 The analysis of German government bond yields indicates that the yields have significantly decreased since the financial crisis and currently are at a very low level due to the increased demand for German debt. However, Europe Economics observe that the currently observed low yields are unlikely to persist over the period of the price control.

[38] As proposed by Europe Economics which emphasises that there is no mechanistic way in which to use evidence from sovereign debt yields to estimate the risk-free rate. Sovereign debt has been used to estimate the risk-free rate in the past because low systematic risk means that, by the properties of the CAPM, return on such debt should be approximately equal to the risk-free rate. However, there are a number of factors, such as default risk or monetary policy, which could cause sovereign debt returns to differ materially from the risk-free rate. Any estimate of the risk-free rate using sovereign debt will therefore need to take such considerations into account.

[39] Standard & Poors, Moody's and Fitch.

4.10 In order to support this argument, Europe Economics provide evidence on positive economic forecasts for Ireland and highlights the fact that in the period before the start of the financial crisis (2000-2007), real 10 year[40] yields on German government bonds averaged around 2%. Furthermore, Europe Economics notes an average real risk-free rate of 2.5%, as indicated by regulatory decisions in Ireland[41] since 2000. Given expected normalisation in the Irish economy, though not to as strong a position as before the financial crisis, these higher figures are more likely to be appropriate than the low yields currently observed.

4.11 Combining the risk free rate, as indicated by the yields of German government bonds, with relatively higher rates in line with Irish regulatory precedent, ComReg is of the preliminary view that the real risk-free rate range is 1.75% – 2.5%. A point estimate of 2.3% is deemed to be appropriate.

Inflation and the nominal risk-free rate

4.12 As mentioned in paragraph 4.5 above, Europe Economics calculates the nominal risk-free rate using the Fisher Equation, which requires an assumed rate of inflation. Its report notes the current low level of inflation in Ireland and Germany, and also presents Bloomberg's forecast of 1.5% Irish inflation in 2015 (estimate as of February 2014). It concludes that if, as expected, the Irish economy will improve during the period of the price control, Irish annual inflation rate will be close to European Central Bank's inflation target of 'below, but close to 2%''. ComReg is of the preliminary view that annual inflation rate will be within the range of 1.5% – 2.0% over the period of the price control, with a point estimate of 1.75%.

4.13 Taking the ranges and point estimates for the real risk-free rate and inflation, ComReg proposes a nominal risk-free rate range of 3.28% – 4.55% with a point estimate of 4.09%. ComReg notes that the point estimate in the upper part of the range reflects the likely increase in the currently prevailing risk-free rate during the period of the price control and thus reflects consensus regarding forward looking conditions in the financial markets.

[40] The Europe Economics' Technical Report favours 10 year bonds, since these bonds will be less affected by fluctuations in short-term interest rates, but would not be affected by factors such as long-run macroeconomic growth that are less relevant for a 3 to 5 year price control period.
[41] The Commission for Aviation Regulation set the real risk free rate at 2.5% in 2009. The Commission for Energy Regulation also applied a real risk free rate of 2.5% in 2003.

The Equity Risk Premium

4.14 In the CAPM framework, the ERP represents the mean level of extra return that investors require as a reward for investing in the entire equity market rather than a risk free asset. The ERP cannot be directly observed but may be inferred from historical or forward-looking evidence.

4.15 Europe Economics' Technical Report relies on the ERP estimates provided by Dimson, Marsh and Staunton[42] (''DMS''). DMS estimate ERP over bonds (a proxy for the risk free rate) for various countries since 1900. The Europe Economics' Technical Report notes that relying on a long-run historical data significantly reduces the variation in ERP which is observed over short periods of time. Europe Economics favour the use of the arithmetic mean[43] of ERP estimates. It believes the arithmetic mean is more appropriate for a forward-looking estimate of the ERP as it captures the rate of return on a marginal unit of capital which is the relevant unit for regulatory price controls.

4.16 The DMS estimate of ERP arithmetic mean for Ireland is 4.6%. ComReg notes that this Ireland specific rate is similar to the estimated European wide ERP of 4.8%.

4.17 Europe Economics also reviewed the ERP values applied in previous regulatory WACC estimations in Ireland, including those of other Irish regulators. The regulatory precedent suggests an ERP range of 5% to 6%. It should be noted however, that in the most recent decisions the ERP was in the lower part of this range.

4.18 ComReg analysed Europe Economics approach to estimating the ERP and concurs with its proposal of a 5.00% point estimate from a range of 4.60% to 5.25%.

Taxation

4.19 Treatment of tax in regulatory WACC models can strongly affect returns on historic investment as well as incentives for future investment. Furthermore, regulatory consistency is likely to be an important factor for investors.

[42] Dimson, Elroy, Marsh, Paul and Staunton, Mike (2002) "Global evidence on the equity risk premium" London: London Business School.
[43] An alternative way is to estimate geographic mean. Geographic mean is the nth root of the product of historical ERP values. ERP estimates based on geographic mean are available online. See http://www.investmenteurope.net/digital_assets/6305/2013_yearbook_final_web.pdf.

4.20 The WACC can be estimated on a pre-tax or post-tax basis. Pre-tax WACC grosses up the cost of equity[44] by the selected tax rate. This is because payments to equity holders in the form of dividends are not tax deductible so the allowed return must allow for corporate tax payments. This is not the case for debt interest payments which can be offset against profits for the purposes of corporate tax calculations in Ireland. The allowed profits are then intended to cover both the investor remuneration and statutory tax payments.

4.21 ComReg notes that there are two main approaches in selecting the tax rate:

- The statutory tax rate; and
- The effective tax rate.

4.22 The selection of the effective tax rate recognises the fact that the firm in question may be paying less tax than the statutory tax rate. This situation can arise when a company has high levels of gearing (high level of debt relative to the level of debt plus equity) or in corporate group structures where tax losses in one company are used to offset taxable profits in another. These situations create the potential for significant tax shields. A tax shield is the reduction in incomes taxes that results from taking an allowable deduction from taxable income. Since interest on debt is a tax-deductible expense, taking on debt acts as a tax shield. The application of the effective tax rate claws back the benefits of debt tax shields and reduces the incentives to take on excessive debt levels.

4.23 A further refinement of this approach would be to take the accounting effective tax rate, including deferred tax charges, which is intended to smooth out temporary timing differences between a company's effective tax rate from year to year.

4.24 ComReg notes that the selection of tax rate is largely dependent on the chosen methodology for estimating regulated company's gearing level. The application of effective tax rate might be preferred in instances where the chosen notional level of gearing (gearing level of an efficiently financed firm) is substantially lower than the actual gearing level of the regulated firm.

[44] Equity dividend payment is made from a post-tax profit; therefore the cost of equity is a post-tax cost. The cost of debt is considered to be a pre-tax cost and thus grossing up is not required.

4.25 Europe Economics' Technical Report highlights the benefits of a consistent approach in the treatment of taxation in the WACC estimation and it notes that in the previous three reviews of Eircom's WACC the statutory corporation tax level of 12.5% was used. ComReg is of the preliminary view that Europe Economics proposal to continue the same approach in which a pre-tax WACC is calculated using a statutory tax rate of 12.5% is appropriate. This is because, for each of the WACC estimations, we are calculating it on the basis of a hypothetical efficient operator i.e. an operator with an efficient capital structure. ComReg believes it would therefore be inappropriate to factor in company specific factors such as the availability of losses forward or accelerated capital allowances.

ComReg's preliminary view

4.26 As above, ComReg is of the preliminary view is that the following estimates should be used for the generic parameters of the WACC estimations.

Table4 :Parameter	Range	Point Estimate
Nominal risk free rate	3.28% - 4.55%	4.09%
Equity Risk Premium	4.60% - 5.25%	5.00%
Taxation	12.5%	12.5%

Q. 2 Do you agree with ComReg's proposed approach to estimating the generic parameters for the respective costs of capital and the preliminary point estimates chosen? Please explain the reasons for your answer, clearly indicating the relevant paragraph numbers to which your comments refer, along with all relevant factual evidence supporting your views.

Chapter 5

5 Mobile Telecommunications

Estimation of the different parameters used to calculate WACC

5.1 This is the first time that the cost of capital has been estimated by ComReg for the purpose of a price control in the mobile telecommunications sector. This chapter sets out ComReg's assumptions and preliminary proposals in relation to key determinants of the WACC for a Hypothetical Efficient Mobile Operator. It is proposed that this WACC will in turn will be an input into the MTR model.

5.2 This chapter examines the sector specific parameters for a Hypothetical Efficient Mobile Operator. It details the estimation of asset and equity betas, which in turn enables estimation of the cost of equity given an asset's systematic risk.

5.3 This chapter also identifies the chosen methodology for estimating the debt premium for a Hypothetical Efficient Mobile Operator and in turn provides an estimated cost of debt.

Proposed approach to gearing

5.4 In determining the WACC for Mobile Telecommunications it is necessary to consider the financial gearing[45] (hereafter, referred to as gearing) for a Hypothetical Efficient Mobile Operator. Gearing reflects the relative weighting of debt and equity in the overall capital structure. Regulators can assume the actual level of gearing for an industry specific company or alternatively assume a notional level i.e. the level of debt which reflects the capital structure of an efficiently financed operator.

5.5 The notional level of gearing is an approach which is widely used by regulators and has a number of merits. It provides flexibility to the regulated company to adopt the most efficient capital structure and it also reduces the degree of regulatory intervention in the financing of the business. Importantly, it does not reward the regulated entity for an inefficient capital structure or for sub-optimal decisions made in the past. It also reflects the inherent uncertainty regarding the future evolution of the company's capital structure.

[45] Gearing is defined as the ratio of debt to the sum of debt plus equity (i.e. net debt divided by net debt plus equity)

5.6 A notional approach conceptually reflects the gearing that would be chosen by an efficiently financed business. While a review of regulatory precedent shows that the use of notional gearing is broadly recognised, in certain instances regulators have selected actual gearing of regulated companies as being representative of efficient gearing[46].

5.7 While the use of actual gearing simplifies analysis of the cost of debt, it introduces uncertainties when interpreting 'financeability' (i.e. the ability to raise finance on reasonable terms in order to support necessary investment programmes). However, it is important to note that ComReg does not have an obligation to ensure financeability. Thus financeability concerns should not be the determinant factor when ComReg is selecting the most appropriate approach to gearing.

5.8 Each MSP operating in Ireland will have a unique actual gearing rate, specific to its own operations. It is however not possible to apply the gearing of each individual company for the purposes of calculating the WACC. For a Hypothetical Efficient Mobile Operator, only one gearing value can be selected as the same WACC and MTR will apply to all operators subject to SMP. ComReg is of the preliminary view that proposed notional approach to gearing is appropriate in that it incentivises a more efficient capital structure amongst operators.

5.9 The notional gearing approach involves choosing a credit rating for the Hypothetical Efficient Mobile Operator. The gearing level is then typically set at a level of gearing compatible with the target credit rating. Europe Economics suggest using notional gearing on the grounds that companies should decide their efficient capital structure. Table 7 presents preliminary estimates of the mobile sector specific WACC under the assumption of notional gearing.

5.10 In estimating gearing, Europe Economics examined recent regulatory decisions of Irish regulators and of European telecommunications regulators that opted for a notional gearing approach. It is evident that asset heavy regulated industries tend to be more highly geared than mobile operators with the former tending to have a range in the region of 40% to 60%. Notwithstanding this range, precedent for the mobile telecommunications sector suggests that the gearing range should in fact be lower.

5.11 Europe Economics' analysis shows that actual gearing levels of more pure-play MSPs tends to be around 20% and it notes that multi services operators tend have gearing levels that approximate 40% to 60%.

[46] For example, Ofcom in its recent determination of mobile sector WACC opted to use Vodafone's actual gearing. This was on the basis that Vodafone's actual gearing was considered to be an efficient level of gearing.

5.12 A notional gearing level of 30% is proposed by ComReg which is consistent with Europe Economics' suggested target credit rating and regulatory precedent of gearing in the range of 25% to 35%. This chosen level of gearing is also broadly consistent with the observed gearing level of mobile operators outside of Ireland.

5.13 Actual gearing levels for MSPs with SMP provide ComReg with a good indicator of gearing for a Hypothetical Efficient Mobile Operator. ComReg notes that other sectoral regulators (such as the Commission for Energy Regulation ("CER")) have been setting cost of capital estimates in line with notional levels of gearing consistent with maintaining an investment grade credit rating.

5.14 ComReg acknowledges that the use of notional, rather than actual gearing, may:

- Lack flexibility with respect to future decisions of those MSPs with higher actual gearing on their capital structure; and
- Have potentially important financial consequences for those MSPs with higher actual gearing.

5.15 ComReg believes the notional gearing approach is, nevertheless, appropriate. The use of actual gearing, based on one particular operator is not considered appropriate because the output of the WACC calculation is to be used in a cost model which reflects a Hypothetical Efficient Mobile Operator rather than one specific operator. Actual gearing is also inappropriate because ComReg's position is that only efficient costs should be recovered via regulatory price controls and it follows that the assumed capital structure should be efficient rather than the structure actually in place. Using a notional gearing rate provides flexibility to the regulated company to adopt the most efficient capital structure and it also reduces the degree of regulatory influence over the financing of the business. Importantly, this approach does not reward the regulated entity for an inefficient capital structure or for sub optimal decisions made in the past.

5.16 Having analysed Europe Economics' Technical Report and for the reasons outlined above, ComReg's preliminary view is that, for the purposes of the mobile telecommunication WACC estimation, a notional gearing approach is used and that a point estimate of 30% is appropriate.

Proposed estimation of asset beta

5.17 Within the CAPM framework (the methodology of which is explained in chapter 3) it is necessary to estimate the equity beta for a Hypothetical Efficient Mobile Operator (i.e. the extent to which net returns on the asset as a whole (mobile networks) are correlated with changes in returns in the entire equity market).

If equity beta = 1: when the entire equity market return rises by 5%, the return on the analysed stock would rise by 5% on average;

If equity beta = 2: when the entire equity market return rises by 5%, the return on the analysed stock would rise by 10% on average; and

If equity beta = 0.5: when the entire equity market rises by 5%, the return on the analysed stock rises by 2.5% on average.

5.18 The most straightforward way of estimating the equity beta would be to estimate current equity beta from the stock market. In a best case scenario, ComReg would be able to estimate the equity beta values from the stock prices of mobile only operators and make a judgment surrounding perceived efficiencies. In doing so, market data would exclude the effect of major stock market disturbances, such as the recent financial crisis, and the unbiased equity beta (for the period of the next 3-5 years) would be estimated accordingly.

5.19 ComReg notes that the equity beta is derived via the following formula:

where β_A = asset beta[47] which similarly to equity beta (β_E) measures company's exposure to systematic risk, but abstracts from the capital structure

β_D = debt beta

g = gearing

5.20 Thus, Europe Economics estimate appropriate values for asset and debt betas and then apply the proposed notional level of gearing to derive the equity beta.

[47] The asset beta is also referred to an unlevered beta. This is subsequently levered (with gearing) to achieve the equity beta which ultimately feeds through to the estimation of the cost of equity.

5.21 ComReg recognises that estimating an asset beta for a Hypothetical Efficient Mobile Operator is complicated by several factors. It is difficult to find good comparators for beta estimation as there are a limited number of mobile only operators in Europe. As mobile operators in Europe tend to exist as part of a multi-service telecommunications company, it is therefore difficult to isolate their pure-play mobile activities and to also identify the returns. There also happens to be relatively few post-crisis precedents on betas for efficient mobile operators.

5.22 Europe Economics' approach to estimating an asset beta for a Hypothetical Efficient Mobile Operator is set out in chapter 6 of its Technical Report. It considered the following in reaching a proposal on a suitable range for a Hypothetical Efficient Mobile Operator's asset beta[48], in order to arrive at a best approximation:

- A combination of direct statistical estimates based on market data from a sample of European and non-European mobile telecommunications asset betas;
- Relevant regulatory precedent; unlevered betas, as estimated by other National Regulatory Authorities ("NRAs") in their respective MTR determinations; and
- Comparison of 1, 2 and 5 year rolling asset betas.

5.23 In addition, other specific business factors, such as capital intensity, have been explored by Europe Economics to provide an insight into what level systematic risk would be faced by a Hypothetical Efficient Mobile Operator.

5.24 Tables 6.7 and 6.8 of Europe Economics' Technical Report present a summary of beta estimates from the various approaches outlined above. Evidence from the UK indicates that the asset beta used in the MTR price controls for mobile operators reduced from 1.18 in 2007 to 0.56 in 2011. However, comparing asset betas over the same timeframe in France shows no change in a rate set at 1.00 in 2007 compared to 2011. Overall, Europe Economics observe that a general decrease in asset betas for purer play mobile companies is likely to indicate a fall in the perceived level of systematic risk of such companies, relative to the market as a whole. This is possibly to be explained in part by a rise in the perceived riskiness of other assets, particularly construction and finance.

[48] It is important to note that the asset beta is industry specific and not country specific meaning that we can take guidance from other countries and operators in other areas.

5.25 Two year asset betas for telecommunications companies have generally converged since 2008 with an overall range of approximately 0.4 to 0.6, as outlined in Figure 2. In estimating the asset beta, more weight is placed on recent, post crisis precedent than on pre crisis precedent. The asset beta for a Hypothetical Efficient Mobile Operator is therefore estimated by placing emphasis on one-year and two-year betas since 2008 as opposed to taking guidance from five-year betas which could potentially be skewed as a result of the financial crisis.

5.26 An asset beta is industry specific and not necessarily country specific. This implies that there is merit in looking to neighbouring countries. This is not a straightforward process however as the asset beta may have been estimated at a different point in time. ComReg has also reviewed comparator pure play mobile companies (of which there are few examples) but which are more accurate comparators than companies that have both fixed and mobile operations (which ComReg has also considered).

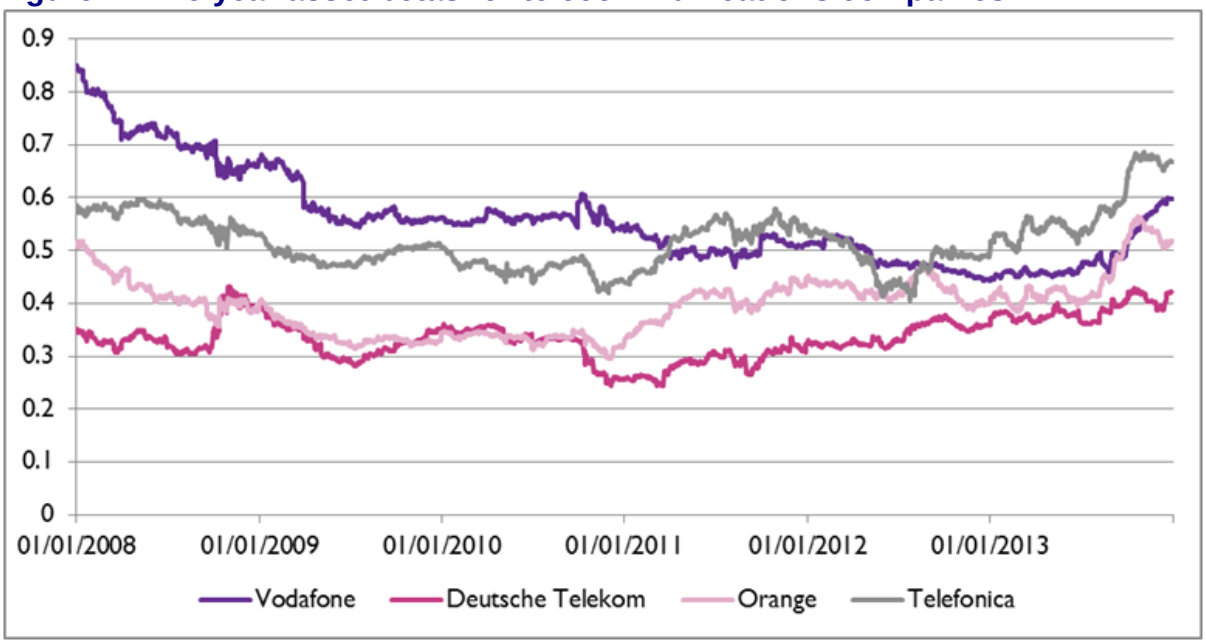
5.27 According to The Brattle Group, the recent financial crisis occurred at a time in which the perception of the mobile telecommunications sector was that it became less risky than the market as a whole.

5.28 Europe Economics believe that the mobile telecommunications sector has become less risky for a number of reasons:

- The mobile market is much larger market now (high income and low income consumers tend to have mobiles). The size of the market served would decrease risk so long as the average customer was not riskier;
- Mobile phones are becoming increasingly like a consumer staple or fixed-line telephony business rather than a consumer discretionary service. Some consumers may have dropped or cancelled their fixed-line service and use only their mobile phone. In all likelihood consumers view mobiles as more essential than they did 8 years ago[49]; and
- The mobile market is more mature. Investors understand the mobile market more than they did back in 2006, thereby decreasing the perception of risk.

[49] Prepared for ACM byThe Brattle Group, ”The WACC for Wholesale Broadband and FttO (page 27)”, 29 May 2013

Figure 2 Two year asset betas for telecommunications companies



Source: Bloomberg and Europe Economics calculations

Note: Vodafone calculated on domestic market index; Deutsche Telekom, Orange and Telefónica calculated on European Market Index.

5.29 The approach of estimating an asset beta for a Hypothetical Efficient Mobile Operator is based on several different methodologies and is in line with Ofcom's most recent estimation of 0.56 in March 2011[50]. The application of the various methodologies produces a range for the asset beta that is rigorous and evidence-based. The value of this comprehensive approach is that each methodology acts as a separate data point in the analysis while providing a cross-check on the other results.

5.30 Europe Economics in its Technical Report noted that MSPs tend to have higher asset betas than multi-service telecoms and for this reason most weight is placed on Vodafone's as it is considered to be the closest to a pure play European mobile operator. In general, most weight is placed on 2 year asset betas and with the midpoint of the overall unlevered beta range 0.50. Higher one and two year asset betas for Vodafone suggest shading up on this.

5.31 Having analysed Europe Economics' Technical Report and for the reasons outlined above, ComReg's preliminary view is that, for the purposes of the mobile telecommunication WACC estimation, an unlevered beta point estimate of 0.55 should be used.

[50] http://stakeholders.ofcom.org.uk/binaries/consultations/mtr/statement/MCT_statement_Annex_6-10.pdf

Proposed estimation of debt beta

5.32 In general, Irish regulators have chosen not to include a debt beta in their assessment of the regulatory WACC (i.e. debt beta equal to zero).

5.33 The use of zero debt betas reflects the difficulties of producing reliable estimates of debt beta. It also reflects the fact that, where debt beta is low and notional gearing is close to companies' actual gearing levels, the inclusion of debt beta does not make a material difference to the cost of capital. However, a non-zero debt beta may be appropriate in some circumstances, for example if elevated debt premiums suggest that the systematic risk of debt has increased.

5.34 The rationale behind estimation of debt beta is explained in chapter 3. Debt betas of zero and 0.1 are considered by Europe Economics, but the overall WACC is presented with a zero debt beta due to its negligible impact on equity beta when re-levered to the notional gearing level. This is shown by Europe Economics in Figure 6.4 of its Technical Report.

5.35 Having analysed Europe Economics' Technical Report and for the reasons outlined above, ComReg is of the preliminary view that, for the purposes of the mobile telecommunication WACC estimation, debt beta should be zero.

Proposed estimation of equity beta

5.36 The equity beta describes the analysed stock's exposure to systematic risks. A lower sensitivity to systematic risks is rewarded by a lower cost of equity, since investors are unable to diversify away from systematic risks that affect the entire equity market.

5.37 The preliminary equity beta is estimated to be 0.79 resulting from a preliminary asset beta of 0.55, the debt beta of zero and notional gearing of 30%.

Equity beta = Asset Beta / (1 – Gearing)

Equity beta = 0.55 / (1 – 0.3)

Proposed estimate of the cost of equity

5.38 The preliminary nominal post tax cost of equity is 8.02%. It is measured by multiplying the equity beta by the ERP and then adding the nominal risk free rate. In order to calculate a nominal pre-tax WACC it is then necessary to derive a nominal pre-tax cost of equity. This equates to the nominal post tax cost of equity divided by [1 minus the tax rate] i.e. 8.02/(1-0.125). The preliminary nominal pre tax cost of equity (r_e) is therefore equal to 9.16% (Table 5).

Table 5: Nominal pre-tax cost of equity for Mobile Telecommunications

A	Tax rate	12.5%	
B	Real risk-free rate	2.30%	
C	Inflation	1.75%	
D	Nominal risk-free rate	4.09%	(1+B)*(1+C)-1
E	Equity risk premium	5.00%	
F	Equity Beta at notional gearing	0.79	
G	Nominal post-tax cost of equity	8.02%	**D + (F*E)**
H	Nominal pre-tax cost of equity	9.16%	G/(1-A)

Source: Europe Economics' calculations from sources previous cited

Proposed cost of debt

5.39 In ascertaining the cost of debt to be included in the WACC calculation ComReg needs to decide whether or not this reflects a theoretical value only or includes a weighting for companies actual debt costs. A key consideration is whether it should be one that accounts for embedded debt or debt on a forward looking basis. In other words, should the analysis incorporate the costs of debt that companies have already incurred, or only the cost of debt that will be incurred over the course of the price control period?

5.40 As the proposed WACC is calculated on the basis of a Hypothetical Efficient Mobile Operator, there is no clear basis on which to judge what, if any, existing debt that an efficient operator would have incurred, nor the size of this relative to future debt requirements. It is quite feasible to expect this to be minimal for a Hypothetical Efficient Mobile Operator as an efficient new entrant would not have any legacy debt. It is on this basis that the cost of debt parameter uses a forward looking cost of debt. It is worth noting that in the UK, Ofcom also uses a forward looking cost of debt approach in its respective setting of the WACC[51].

[51] Ofcom (2011) "Wholesale mobile voice call termination — modelling annexes". http://stakeholders.ofcom.org.uk/binaries/consultations/mtr/statement/MCT_statement_Annex_6-10.pdf

5.41 Europe Economics favours a forward-looking cost of debt approach and suggest exclusion of adjustments for any embedded debt on the basis that the preliminary WACC is estimated for a hypothetical efficient operator. ComReg is of the preliminary view that best practice in economic regulation is the phasing out of embedded debt adjustments in such instances where it is feasible.

5.42 An alternative way of thinking of the cost of debt is as the sum of the risk-free rate and the debt premium:

$$r_{debt} = r_f + dp$$[52]

Cost of Debt = Risk Free Rate + Debt Premium

5.43 There are two reasons why the actual cost of debt for a Hypothetical Efficient Mobile Operator would exceed that of the risk free rate. First, mobile sector debt requires a higher compensation than German bonds as the mobile sector is riskier than government bonds. Secondly, Irish bonds of a given credit rating carry a premium over German bonds of the same rating, either because of a higher perceived debt beta or higher risk of default. These two factors are cumulative in respect of the cost of debt.

5.44 From the above equation, the nominal risk free rate is used in order to derive a nominal pre-tax cost of debt. Europe Economics estimates the cost of debt on the basis of two debt premia, namely a mobile debt premium and a premium for Irish debt issuance.

$$r_{debt} = r_f + P1 + P2,$$

where,

Debt Premium 1 = Mobile Debt Premium ("P1")

Debt Premium 2 = Irish Debt Issuance Premium ("P2")

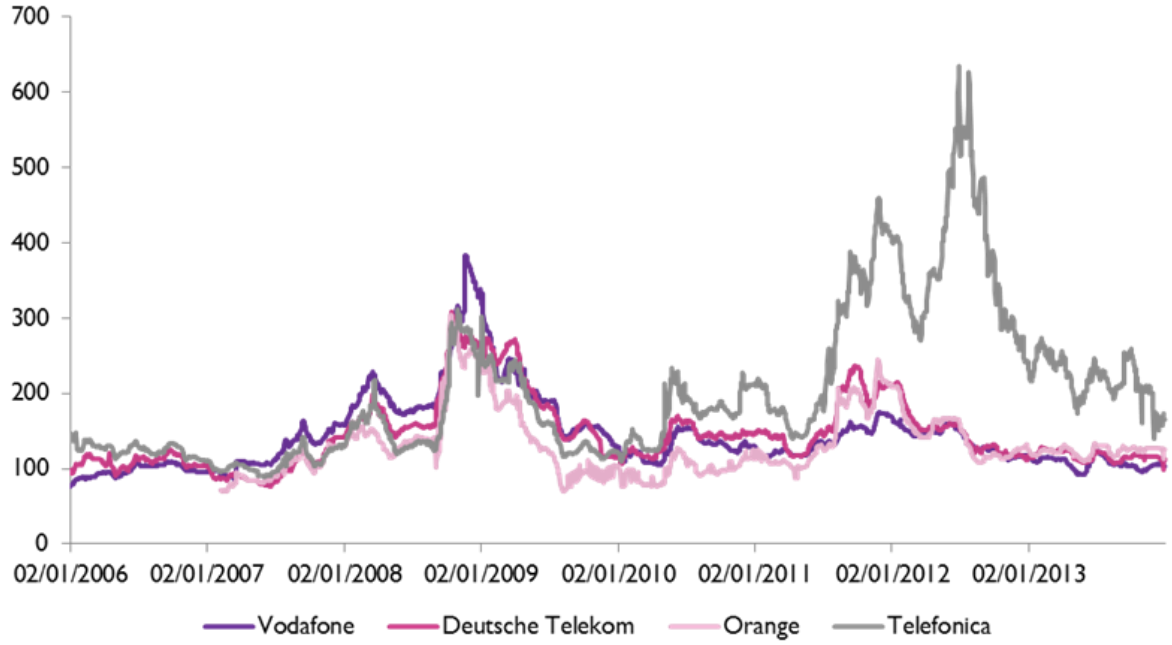
5.45 There is a difficulty in estimating the debt premium for a Hypothetical Efficient Mobile Operator due to the lack of pure play Irish mobile companies with listed debt.

[52] This is a simplified version of the cost of debt formula where debt beta is assumed to be zero. See section 3 of the Europe Economics Technical Report for a more detailed cost of debt expression

5.46 Europe Economics estimate the debt premium empirically by observing the spreads of corporate debt yields over benchmark bonds of the same maturity. Consistent with the use of German government bonds as the main source of evidence on the risk-free rate, Europe Economics analyses the spread between mobile telecoms companies and German government bonds with the same maturity to determine the mobile debt premium. (see Figure 3)

5.47 Ideally, if there were multiple standalone mobile operators in Ireland ComReg could estimate the combined premium of an Irish mobile operator. However, this is not the case, so ComReg has to create the combined premium by adding country premium and mobile premium.

Figure 3 Average debt premium over the risk-free rate for European telecommunications companies (bps)

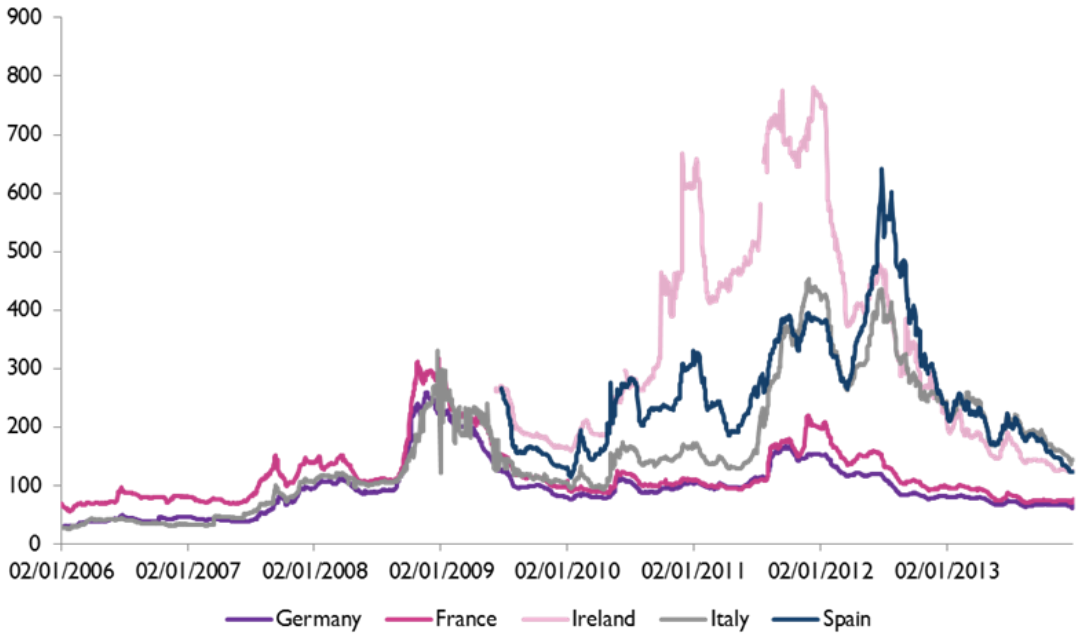


Source: Bloomberg; Europe Economics' calculations.

5.48 It is noteworthy that Telefónica's yield is much higher than that of Deutsche Telekom, Orange and Vodafone suggesting that borrowing costs for a comparable Spanish telecoms operator are higher than those for other European countries. ComReg is of the preliminary view that the Telefónica values should be excluded due to its financial profile and in the context of Spain's financial difficulties. Therefore, ComReg considered Vodafone, Orange and Deutsche Telekom as the appropriate comparators. This suggests a Hypothetical Efficient Mobile Operator would have a debt premium of 1.5% due to the industry in which it is operating.

5.49 In addition to a mobile debt premium faced by a MSP, it is likely that a mobile telecommunications operator operating in Ireland would also be faced with comparably higher borrowing costs. Europe Economics examined this hypothesis by comparing Irish utility companies to similar companies across Europe (see Figure 4).

Figure 4 Spreads of average European utility bonds over German Bunds (bps)



Source: Bloomberg; Europe Economics' calculations.

5.50 As few Irish corporate bonds are publicly traded, ComReg is limited to considering those of Bord Gáis and the Electricity Supply Board ("ESB"). It is assumed that the margin of Bord Gáis and ESB bonds over German utility bonds reflects the premium that any Irish corporate bond would require. This represents the country premium i.e. the Irish Debt Issuance Premium.

5.51 The evidence suggests that Irish utilities' borrowing costs are at most 0.75 percentage points higher than a similar French or German company. As the economy returns to a more normal growth paths it is likely that this premium would eventually disappear. This implies that a point estimate somewhere between 0 and 0.75 percentage points should be added to the 1.5% surplus on the risk-free rate. Factoring into account that the Irish economy is improving and a more normal growth path in sight, Europe Economics opt for a point estimate of 0.25%. The debt premium has a range of 1.5% to 2.25%, with a point estimate of 1.75%. ComReg is of the preliminary view that the ranges and point estimate are appropriate.

5.52 P1 + P2, as outlined above, therefore equates to 1.5% + 0.25% = 1.75%. Combining the nominal risk free rate of 4.09% gives a nominal pre tax cost of debt of 5.84%.

$$r_{debt} = r_f + P1 + P2,$$

$$5.84\% = 4.09\% + 1.5\% + 0.25\%$$

5.53 Having analysed Europe Economics' Technical Report and for the reasons outlined above, ComReg's preliminary view is that, for the purposes of the mobile telecommunication WACC estimation the forward looking nominal pre tax cost of debt should be estimated to be 5.84%.

Aiming up

5.54 ComReg proposes that the WACC estimate should be "aimed-up" to reflect the asymmetry of consequences between setting the cost of capital too low and setting it too high. Europe Economics is of the view that the negative consequences of the former materially exceed those of the latter and therefore that the regulatory cost of capital should be set above the central estimate of the market cost of capital. This principle of "aiming up" has been used by other regulators having applied similar methodologies[53].

5.55 Europe Economics suggests analysing variances and aiming up to the 66th percentile (one standard deviation above the mean) on certain parameters that feed through to the preliminary estimate of the WACC[54]. Europe Economics' aiming up methodology applies to the nominal risk free rate (capturing the real risk free rate and inflation) and the asset beta (which feeds through to the equity beta in conjunction with notional gearing). The debt premium is aimed up on the basis of applying a standalone uplift of 0.3% for each of the three sector specific WACCs[55]. The tax rate and notional gearing are not aimed up because there is no uncertainty surrounding these parameters.

[53] See paragraph 150 of this UK Competition Commission document https://www.caa.co.uk/docs/5/ergdocs/ccreport_appf.pdf

[54] With various components of the respective WACC estimations aimed up by one standard deviation (i.e. at the 66th percentile), it would not be entirely accurate to infer that the baseline WACCs have been aimed up by precisely one standard deviation above the mean. Rather, Europe Economics has confirmed that the aiming up methodology that has been applied results in an uplift of the WACC by more than one standard deviation i.e. above the 66th percentile and that in principle, the precise confidence interval at which it lies could be estimated.

[55] Europe Economics has analysed the variance surrounding the relevant range of figures that have been used to inform its point estimates. The aiming up of key parameter point estimates is implemented on this basis, essentially accommodating for variance that exists within the range.

5.56 The ERP can be expected to move in the opposite direction to the risk free rate so that total market returns are more stable than their components. Europe Economics therefore does not believe it is appropriate to aim up on both the risk-free rate and the ERP. In view of this, and given the difficulties in determining uncertainty over the ERP, ComReg is of the preliminary view that aiming up should apply to the risk-free rate only.

5.57 Table 6 represents the pre and post aimed up values for the following parameters:

Table 6: Parameter	Pre aiming up	Post aiming up
Nominal risk free rate	4.09%	4.19%
Asset beta	0.55	0.60
Debt premium	1.75%	2.05%

Proposed WACC for a Hypothetical Efficient Mobile Operator

5.58 The construction of the overall nominal pre-tax WACC requires point estimates from each of the parameter ranges presented. The point estimates are not necessarily taken from the midpoint of the range for reasons already explained and as such high and low points of parameter ranges are used to construct an overall WACC range. There is good reason to calculate the WACC on the basis that the ERP and risk free rate move in opposite direction as a low ERP point estimate and a low risk free rate would significantly understate reality[56].

[56] The table presents the WACC as if calculated on the basis of the lowest and highest parameters. However, in calculating the point estimate it should be noted that the lowest or highest risk free rate and ERP cannot be used simultaneously as they both move inversely to each other.

Table 7: Cost of capital for Mobile Telecommunications			
	Low	High	Point Estimate
Gearing (%)	30%	30%	30%
Tax rate (%)	12.5%	12.5%	12.5%
Real risk-free rate (%)	1.75%	2.5%	2.3%
Inflation (%)	1.50%	2.0%	1.75%
Nominal risk-free rate (%)	3.28%	4.55%	4.09%
Equity risk premium (%)	4.60%	5.25%	5.00%
Equity Beta at notional gearing	0.57	0.86	0.79
Nominal post-tax cost of equity (%)	5.90%	9.05%	8.02%
Nominal pre-tax cost of equity (%)	6.75%	10.34%	9.16%
Debt Premium (%)	1.50%	2.25%	1.75%
Nominal pre-tax cost of debt (%)	4.78%	6.80%	5.84%
Nominal Vanilla WACC (%)	5.57%	8.37%	7.37%
Nominal pre-tax WACC (%)	6.16%	9.28%	8.17%
Nominal pre-tax WACC (%) after aiming up			8.66%

Source: Europe Economics' calculations from sources previous cited

5.59 The nominal pre-tax WACC is preliminarily estimated to be 8.17%, with a high and low bound estimated to be 9.28% and 6.16% respectively (see Table 7).

5.60 Aiming up certain parameters estimates (Table 6) implies an uplift of c. 6% to the nominal pre-tax WACC point estimate of 8.17% resulting in a nominal pre-tax WACC of 8.66% for the mobile telecommunications sector[57].

5.61 The nominal pre-tax WACC percentage after aiming up in Table 7 is the cumulative value after aiming up was applied to the afore-mentioned parameters in Table 6[58].

[57] Europe Economics suggests aiming up certain parameter point estimates to the 66th percentile, which reflects one standard deviation above the mean. The uplift to the baseline WACC, following this aiming up methodology, is 6% in absolute terms, resulting in higher preliminary of 8.66 % (i.e. 8.17% * 1.06 = 8.66%).

[58] Rounding differences may occur due to the calculation of figures to two decimal places

5.62 Having analysed Europe Economics' Technical Report and for the reasons outlined above, ComReg's preliminary view is that a nominal pre-tax WACC of 8.66% should be used in the mobile telecommunications sector. This is based upon the following parameters specific to mobile telecommunications (Table 8):

Table 8: Parameter	Range	Pre aiming up Point Estimate
Asset beta	0.40 – 0.60	0.55
Gearing	30%	30%
Debt premium	1.50% - 2.25%	1.75%

Q. 3 Do you agree with ComReg's proposed approach to estimating the WACC specific to the mobile telecommunications sector? Please explain the reasons for your answer, in particular your views on the specific parameters used. Please clearly indicate the relevant paragraph numbers to which your comments refer, along with all relevant factual evidence supporting your views.

Chapter 6

6 Fixed Line Telecommunications

Estimation of the different parameters used to calculate WACC

6.1 ComReg previously set the WACC for Eircom's fixed line business in 2000[59], 2003[60] and 2008[61]. Previous WACC estimations, on a pre-tax nominal basis, were as follows:

Table 9: Previous Eircom WACC percentages (on a nominal pre-tax basis)

Period	WACC rate %
2000	12.00%
2003	11.50%
2008	10.21%

6.2 It should be noted that in 2007, ComReg proposed a range for the Fixed Line telecommunications WACC of between 7.77% and 11.08%[62]. It was considered that a WACC approximately in the mid-point of this range, which equated to 9.43%, would constitute an adequate return on investment for Eircom. Following substantial volatility in capital markets, ComReg considered it prudent to assess the potential impact that the financial turmoil could have on Eircom's cost of capital. Subsequent analysis on the range suggested the following:

- The risk free rate had decreased;
- Corporate debt spreads had increased, thereby pushing up the cost of debt; and
- A reevaluation of the ERP resulted in switching to the upper end of the original ERP range of 4.8% to 6.0%.

[59] *"Accounting Separation and Publication of Financial Information for Telecommunications Operators"* Decision Notice D9/00 and Issues for further consideration, Document No. ODTR 00/59, 18 August 2000.
[60] "*Review of the Price Cap on certain Telecommunication Services"* Decision No. D3/03, Document No. 03/14, 3 February 2003.
[61] *"Response to Consultation and Decision Notice, Eircom's Cost of Capital"* Decision No. D01/08, Document No: 08/35, dated 22 May 2008
[62] *"Review of Eircom's Cost of Capital"* Document No. 07/88 dated 1 November 2007 ("ComReg Document No. 07/88")

6.3 The adjustments to the ERP and the cost of debt increased the WACC above the original estimate of 9.43% by 0.78% to 10.21%. This uplift was intended to compensate Eircom for the financial crisis which emerged in 2007.

6.4 Given that both the Irish and European economies are showing signs of stabilisation, ComReg is of the preliminary view that the 2008 comparator for the proposed WACC of 8.51% is 9.43% and not 10.21%. The WACC of 9.43% as proposed in ComReg Document No. 07/88 reflected economic conditions more comparable to current conditions than the 10.21% WACC, as at the time it was not envisaged as a WACC applying over a period of financial turmoil.

6.5 ComReg notes that although the WACC of 9.43% was envisaged as a WACC for a period of economic stability, it also reflected a time in which the outlook for growth was stronger than is now the case. The present WACC applies to a situation in which the economy is expected to normalise, but with less buoyant growth than in the pre-crisis period.

6.6 ComReg notes that the current review of the fixed line WACC is based on a Hypothetical Efficient Fixed Line Operator with an efficient capital structure. It is also estimated on a forward looking basis.

6.7 There appears to be insufficient basis for the application of a separate WACC to differing types of fixed line investment at this time. While in principle it is possible to differentiate the WACC between Eircom's assets, the risk differentials, if any, are likely to be limited in magnitude and in any event very difficult to estimate. ComReg therefore is of the preliminary view that it would be premature to apply a disaggregated cost of capital at this time.

6.8 This chapter sets out ComReg's assumptions and preliminary proposals in relation to key determinants of the WACC to be applied to the fixed line sector. This WACC will in turn feed into the various price control remedies, where appropriate, in the fixed line market.

6.9 This chapter examines sector specific parameters for fixed line telecommunications. It details the estimation of asset and equity betas for which in turn provides the required cost of equity given an asset's systematic risk.

6.10 This chapter also identifies the chosen methodology for estimating the debt premium of a Hypothetical Efficient Fixed Line Operator, and in turn provides an estimated cost of debt.

Proposed approach to gearing

6.11 In determining the fixed line telecommunications WACC it is necessary to consider the financial gearing[63] (hereafter referred to as gearing) for a Hypothetical Efficient Fixed Line Operator. Gearing reflects the relative weighting of debt and equity in the overall capital structure. Regulators can assume an actual level of gearing in line with an industry specific company, such as Eircom, or alternatively assume a notional level i.e. the level of debt which reflects the capital structure of an efficiently financed operator.

6.12 The notional level of gearing is an approach which is widely used by regulators and has a number of merits. It provides flexibility to the regulated company to adopt the most efficient capital structure and it also reduces the degree of regulatory intervention in the financing of the business. Importantly, it does not reward the regulated entity for an inefficient capital structure or for sub-optimal decisions made in the past. It also reflects the inherent uncertainty regarding the future evolution of the company's capital structure.

6.13 A notional approach conceptually reflects the gearing that would be chosen by an efficiently financed business. While a review of regulatory precedent shows that the use of notional gearing is broadly recognised, in certain instances regulators have selected actual gearing of regulated companies as being representative of efficient gearing[64].

6.14 While the use of actual gearing simplifies analysis of the cost of debt it introduces uncertainties when interpreting 'financeability' (i.e. the ability to raise finance on reasonable terms in order to support necessary investment programmes). However, it is important to note that ComReg does not have an obligation to ensure financeability. Thus, financeability concerns should not be the determinant factor when ComReg is selecting the most appropriate approach to gearing.

6.15 ComReg notes that given the recent examinership, Eircom clearly did not have an efficient capital structure pre-restructuring and its debt levels are still higher than most of its European peers. It is also the case that there is a large degree of overlap between bondholders and shareholders which suggests that the capital structure may reflect unusual circumstances.

6.16 Table 13 presents preliminary estimates of the fixed line WACC under the assumption of notional gearing.

[63] Gearing is defined as the ratio of debt to the sum of debt plus equity (i.e. net debt divided by net debt plus equity)

[64] For example, Ofcom in its recent determination of mobile sector WACC opted to use Vodafone's actual gearing. This was on the basis that Vodafone's actual gearing was considered to be an efficient level of gearing.

6.17 Gearing levels for a selection of fixed line European comparators indicates that certain operators, such as BT, Swisscom and TeliaSonera, have seen their gearing fall to between 20% and 30%. Other companies, such as Deutsche Telekom and Telefónica have geared up higher and are above the 40% mark. An unweighted average of gearing for 13 European comparators was c. 37%[65].

6.18 Ireland's previous nominal pre-tax WACC determination of 10.21% for the fixed line telecommunications market in 2008 which was based on a notional gearing point estimate of 40%. This was set in the context of Eircom being the fixed line incumbent.

6.19 Recent fixed-line determinations across various European countries provide a useful guide as to what an efficient level of gearing for a fixed line incumbent might be. Belgium (2010), France (2013), Norway (2013) and UK (2013 proposal) have all implemented notional gearing of 40%. Portugal (2012) settled on a marginally higher notional gearing point estimate of 42.52%.

6.20 While it appears that Eircom's actual gearing does not resemble that of an operator with an efficient capital structure, if efficiently run, Eircom should move towards an efficient capital structure over time. Europe Economics does not deviate from the preliminary point estimate of gearing in the higher and lower bounds, as evident in Table 13.

6.21 Having analysed Europe Economics' Technical Report and for the reasons outlined above ComReg's preliminary view is that, for the purposes of the fixed line telecommunication WACC estimation, a notional gearing approach should be used and that a point estimate of 40% is appropriate.

Proposed estimation of asset beta

6.22 Within the CAPM framework it is necessary to estimate the equity beta in order to calculate the fixed line WACC i.e. the extent to which net returns on the asset as a whole (fixed line networks) are correlated with changes in returns in the entire equity market.

If equity beta = 1: when the entire equity market return rises by 5%, the return on the analysed stock rises by 5% on average;

If equity beta = 2: when the entire equity market return rises by 5%, the return on the analysed stock rises by 10% on average; and

[65] See Figure 7.3 in the annexed Europe Economics' Technical Report

If equity beta = 0.5: when the entire equity market rises by 5%, the return on the analysed stock rises by 2.5% on average.

6.23 The most straightforward way of estimating the equity beta would be to estimate current equity beta from the stock market. In a best case scenario, ComReg would be able to estimate the beta values from the stock price of a fixed line incumbent in the Irish market and make a judgment surrounding perceived efficiencies. In doing so market data would exclude the effect of major stock market disturbances, such as the recent financial crisis, and the unbiased equity beta (for the period of the next 3-5 years) would be estimated accordingly.

6.24 Furthermore, due to the amount of time that has passed since Eircom was a listed company, it was not considered appropriate to use historical market data to directly estimate the equity beta of Eircom. Europe Economics instead rely on regulatory precedent and comparator analysis to estimate the efficient equity beta for a Hypothetical Efficient Fixed Line Operator.

6.25 ComReg notes that the equity beta is derived from the following formula:

where β_A = asset beta[66] which similarly to equity beta (β_E) measures company's exposure to systematic risk, but abstracts from the capital structure;
β_D = debt beta
g = gearing

6.26 Thus, Europe Economics estimate appropriate values for asset and debt betas and then apply the proposed notional level of gearing to derive the equity beta.

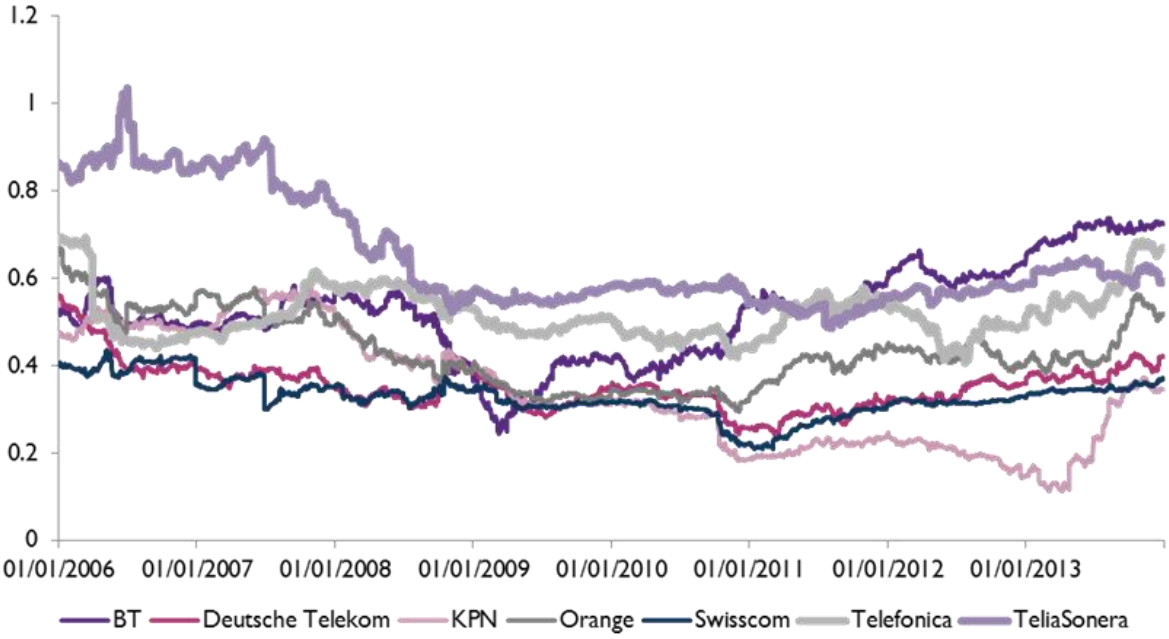
6.27 ComReg most recently estimated the fixed line asset beta to be 0.57[67]. Subsequent WACC determinations across Europe estimated asset betas in the fixed line telecommunications sector to be lower than this; the UK however proposed an asset beta of 0.60 in 2013.

6.28 Asset beta precedent from European comparator countries suggests a range of 0.42 to 0.60[68].

[66] The asset beta is also referred to an unlevered beta. This is subsequently levered (with gearing) to achieve the equity beta which ultimately feeds through to the estimation of the cost of equity.
[67] http://www.comreg.ie/_fileupload/publications/ComReg0835.pdf
[68] See Table 7.5 of the Europe Economics Technical Report

6.29 Market data on listed European fixed line incumbents suggest a marginally wider range, 0.30 to 0.60 but this may be influenced downwards by outliers. Subsequent analysis involving five year rolling betas suggests that the upper end of this range is likely to be most appropriate.

Figure 5 Two-year rolling unlevered betas of select European fixed-line comparators



Note: Estimates use a European Market Index

Source: Bloomberg; Europe Economics calculations.

6.30 Europe Economics applied the above methodologies to calculate the Hypothetical Efficient Fixed Line Operator's unlevered beta in the range of 0.40 to 0.60. ComReg concurs with this proposal and believes that a suggested point estimate of 0.50 is appropriate for a Hypothetical Efficient Fixed Line Operator.

6.31 The approach of estimating the asset beta for the Hypothetical Efficient Fixed Line Operator is based on several different methodologies and is in line with asset betas of other fixed line incumbents across Europe. The application of the various methodologies produces a range for the asset beta that is rigorous and evidence-based. The value of this comprehensive approach is that each methodology acts as a separate data point in the analysis while providing a cross-check on the other results.

6.32 Having analysed Europe Economics' Technical Report and for the reasons outlined above, ComReg's preliminary view is that, for the purposes of the fixed line telecommunication WACC estimation, an unlevered point beta estimate of 0.50 should be used.

Proposed estimation of debt beta

6.33 In general, Irish regulators have chosen not to include a debt beta in their assessment of the regulatory WACC (i.e. debt beta equal to zero).

6.34 The use of zero debt betas reflects the difficulties of producing reliable estimates of debt beta. It also reflects the fact that, where debt beta is low and notional gearing is close to companies' actual gearing levels, the inclusion of debt beta does not make a material difference to the cost of capital. However, a non-zero debt beta may be appropriate in some circumstances, for example if elevated debt premiums suggest that the systematic risk of debt has increased.

6.35 The rationale behind estimation of debt beta is explained in chapter 3. Debt betas of zero and 0.1 are considered by Europe Economics, but the overall WACC is presented with a zero debt beta due to its negligible impact on equity beta when re-levered to the notional gearing level. This is shown by Europe Economics in Figure 6.4 of its Technical Report.

6.36 Having analysed Europe Economics' Technical Report and for the reasons outlined above, ComReg's preliminary view is that, for the purposes of the fixed line telecommunication WACC estimation, debt beta should be zero.

Proposed estimation of equity beta

6.37 The equity beta describes the analysed stock's exposure to systematic risks. A lower sensitivity to systematic risks is rewarded by a lower cost of equity, since investors are unable to diversify away from systematic risks that affect the entire equity market.

6.38 The previous 2008 WACC determination estimated the equity beta to be within the range 0.67 to 1.39, with a point estimate of 1.02. This was with an assumption of 40% notional gearing.

6.39 The preliminary equity beta is estimated to be 0.83, resulting from a preliminary asset beta of 0.50, a debt beta of zero and notional gearing of 40%.

Equity beta = Asset Beta / (1 – Gearing)

6.40 An equity beta of 0.83 is therefore derived from the following:

Equity beta = Asset Beta / (1 – Gearing)

Equity beta = 0.5 / (1 – 0.4)

Proposed cost of equity

6.41 The preliminary nominal post tax cost of equity is 8.26%. It is measured by multiplying the equity beta by the Equity Risk Premium and then adding the nominal risk free rate. In order to calculate a nominal pre tax WACC it is then necessary to then derive a nominal pre tax cost of equity.

6.42 The pre tax cost of equity is obtained by dividing the nominal post tax cost of equity by (1 minus the tax rate). The preliminary nominal pre-tax cost of equity (r_e) is therefore equal to 9.44% (Table 10).

Table 10: Nominal pre-tax cost of equity for Fixed Line Telecommunications

A	Tax rate	12.5%	
B	Real risk-free rate	2.30%	
C	Inflation	1.75%	
D	Nominal risk-free rate	4.09%	(1+B)*(1+C)-1
E	Equity risk premium	5.00%	
F	Equity Beta at notional gearing	0.83	
G	Nominal post-tax cost of equity	8.26%	**D + (F*E)**
H	Nominal pre-tax cost of equity	9.44%	G/(1-A)

Source: Europe Economics' calculations from sources previous cited

Proposed cost of debt

6.43 In ascertaining the cost of debt to be included in the WACC calculation ComReg needs to decide whether or not this reflects a theoretical value only or includes a weighting for companies actual debt costs. A key consideration is whether it should be one that accounts for embedded debt or on a forward looking basis. It other words, should the analysis incorporate the costs of debt that companies have already incurred, or only the cost of debt that will be incurred over the course of the price control period.

6.44 As the proposed WACC is calculated on the basis of a Hypothetical Efficient Fixed Line Operator, there is no clear basis on which to judge what, if any, existing debt that a Hypothetical Efficient Fixed Line Operator would have incurred, nor the size of this relative to future debt requirements. It is quite feasible to expect this to be minimal for a Hypothetical Efficient Fixed Line Operator as an efficient new entrant would not have any legacy debt. It is on this basis that the cost of debt is calculated on the basis of forward looking cost of debt. It is worth noting that in the UK, Ofcom also used a forward looking cost of debt approach in its setting of the WACC[69].

6.45 Europe Economics favours a forward-looking cost of debt approach and suggest exclusion of adjustments for any embedded debt of Eircom on the basis that the preliminary WACC is estimated for a hypothetical efficient operator. ComReg is of the preliminary view that best practice in economic regulation is the phasing out of embedded debt adjustments in such instances where it is feasible.

6.46 An alternative way of thinking of the cost of debt is as the sum of the risk-free rate and the debt premium:

$r_{debt} = r_f + dp$[70]

Cost of Debt = Risk Free Rate + Debt Premium

6.47 There are two reasons why the actual cost of debt for a Hypothetical Efficient Fixed Line Operator would exceed that of the risk free rate. First, fixed line sector debt requires a higher compensation than German bonds as the fixed line sector is riskier than Government Bonds. Secondly, Irish bonds of a given credit rating carry a premium over German bonds of the same rating, either because of a higher perceived debt beta or higher risk of default. These two factors are cumulative in respect of the cost of debt.

6.48 Europe Economics estimates the cost of debt on the basis of two debt premiums, namely a mobile debt premium and a premium for Irish debt issuance.

$r_{debt} = r_f + P1 + P2$

where,

Debt Premium 1 = Fixed Line Specific Debt Premium (P1)

Debt Premium 2 = Irish Operator Premium (P2)

[69] Ofcom (2011) "Wholesale mobile voice call termination — modelling annexes". http://stakeholders.ofcom.org.uk/binaries/consultations/mtr/statement/MCT_statement_Annex_6-10.pdf

[70] This is a simplified version of the cost of debt formula where debt beta is assumed to be zero. See section 3 of the Europe Economics Technical Report for a more detailed cost of debt expression

6.49 Table 11 presents the debt premium for fixed line telecommunication incumbents in Europe.

Table 11: Debt Premium precedent in European fixed line determinations

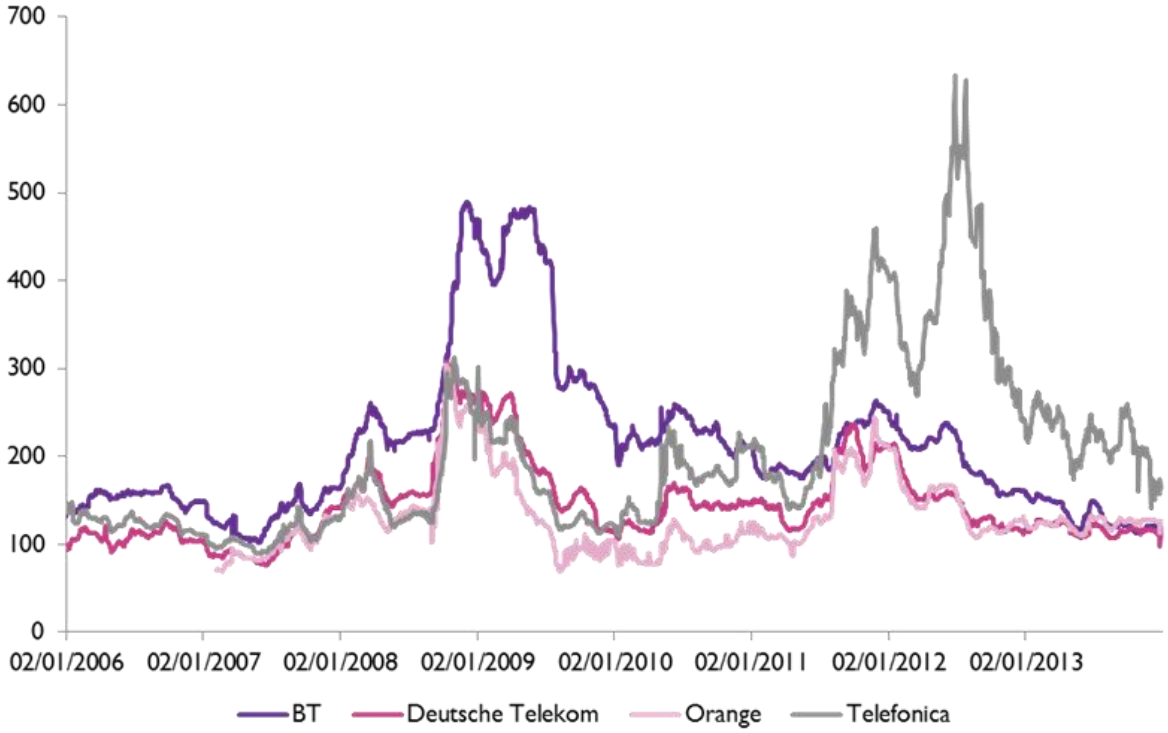
	Basis points
Ireland (2008)	190
Belgium (2010)	170
Portugal (2012)	279
France (2013)	100
Norway (2013)	150
Sweden (2013)	125 - 175
UK (2013 consultation)	170

Source: Europe Economics Technical Report (Table 7.8)

6.50 The debt premium has tended to lie between 100 and 190 basis points (excluding the Portuguese debt premium) suggesting this is an appropriate range for the debt premium of a Hypothetical Efficient Fixed Line Operator.

6.51 Looking towards comparator fixed line company debt premia across Europe, fixed line incumbents' spreads appear to have clustered around two ranges since the sovereign debt crisis (since mid-2012). Six of the ten operators analysed had a premium on its debt in the range 1.15% to1.55% while the remaining four were in the range 0.55% to 0.85%.

Figure 6 Debt premium of select European fixed-line incumbents (bps)



Source: Bloomberg; Europe Economics calculations.

6.52 It is on this basis that Europe Economics recommend a debt premium in the range of 1.0% to 2.0% as being most appropriate. Specifically, it sees no valid reason for deviating from the midpoint of this range and ComReg concurs with a point estimate of 1.5% for the debt premium.

6.53 Europe Economics does not see any reason to elevate the forward looking estimate of the cost of debt. For example, it expects Eircom's cost of debt to decrease over the period of the price control.

6.54 The preliminary debt premium for the Hypothetical Efficient Fixed Line Operator of 1.5% is combined with an Irish operator premium. This premium is estimated to be within the range 0.0% to 0.75% with a point estimate of 0.25% on the basis that Irish companies carry a premium relative to French and German issuers of equivalent debt ratings.

6.55 This suggests a preliminary total debt premium within the range of 1.5% to 2.25% and a point estimate of 1.75%. It is subsequently added to the nominal risk free rate to obtain the cost of debt, as outlined below.

6.56 P1 + P2, as outlined above, therefore equates to 1.5% + 0.25% = 1.75%. Combining the nominal risk free rate of 4.09% gives a nominal pre tax cost of debt of 5.84%. This equates to the preliminary cost of debt for the Hypothetical Efficient Fixed Line Operator.

$r_{debt} = r_f + P1 + P2,$

$5.84\% = 4.09\% + 1.5\% + 0.25\%$

The forward looking nominal pre tax cost of debt is preliminary estimated to be 5.84%.

6.57 As Eircom is currently very highly geared, one consequence of this is an associated higher cost of debt. Eircom's 2012 default[71] on its debt is likely to have impacted on its cost of debt. These inefficiencies are not included in the analysis of the cost of debt of a Hypothetical Efficient Fixed Line Operator.

6.58 The WACC is based on a Hypothetical Efficient Fixed Line Operator. It is important to note that ComReg does not have an obligation to ensure financeability. Thus financeability concerns should not be the determinant factor when selecting the most appropriate approach to the cost of debt estimation.

6.59 An analysis of Eircom's actual debt financing costs produces an average interest rate on debt of ✂[72] in 2013. Assuming a nominal risk free rate of 4.09%, this represents a debt premium in the region of ✂. This range greatly exceeds past fixed-line regulatory precedent.

6.60 It is also important to be aware that the coupon rate of a company's debt may not be representative of the current market interest rates on its debt. Certainly, the recent upgrading by Moody's and subsequently Fitch of Eircom's credit rating to 'B3 stable outlook' and B- Outlook Negative, respectively, is likely to have positively impacted on its cost of debt[73].

6.61 It is noteworthy that the key driver of Eircom's lower debt premium is the drop in its perceived risk and, especially recently, its credit rating upgrade. The increase in German bond yields contributes to but is less important than Eircom own debt characteristics. The cost of debt for WACC purposes should in ComReg's opinion be based on a Hypothetical Efficient Fixed Line Operator, since only efficient costs should be recovered.

[71] http://siteassets.eircom.net/assets/static/pdf/IR/Investor%20Update%2009_02_2012.pdf http://siteassets.eircom.net/assets/static/pdf/IR/Investor%20Update%2016_02_12.pdf
[72] This symbol indicates confidential and commercially sensitive information which has been redacted.
[73] https://www.moodys.com/research/Moodys-upgrades-eircoms-rating-to-B3-stable-outlook--PR_292364 and; http://uk.reuters.com/article/2013/03/22/fitch-affirms-eircom-at-b-outlook-negati-idUSFit65268920130322

6.62 Having analysed Europe Economics' Technical Report and for the reasons outlined above, ComReg's preliminary view is that, for the purposes of the fixed line telecommunication WACC estimation the forward looking nominal pre tax cost of debt should be estimated to be 5.84%.

Aiming up

6.63 ComReg proposes that the WACC estimate should be "aimed-up" to reflect the asymmetry of consequences between setting the cost of capital too low and setting it too high[74]. Europe Economics is of the view that the negative consequences of the former materially exceed those of the latter and therefore that the regulatory cost of capital should be set above the central estimate of the market cost of capital. This principle of "aiming up" has been used by other regulators having applied similar methodologies[75].

6.64 Europe Economics suggests analysing variances and aiming up to the 66th percentile (one standard deviation above the mean) on certain parameters that feed through to the preliminary estimate of the WACC[76]. Europe Economics' aiming up methodology applies to the nominal risk free rate (capturing the real risk free rate and inflation) and the asset beta (which feeds through to the equity beta in conjunction with notional gearing). The debt premium is aimed up on the basis of applying a standalone uplift of 0.3% for each of the three sector specific WACCs[77]. The tax rate and notional gearing are not aimed up because there is no uncertainty surrounding these parameters.

6.65 The ERP can be expected to move in the opposite direction to the risk free rate so that total market returns are more stable than their components. Europe Economics therefore does not believe it is appropriate to aim up on both the risk-free rate and the ERP. In view of this, and given the difficulties in determining uncertainty over the ERP, ComReg is of the preliminary view that aiming up should apply to the risk-free rate only.

6.66 Table 12 represents the pre and post aimed up values for the following parameters:

[74] See paragraph 150 of this UK Competition Commission document https://www.caa.co.uk/docs/5/ergdocs/ccreport_appf.pdf
[75] See paragraph 150 of this UK Competition Commission document https://www.caa.co.uk/docs/5/ergdocs/ccreport_appf.pdf
[76] With various components of the respective WACC estimations aimed up by one standard deviation (i.e. at the 66th percentile), it would not be entirely accurate to infer that the baseline WACCs have been aimed up by precisely one standard deviation above the mean. Rather, Europe Economics has confirmed that the aiming up methodology that has been applied results in an uplift of the WACC by more than one standard deviation i.e. above the 66th percentile and that in principle, the precise confidence interval at which it lies could be estimated.
[77] Europe Economics has analysed the variance surrounding the relevant range of figures that have been used to inform its point estimates. The aiming up of key parameter point estimates is implemented on this basis, essentially accommodating for variance that exists within the range.

Table 12: Parameter	Pre aiming up	Post aiming up
Nominal risk free rate	4.09%	4.19%
Asset beta	0.50	0.55
Debt premium	1.75%	2.05%

Proposed WACC for a Hypothetical Efficient Fixed Line Operator

6.67 The construction of the overall nominal pre tax WACC requires point estimates from each of the parameter ranges presented. The point estimates are not necessarily taken from the midpoint of the range for reasons outlined above. As such, high and low points of parameter ranges are used to construct an overall WACC range. There is good reason to calculate the WACC on the basis that the ERP and risk free rate move in opposite direction as a low ERP point estimate and a low risk free rate would significantly understate reality[78].

[78] The table presents the WACC as if calculated on the basis of the lowest and highest parameters. However, in calculating the point estimate it should be noted that the lowest or highest risk free rate and ERP cannot be used simultaneously as they both move inversely to each other.

Table 13: Cost of capital for a Fixed Line Telecommunications			
	Low	High	Point Estimate
Gearing (%)	40%	40%	40%
Tax rate (%)	12.5%	12.5%	12.5%
Real risk-free rate (%)	1.75%	2.5%	2.30%
Inflation (%)	1.50%	2.0%	1.75%
Nominal risk-free rate (%)	3.28%	4.55%	4.09%
Equity risk premium (%)	4.60%	5.25%	5.00%
Equity Beta at notionall gearing	0.67	1.00	0.83
Nominal post-tax cost of equity (%)	6.34 %	9.80 %	8.26%
Nominal pre-tax cost of equity (%)	7.25%	11.20%	9.44%
Debt Premium (%)	1.50%	2.25%	1.75%
Nominal pre-tax cost of debt (%)	4.78%	6.80%	5.84%
Nominal Vanilla WACC (%)	5.72%	8.60%	7.29%
Nominal pre-tax WACC (%)	6.26%	9.44%	8.00%
Nominal pre-tax WACC (%) after aiming up			8.48%

Source: Europe Economics' calculations from sources previous cited

6.68 The nominal pre-tax WACC is preliminarily estimated to be 8.00%, with a high and low bound estimated to be 9.44% and 6.26% respectively (Table 13).

6.69 Aiming up certain parameter estimates (Table 12) implies an uplift of c. 6% to the nominal pre-tax WACC point estimate resulting in a nominal pre-tax WACC of 8.48% for the fixed line telecommunications sector[79].

6.70 The nominal pre-tax WACC percentage after aiming up in Table 13 is the cumulative value after aiming up was applied to the afore-mentioned parameters in Table 12[80].

[79] Europe Economics suggests aiming up certain parameter point estimates, to the 66th percentile, which reflects one standard deviation above the mean. The uplift to the baseline WACC, following this aiming up methodology, is 6% in absolute terms, resulting in higher preliminary WACC of 8.48% (i.e. 6% i.e. 8.00% * 1.06 = 8.48%).

[80] Rounding differences may occur due to the calculation of figures to two decimal places.

6.71 ComReg notes that since the last WACC review a number of operators' fixed termination prices have become subject to regulation[81]. The question arises as to whether the same WACC should apply to all fixed line operators or whether differential WACCs should apply. ComReg's preliminary view is that the same WACC should apply because:

a. This approach is consistent with the use of a Hypothetical Efficient Fixed Line Operator; and

b. There is no practical way to estimate a differential WACC for termination services as compared to the other services provided by Eircom which are subject to price controls.

6.72 Having analysed Europe Economics' Technical Report and for the reasons outlined above, ComReg's preliminary view is that a nominal pre-tax WACC of 8.48% should be used in the fixed telecommunications sector. This is based upon the following parameters specific to fixed line telecommunications (Table 14):

Table 14: Parameter	Range	Pre aiming up Point Estimate
Asset beta	0.40 – 0.60	0.50
Gearing	40%	40%
Debt premium	1.50% - 2.25%	1.75%

Q. 4	Do you agree with ComReg's proposed approach to estimating the WACC specific to the fixed line telecommunications sector? Please explain the reasons for your answer, in particular your views on the specific parameters used. Please clearly indicate the relevant paragraph numbers to which your comments refer, along with all relevant factual evidence supporting your views.

[81] These are: BT Communications Ireland Limited, Colt Technology Services Limited, Magnet Networks Limited, Smart Telecom Holdings Limited, UPC Communications Ireland Limited and Verizon Ireland Limited.(Ref: ComReg Document 12/15 (D12/12))

Chapter 7

7 Broadcasting (Market A and Market B)

7.1 In 2013 ComReg conducted a market analysis on the market for broadcasting transmission services in Ireland[82] and 2rn and RTÉ were found to have SMP in the following markets:

- 2rn – Wholesale access to national terrestrial broadcast transmission services ("Market A")
- RTÉ – Wholesale access to Digital Terrestrial Television ("DTT") Multiplexing Services ("Market B")

7.2 One of the obligations imposed on 2rn and RTÉ following their designations with SMP was the price control obligation of cost orientation which took effect on 26 July 2013.

7.3 This is the first time that the cost of capital has been developed by ComReg for the purpose of a price control in the broadcasting sector. However, as noted in ComReg 13/71 the tariffs of 2rn and RTÉ are to be applied

> *"[…] on an interim basis and, following the completion of ComReg's […] review of the WACC […], may be adjusted (either upwards or downwards) as appropriate"*[83].

7.4 This chapter sets out ComReg's assumptions and preliminary proposals in relation to key determinants of the WACC for a Hypothetical Efficient Broadcaster. This WACC will be an input into the pricing decisions for setting tariffs in Market A and Market B.

7.5 This also chapter examines whether a separate WACC should be estimated for Markets A and B. The sector specific parameters, such as gearing, for a Hypothetical Efficient Broadcaster are then estimated. The chapter also details the estimation of asset and equity betas for an Irish broadcaster with an efficient capital structure, which then provides the required cost of equity given an asset's exposure to systematic risk.

7.6 Finally, this chapter identifies the chosen methodology for estimating a debt premium for a Hypothetical Efficient Broadcaster and in turn provides an estimated cost of debt.

[82] ComReg 13/71.
[83] Paragraph 2.20 of ComReg Document No. 13/71

The WACCs in Market A and Market B

7.7 Europe Economics has considered whether Market A and Market B should have costs of capital estimated on a separate basis. The evidence considered consisted of previous regulatory WACC estimations in the broadcasting sector in Europe in addition to information on publicly listed DTT multiplex operators. Europe Economics also considered whether there is a difference in exposure to systematic risks between operators in Market A and Market B.

7.8 Europe Economics concluded that one WACC should apply to both Market A and Market B for the following reasons:

- There is no regulatory precedent for estimating separate WACCs in Market A and Market B. A single WACC for broadcasting services was applied by Swedish NRA PTS[84] as well as Ofcom[85] in the UK;
- There is a lack of pure play DTT operators. Among the few[86] publicly listed DTT multiplex operators (e.g. ITV in the UK), DTT multiplexing forms a small part of its diverse operations making it difficult to confidently estimate a separate WACC in Market B; and
- The underlying driver of demand and supply variation in Market A and Market B are quite similar and each market would respond in a similar manner to systematic risks.

7.9 On this basis, Europe Economics proposes that a single WACC is appropriate for both Market A and Market B.

7.10 ComReg agrees with this view. There is limited available information upon which the separate WACCs could be estimated. Furthermore, following the assessment of international evidence, ComReg has not encountered any persuasive evidence indicating that there is a difference in the exposure to systematic risks between Market A and Market B. There appears to be no practical means of distinguishing between 2rn and. ComReg is therefore of preliminary view that the same WACC should be applied in both Market A and Market B.

[84] See the Copenhagen Economics' report on WACC estimation which was prepared for PTS in 2007.
85 See Ofcom (2006) ''Terrestrial transmission market review'' and Plum Consultant's report on WACC for broadcast transmission which was prepared for Office of the Adjudicator in 2010.
[86] For operators such as BBC in the UK or TDF Group in France market data is not available as they are either state-owned or privately owned.

Proposed approach to gearing

7.11 In determining the WACC for broadcasting it is necessary to consider the the financial gearing[87] (hereafter, referred to as gearing) for a Hypothetical Efficient Broadcaster. Gearing reflects the relative weighting of the cost of debt and the cost of equity in the overall cost of capital structure. Regulators can assume the actual level of gearing for an industry specific company or alternatively assume a notional level i.e., the level of debt which reflects the capital structure of an efficiently financed operator.

7.12 The notional level of gearing is an approach which is widely used by regulators and has a number of merits. It allows flexibility to the company to adopt the most efficient capital structure and it also reduces the degree of regulatory intervention in the financing of the business. Importantly, it does not reward the regulated entity for an inefficient capital structure or for sub-optimal decisions made in the past. It also reflects the inherent uncertainty regarding the future evolution of the company's capital structure.

7.13 A notional approach conceptually reflects the gearing that would be chosen by an efficiently financed business. While a review of regulatory precedent shows that the use of notional gearing is broadly recognised, in certain instances regulators have selected actual gearing of regulated companies as being representative of efficient gearing[88].

7.14 While the use of actual gearing simplifies analysis of the cost of debt, it introduces uncertainties when interpreting 'financeability' (i.e. the ability to raise finance on reasonable terms in order to support necessary investment programmes). However, it is also important to note that ComReg does not have an obligation to ensure financeability. Thus, financeability concerns should not be the determinant factor when ComReg is selecting the most appropriate approach to gearing.

7.15 Europe Economics examined the actual gearing of 2rn and RTÉ and found it to be uninformative due to ✂. It therefore opted for the notional gearing approach, examining regulatory precedent and gearing levels of relevant comparators. ComReg is of the preliminary view that proposed notional approach to gearing is appropriate in that it incentivises a more efficient capital structure amongst operators.

7.16 The notional gearing approach involves choosing a credit rating for a Hypothetical Efficient Broadcaster. The gearing level is then typically set at a level of gearing compatible with the target credit rating.

[87] Gearing is defined as the ratio of debt to the sum of debt plus equity (i.e. net debt divided by net debt plus equity)
[88] For example, Ofcom in its recent determination of mobile sector WACC have opted to use Vodafone's actual gearing.

7.17 In estimating gearing, Europe Economics examined recent regulatory decisions of European telecommunications regulators that opted for a notional gearing approach. In such instances, regulatory agencies have relied on the gearing levels of tower and mast companies, integrated telecommunications operators and utility operators. Applying this approach to an Irish context suggests that notional gearing level in the broadcasting sector should be within the range of 25% to 55%.

7.18 There are relatively few publicly listed companies that can be considered as suitable comparators to a company operating in the broadcasting sector. Europe Economics therefore examine gearing levels of companies that operate in the towers and masts sector, for which market data is available. Europe Economics has selected companies that it deems to be the most relevant comparators to a Hypothetical Efficient Broadcaster.

7.19 Gearing of these companies has generally been between 20% and 40%[89]. However, companies with investment grade credit rating (such as Baa3 by Moody's rating or BBB by S&P's rating) tend to have gearing levels at the lower end of this range.

7.20 Finally, the assessment of actual gearing of companies operating in fixed line telecommunications sector indicated the range of 30% to 50%[90].

7.21 Europe Economics conclude by selecting a preliminary notional gearing of 25%, of which ComReg concurs.

7.22 ComReg notes that this point estimate for gearing is lower than notional gearing adopted in previous regulatory decisions in other European countries. However, more weight is placed on the observed gearing levels of comparators with investment grade ratings. As the gearing of these companies is below 30%, notional gearing of 25% is chosen for estimating the broadcasting WACC in Market A and Market B.

7.23 Having analysed Europe Economics' Technical Report and for the reasons outlined above, ComReg's preliminary view is that, for the purposes of the broadcasting WACC estimation, a notional gearing approach should be used with a point estimate of 25% being appropriate.

[89] Excluding periods when financial crisis and the sovereign crisis in Italy were prevailing, thus affecting gearing levels of examined companies.
[90] See Table 7.2 of the Europe Economics Technical Report

Proposed estimation of asset beta

7.24 Within the CAPM framework it is necessary to estimate equity beta in calculating the broadcasting WACC. i.e. the extent to which net returns on the asset as a whole (assets in broadcasting sector) are correlated with changes in returns in the entire equity market.

If equity beta = 1: when the entire equity market return rises by 5%, the return on the analysed stock rises by 5% on average;

If equity beta = 2: when the entire equity market return rises by 5%, the return on the analysed stock rises by 10% on average; and

If equity beta = 0.5: when the entire equity market rises by 5%, the return on the analysed stock rises by 2.5% on average.

7.25 The most straightforward way of estimating the equity beta would be to estimate current equity beta from the stock market. In a best case scenario, ComReg would be able to estimate the equity beta values from the stock prices of mobile only operators and make a judgment surrounding perceived efficiencies. In doing so, market data would exclude the effect of major stock market disturbances, such as the recent financial crisis, and the unbiased equity beta (for the period of the next 3-5 years) would be estimated accordingly.

7.26 However, this approach is not possible as 2rn and RTÉ are state-owned companies and there is no market data that can be used to directly estimate its equity beta. Therefore, Europe Economics rely on regulatory precedent and comparator analysis to estimate the appropriate equity beta for a Hypothetical Efficient Broadcaster.

7.27 ComReg notes that equity beta is derived from the following formula:

where β_A = asset beta which similarly to equity beta (β_E) measures company's exposure to systematic risk, but abstracts from the capital structure

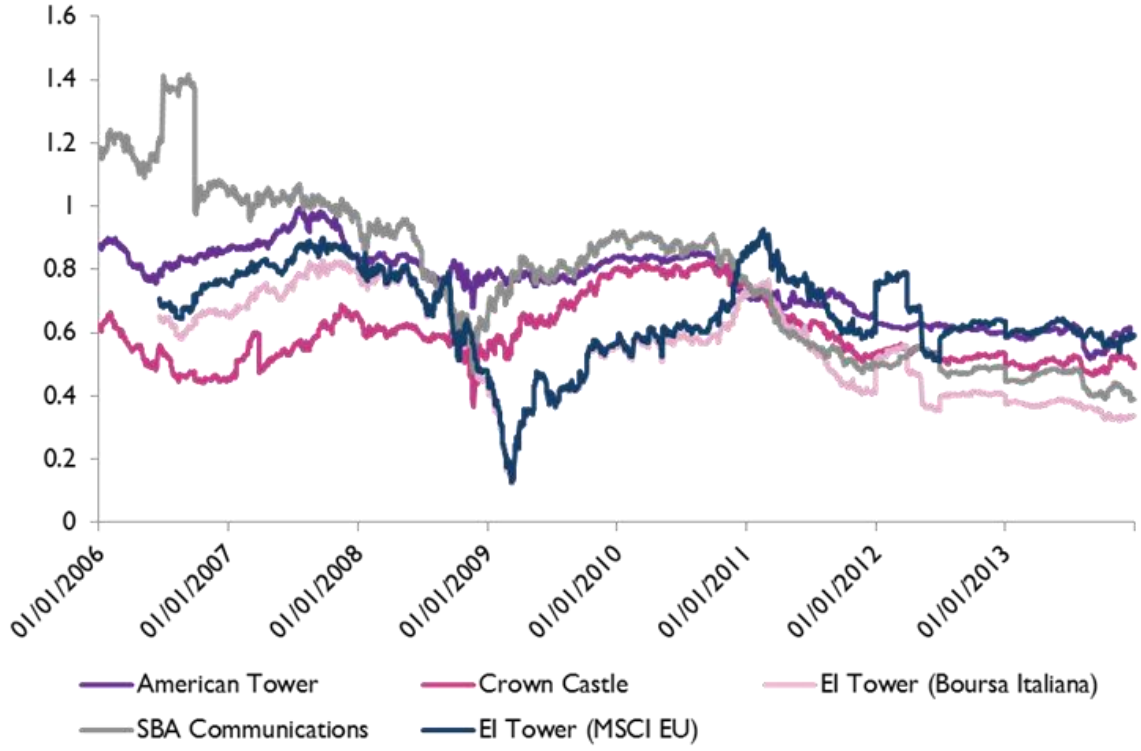
β_D = debt beta

g = gearing

7.28 Thus, Europe Economics estimate appropriate values for asset and debt betas and then applies the proposed notional level of gearing to derive the equity beta.

7.29 The asset beta is estimated based on evidence from regulatory precedent and comparator companies. Regulatory precedent suggests a range of 0.49 to 0.65 for the asset beta. Figure 7 illustrates that two year asset betas for tower and mast companies (which are used as the most relevant comparators) indicate the relevant range of 0.4 to 0.6. Moreover, five year asset betas for the same companies indicate a higher range of 0.6 to 0.8, while the asset betas of fixed line tower and mast companies indicate a range of 0.4 to 0.6.

Figure 7 Two year asset betas for tower and mast companies



Source: Bloomberg and Europe Economics calculations

7.30 Europe Economics examine the aforementioned evidence and propose the range of 0.4 to 0.6 with a point estimate of 0.55 for the asset beta of a Hypothetical Efficient Broadcaster. In determining this range Europe Economics mostly rely on evidence based on the two year asset betas of comparator companies. However, as five year asset betas and regulatory precedent indicate a somewhat higher range, Europe Economics take this evidence into account and select a point estimate in the higher part of the proposed range.

7.31 ComReg is of the preliminary view that the point estimate of 0.55 for the asset beta of a Hypothetical Efficient Broadcaster is appropriate. The approach of estimating asset beta is based on several sources of evidence and is in line with approaches taken by other European regulators. The reliance on the various sources of information produces a range for the asset beta that is rigorous and evidence-based. The value of this comprehensive approach is that each source of information acts as a separate data point in the analysis while providing a cross-check on the other results.

7.32 Having analysed Europe Economics' Technical Report and for the reasons outlined above, ComReg's preliminary view is that, for the purposes of the broadcasting WACC estimation, an unlevered beta point estimate of 0.55 should be used.

Proposed estimation of debt beta

7.33 In general, Irish regulators have chosen not to include a debt beta in their assessment of the regulatory WACC (i.e. debt beta equal to zero).

7.34 The use of zero debt betas reflects the difficulties of producing reliable estimates of debt beta. It also reflects the fact that, where debt beta is low and notional gearing is close to companies' actual gearing levels, the inclusion of debt beta does not make a material difference to the cost of capital. However, a non-zero debt beta may be appropriate in some circumstances, for example if elevated debt premiums suggest that the systematic risk of debt has increased.

7.35 The rationale behind estimation of debt beta is explained in chapter 3. Debt betas of zero and 0.1 are considered by Europe Economics, but the overall WACC is presented with a zero debt beta due to its negligible impact on equity beta when re-levered to the notional gearing level. This is shown by Europe Economics in Figure 8.7 of its Technical Report.

7.36 Having analysed Europe Economics' Technical Report and for the reasons outlined above, ComReg is of the preliminary view that, for the purposes of the mobile telecommunication WACC estimation, debt beta should be zero.

Proposed estimation of equity beta

7.37 As noted in paragraph 7.24 above, the equity beta describes the analysed stock's exposure to systematic risks. A lower sensitivity to systematic risks is rewarded by a lower cost of equity, since investors are unable to diversify away from systematic risks that affect the entire equity market.

7.38 The preliminary equity beta is estimated to be 0.73, resulting from an estimated asset beta of 0.55, a debt beta of zero and notional gearing of 25%.

Equity beta = Asset Beta / (1 – Gearing)

7.39 An equity beta of 0.73 is therefore derived from the following:

Equity beta = 0.55 / (1 – 0.25)

The Proposed Cost of Equity

7.40 The preliminary nominal post tax cost of equity is 7.76%. It is measured by multiplying the equity beta by the ERP and then adding the nominal risk free rate. In order to calculate a nominal pre tax WACC it is then necessary to derive a nominal pre tax cost of equity. This equates to the nominal post tax cost of equity divided by (1 minus the tax rate) i.e. 7.76/(1-0.125). The preliminary nominal pre tax cost of equity (r_e) is therefore equal to 8.87 (Table 15).

Table 15: Nominal pre-tax cost of equity for Broadcasting (Market A and Market B)

A	Tax rate	12.5%	
B	Real risk-free rate	2.30%	
C	Inflation	1.75%	
D	Nominal risk-free rate	4.09%	(1+B)*(1+C)-1
E	Equity risk premium	5.00%	
F	Equity Beta at notional gearing	0.73	
G	Nominal post-tax cost of equity	7.76%	**D + (F*E)**
H	Nominal pre-tax cost of equity	8.87%	G/(1-A)

Source: Europe Economics' calculations from sources previous cited

Proposed cost of debt

7.41 In ascertaining the cost of debt to be included in the WACC calculation ComReg needs to decide whether or not this reflects a theoretical value only or includes a consideration of companies' actual debt costs. Thus, a key consideration is whether the cost of debt should account for embedded debt of companies subject to price control. In other words, a judgement is required on the inclusion of debt that companies incurred in the past when estimating the cost of debt during the price control period.

7.42 Europe Economics favours a forward-looking cost of debt approach and suggest exclusion of adjustments for any embedded debt of 2rn and RTÉ on the basis that the preliminary WACC is estimated for a hypothetical efficient operator. ComReg is of the preliminary view that best practice in economic regulation is the phasing out of embedded debt adjustments in such instances where it is feasible.

7.43 ComReg notes that the cost of debt can be presented as the sum of the risk-free rate and the debt premium:

$$r_{debt} = r_f + dp$$ [91]

Cost of Debt = Risk Free Rate + Debt Premium

7.44 There are two reasons why the actual cost of debt for structure Hypothetical Efficient would exceed the risk free rate. First, broadcasting sector debt requires a higher compensation than German bonds as the corporate debt issued by companies operating in this sector is deemed to be riskier than German Government Bonds. Secondly, Irish bonds of a given credit rating carry a premium over German bonds of the same rating, either because of higher perceived debt beta or higher risk of default. These two factors are cumulative and can be presented as separate components of debt premium.

$$r_{debt} = r_f + P1 + P2,$$

where,

Debt Premium 1 = Broadcasting Debt Premium

Debt Premium 2 = Irish Debt Issuance Premium

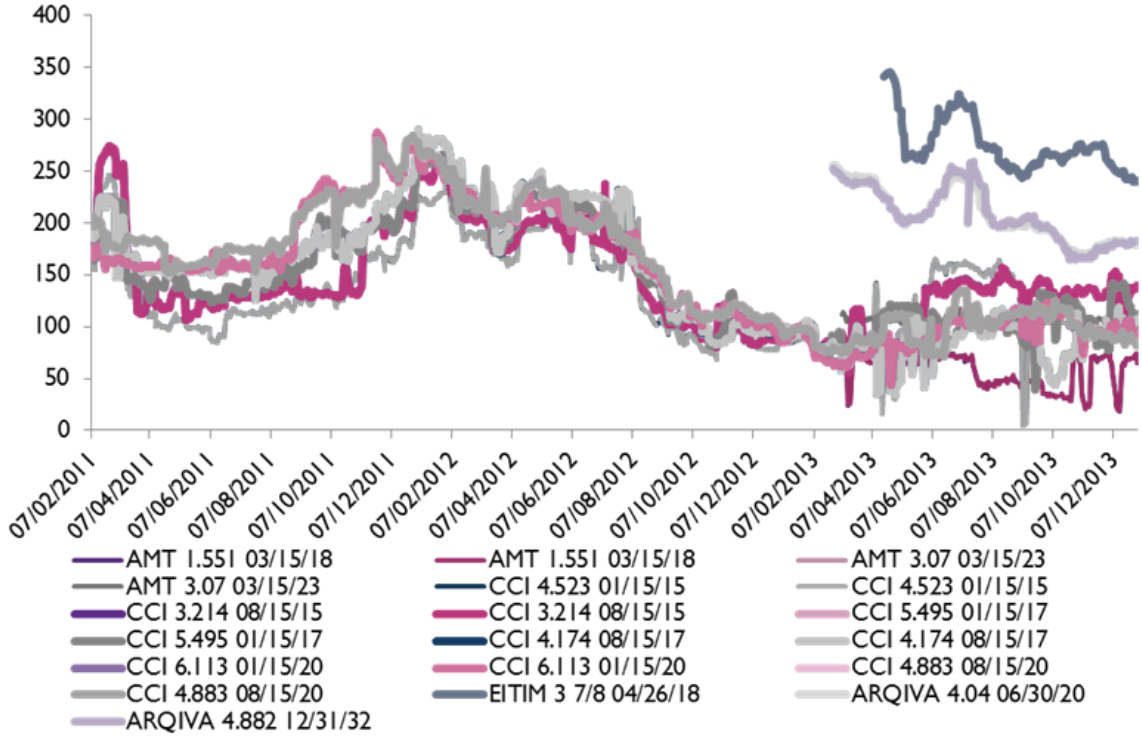
7.45 Europe Economics' approach to estimating the broadcasting debt premium is similar to approaches taken when estimating other sector specific parameters i.e. gearing and asset beta. It relies on evidence from regulatory precedent and debt premium on bonds issued by comparator companies.

7.46 Broadcasting debt premium in previous regulatory decisions ranged from 1% to 1.75%.

[91] This is a simplified version of the cost of debt formula where debt beta is assumed to be zero. See section 3 of the Europe Economics Technical Report for a more detailed cost of debt expression

7.47 The debt premium on corporate bonds issued by comparator companies is estimated by observing the spreads of corporate debt costs over the risk free rate. In other words, Europe Economics analyse the bond spreads of tower and mast companies and compare these with benchmark bonds (German Bonds in this case) with the same maturity to determine the broadcasting debt premium. Figure 8 shows that debt premium on bonds issued by tower and mast companies have varied, but generally falls within a range of 1% to 2%.

Figure 8 Tower and Mast company debt premium (bps)



Source: Bloomberg

7.48 Thus, various sources of information indicate that the relevant range for broadcasting debt premium is 1% to 2% with a point estimate of 1.5%.

7.49 As noted in paragraph 7.44, in addition to a broadcasting debt premium, broadcaster operating in Ireland would likely be faced with higher borrowing costs due to the perceived higher risk of default. Europe Economics examined this hypothesis by comparing corporate bonds issued by Irish utility companies to corporate bonds issued by utility companies across Europe.

7.50 The evidence suggests that Irish utilities' borrowing costs are at most approximately 0.75 percentage points higher than borrowing costs of a similar French or German company. As the economy returns to a more normal growth path it is likely that this premium would eventually disappear. This implies that a point estimate somewhere between 0 and 0.75 percentage points should be added to the 1.5% broadcasting debt premium estimated above.

7.51 Factoring into account that the Irish economy is improving and a more normal growth path is in sight, Europe Economics opt for a point estimate of 0.25. Thus, the debt premium has a range of 1.5% to 2.25%, with a point estimate of 1.75%. ComReg concurs with this rationale.

7.52 P1 + P2, as outlined above, therefore equates to 1.5% + 0.25% = 1.75%. Combining the nominal risk free rate of 4.09% gives a nominal pre-tax cost of debt of 5.84%.

$$r_{debt} = r_f + P1 + P2,$$

$$5.84\% = 4.09\% + 1.5\% + 0.25\%$$

7.53 Having analysed Europe Economics' Technical Report and for the reasons outlined above, ComReg's preliminary view is that, for the purposes of the broadcasting WACC estimation the forward looking nominal pre-tax cost of debt should be estimated to be 5.84%.

Aiming up

7.54 ComReg proposes that the WACC estimate should be "aimed up" to reflect the asymmetry of consequences between those of setting the cost of capital too low and those of setting it too high. Europe Economics is of the view that the negative consequences of the former materially exceed those of the latter and therefore that the regulatory cost of capital should be set above the central estimate of the market cost of capital. This principle of "aiming up" has been used by other regulators having applied similar methodologies[92].

[92] See paragraph 150 of this UK Competition Commission document https://www.caa.co.uk/docs/5/ergdocs/ccreport_appf.pdf

7.55 Europe Economics suggests analysing variances and aiming up to the 66th percentile (one standard deviation above the mean) on certain parameters that feed through to the preliminary estimate of the WACC[93]. Europe Economics' aiming up methodology applies to the nominal risk free rate (capturing the real risk free rate and inflation) and the asset beta (which feeds through to the equity beta in conjunction with notional gearing). The debt premium is aimed up on the basis of applying a standalone uplift of 0.3% for each of the three sector specific WACCs. The tax rate and notional gearing are not aimed up because there is no uncertainty surrounding these parameters[94].

7.56 The ERP can be expected to move in the opposite direction to the risk free rate so that total market returns are more stable than their components. Europe Economics therefore not believe it appropriate to aim up on both the risk-free rate and the ERP. In view of this, and given the difficulties in determining uncertainty over the ERP, ComReg is of the preliminary view that aiming up should apply to the risk-free rate only.

7.57 Table 16 represents the pre and post aimed up values for the following parameters:

Table 16: Parameter	Pre aiming up	Post aiming up
Nominal risk free rate	4.09%	4.19%
Asset beta	0.50	0.57
Debt premium	1.75%	2.05%

[93] With various components of the respective WACC estimations aimed up by one standard deviation (i.e. at the 66th percentile), it would not be entirely accurate to infer that the baseline WACCs have been aimed up by precisely one standard deviation above the mean. Rather, Europe Economics has confirmed that the aiming up methodology that has been applied results in an uplift of the WACC by more than one standard deviation i.e. above the 66th percentile and that in principle, the precise confidence interval at which it lies could be estimated.

[94] Europe Economics has analysed the variance surrounding the relevant range of figures that have been used to inform its point estimates. The aiming up of key parameter point estimates is implemented on this basis, essentially accommodating for variance that exists within the range.

Proposed WACC for a Hypothetical Efficient Broadcaster

7.58 The construction of the overall nominal pre tax WACC requires point estimates from each of the parameter ranges presented. The point estimates are not necessarily taken from the midpoint of the range for reasons already explained above and as such high and low points of parameter ranges are used to construct an overall WACC range. There is good reason to calculate the WACC on the basis that the ERP and the risk free rate move in opposite direction as a low ERP point estimate and a low risk free rate would significantly understate reality[95].

Table 17: Cost of capital for Broadcasting (Market A and B)

	Low	High	Point Estimate
Gearing (%)	25%	25%	25%
Tax rate (%)	12.5%	12.5%	12.5%
Real risk-free rate (%)	1.75%	2.50%	2.30%
Inflation (%)	1.50%	2.0%	1.75%
Nominal risk-free rate (%)	3.28%	4.55%	4.09%
Equity risk premium (%)	4.60%	5.25%	5.00%
Equity Beta at notional gearing	0.53	0.80	0.73
Nominal post-tax cost of equity (%)	5.73%	8.75%	7.76%
Nominal pre-tax cost of equity (%)	6.55%	10.00%	8.87%
Debt Premium (%)	1.50%	2.25%	1.75%
Nominal pre-tax cost of debt (%)	4.78%	6.80%	5.84%
Nominal Vanilla WACC (%)	5.49%	8.26%	7.28%
Nominal pre-tax WACC (%)	6.11%	9.20%	8.11%
Nominal pre-tax WACC (%)			8.68%

Source: Europe Economics' calculations from sources previous cited

7.59 The nominal pre-tax WACC is preliminarily estimated to be 8.11%, with a high and low bound estimated to be 9.20% and 6.11% respectively (Table 17).

[95] The table presents the WACC as if calculated on the basis of the lowest and highest parameters. However, in calculating the point estimate it should be noted that the lowest or highest risk free rate and ERP cannot be used simultaneously as they both move inversely to each other.

7.60 Aiming up certain parameter estimates (Table 16) implies an uplift of c. 7% to the nominal pre-tax WACC point estimate resulting in a nominal pre-tax WACC of 8.68% for broadcasting Market A and Market B[96].

7.61 The nominal pre-tax WACC percentage after aiming up in Table 17 is the cumulative value after aiming up was applied to the fore-mentioned parameters in Table 16[97].

7.62 Having analysed Europe Economics' Technical Report and for the reasons outlined above, ComReg's preliminary view is that a nominal pre-tax WACC of 8.68% should be used in the broadcasting sector. This is based upon the following parameters specific to broadcasting (Table 18):

Table 18: Parameter	Range	Point Estimate (pre aiming-up)
Asset beta	0.40 – 0.60	0.55
Gearing	25%	25%
Debt premium	1.50% - 2.25%	1.75%

Q. 5 Do you agree with ComReg's proposed approach to estimating the WACC specific to Market A and Market B in the broadcasting sector? Please explain the reasons for your answer, in particular your views on the specific parameters used. Please clearly indicate the relevant paragraph numbers to which your comments refer, along with all relevant factual evidence supporting your views.

[96] Europe Economics suggests aiming up certain parameter point estimates to the 66th percentile, which reflects one standard deviation above the mean. The uplift to the baseline WACC, following this aiming up methodology, is 7% in absolute terms, resulting in higher preliminary WACC of 8.68% (i.e. 8.11% * 1.07 = 8.68%).

[97] Rounding differences may occur due to the calculation of figures to two decimal places.

Chapter 8

8 Other issues regarding the Cost of Capital

8.1 There are a number of policy considerations that must be taken into account when estimating an appropriate cost of capital. These policy considerations involve the need to create appropriate incentives for future investment in telecoms and broadcasting infrastructure in Ireland and the appropriate approach to capital structure incentives and financing. The regulated cost of capital can impact on future cash flows for the regulated business, and hence the ability to finance the business, and also on the incentives for future investment.

8.2 ComReg is aware of a number of other possible mechanisms at its disposal for the purposes of promoting investment incentives and public interest considerations going forward. This chapter examines capital expenditure ("CAPEX") incentive mechanisms and trigger mechanisms for reviewing the cost of capital in more detail.

Trigger mechanisms

8.3 The purpose of a trigger mechanism is to adjust the cost of capital when market conditions change to such an extent that the cost of capital applicable in price controls differs significantly from the actual cost of capital that firms incur when raising funds in the market[98]. However, ComReg is of the preliminary view that a review of the respective WACCs after 3 years should be sufficient to account for any future changes. In ComReg's view the introduction of a trigger mechanism could increase regulatory uncertainty which arises when investors are unsure of the expected rate of return on their investments due to uncertainty in regulatory outcomes. Thus, ComReg is of the preliminary view that the proposed four individual WACCs are reasonable measures of the four investment and business risk profiles at this time, while reflecting the future uncertainties regarding the future development of competing technologies. ComReg will, however, continue to monitor the competitive situation and the extent to which it is likely to impact on the systematic risk profiles.

[98] An example of this would be the turmoil in the financial markets in 2008.

CAPEX incentive mechanisms

8.4 ComReg has traditionally assessed the cost of capital at a company-wide level. However, companies commonly make investment decisions at a project or activity level (for instance individual services within markets or retail activities) reflecting possible variations in systematic risk between different activities. ComReg notes that assets with different risk profiles may have different required rates of return, even when owned by the same company. ComReg is therefore exploring a number of possible incentive based measures that may be used, if appropriate, to promote efficient investment incentives over the period of this WACC review. One of these measures is the possibility of setting different levels of WACC for certain activities or assets carry more risk than a typical investment.

8.5 This approach could be adopted if it could be done in a robust way which is in turn conditional on the availability of detailed business and financial information for the individual business projects/activities. If the CAPEX incentive mechanism were to be used, ComReg would have to determine (before the commencement of the particular project) that the project had a higher risk profile in comparison to the average risk profile of the firm's other projects. ComReg might then allow a higher WACC to compensate the firm and its investors for bearing the additional risk.

8.6 ComReg would welcome views on the possibility of implementing an incentive-based mechanism whereby any particularly risky or capital-intensive projects, which may be unanticipated at this time but may emerge over the timeframe of this review, could be assessed on an individual basis to determine if a modification of the average WACC might be appropriate for those particular projects/investments going forward. In considering this issue ComReg will be mindful of the need to ensure efficient investment. It will also be highly cognisant of the impact on alternative operators and their incentive to invest and the impact on competition more generally.

Q. 6	Do you believe that ComReg' should consider additional incentive based mechanisms in order to incentivise long term investments in infrastructure assets and provide an adequate allowance for bearing any associated systematic risks? How might such incentives be implemented in practice? Please explain the reasons for your answer, clearly indicating the relevant paragraph numbers to which your comments refer, along with all relevant factual evidence supporting your views.

Chapter 9

9 Submitting comments

9.1 All comments are welcome to the consultation however it would make the task of analysing responses easier if comments were referenced to the relevant question numbers from this document.

9.2 The consultation period will run from 11 April 2014 to 9 May 2014 during which the Commission welcomes written comments on any of the issues raised in this paper.

9.3 Having analysed and considered the comments received, ComReg will review the main proposals set out in the consultation, amend if necessary in light of representations received and will then notify the draft measure to the European Commission, the NRAs and BEREC, pursuant to Regulation 13 of the European Communities (Electronic Communications Networks and Services) (Framework) Regulations 2011. ComReg will take utmost account of any comments received from the European Commission and will adopt and publish the final decision.

9.4 In order to promote further openness and transparency ComReg will publish all respondents' submissions to this consultation, subject to the provisions of ComReg's guidelines on the treatment of confidential information in ComReg Document No. 05/24. We would request that electronic submissions be submitted in an-unprotected format so that they can be appended into the ComReg submissions document for publishing electronically.

Please note:

9.5 ComReg appreciates that many of the issues raised in this paper may require respondents to provide confidential information if their comments are to be meaningful.

9.6 As it is ComReg's policy to make all responses available on its website and for inspection generally, respondents to consultations are requested to clearly identify confidential material and place confidential material in a separate annex to their response.

9.7 Such Information will be treated subject to the provisions of ComReg's guidelines on the treatment of confidential information as set out in ComReg Document No. 05/24.

Annex: 1 Draft decision instrument – Mobile Telecommunications

Q. 7 Do you believe that the draft text of the proposed decision instrument for Mobile Telecommunications is from a legal, technical and practical perspective, sufficiently detailed, clear and precise with regards to the specifics proposed? Please explain your response and provide details of any specific amendments you believe are required.

1. STATUTORY POWERS GIVING RISE TO THIS DECISION

1.1. This Direction and Decision Instrument ("Decision Instrument") is made by the Commission for Communications Regulation ("ComReg") and relates to the market for voice call termination on individual mobile networks as identified by the European Commission in its Recommendation of 17 December 2007 on relevant product and services markets within the electronic communications sector susceptible to *ex ante* regulation[99] ("the 2007 Recommendation") and as analysed by ComReg in the document entitled "*Market Review: Voice Call Termination on Individual Mobile Networks, Response to Consultation and Decision",* ComReg Document No. 12/124, Decision No. D11/12, dated 21 November 2012.

1.2. This Decision Instrument is made:

(i) Pursuant to and having regard to the functions and objectives of ComReg as set out in Sections 10 and 12 of the Communications Regulation Acts 2002 to 2011 and in Regulation 16 of the Framework Regulations; and

(ii) Having taken account of ComReg's functions under Regulation 6(1) of the Access Regulations; and

(iii) Having, where appropriate, pursuant to Section 13 of the Communications Regulation Acts 2002 to 2011 complied with the policy directions made by the Minister for Communications, Marine and Natural Resources[100]; and

(iv) Having taken the utmost account of the European Commission's Recommendation of 7 May 2009 on the Regulatory Treatment of Fixed and Mobile Termination Rates in the EU[101]; and

[99] European Commission Recommendation of 17 December 2007 on relevant product and services markets within the electronic communications sector susceptible to *ex ante* regulation n accordance with Directive 2002/21/EC of the European Parliament and of the Council on a common regulatory framework for electronic communications networks and services (OJ L 344, 28.12.2007, p. 65).

[100] Policy Directions made by Dermot Ahern TD, then Minister for Communica5tions, Marine and Natural Resources, dated 21 February 2003 and 26 March 2004.

[101] European Commission Recommendation of 7 May 2009 on the Regulatory Treatment of Fixed and Mobile Termination Rates in the EU (2009/396/EC)(OJ L124/67).

(v) Pursuant to and having had regard to the designation of the SMP Undertakings as having SMP on the appropriate Relevant Markets under the provisions of Regulations 25, 26 and 27 of the Framework Regulations, and the obligations imposed on the appropriate Relevant Markets pursuant to Regulation 13 of the Access Regulations; and

(vi) Having had regard to the reasoning and analysis set out in "*Market Review: Voice Call Termination on Individual Mobile Networks, Response to Consultation and Decision",* ComReg Document No. 12/124, Decision No. D 11/12*;* and

(vii) Having had regard to the reasoning and analysis set out in consultation and draft decision entitled "Review of Cost of Capital - Mobile Telecommunications - Fixed Line Telecommunications - Broadcasting (Market A and Market B)" (ComReg Document No. 14/28) and having considered submissions received from interested parties in response to the consultation and draft decision (ComReg Document No. 14/28) following public consultation pursuant to Regulation 12 of the Framework Regulations; and

(viii) Having notified the draft measure and the reasoning on which same is based to the European Commission, BEREC and the national regulatory authorities in other EU Member States in accordance with Regulation 13 of the Framework Regulations and having taken the utmost account, pursuant to Regulation 13(6) of the Framework Regulations, of any comments made by the European Commission, BEREC and any national regulatory authority in another EU Member State in accordance with Article 7(3) of the Framework Directive[102]; and

(ix) Pursuant to Regulations 8, 13 and 18 of the Access Regulations.

1.3. The provisions of the consultation and draft decision (ComReg Document No. 14/28) and the "[Title of Response to Consultation and Decision]", (Document No. 14/XX), (ComReg Decision No. XX/14) shall, where appropriate, be construed with this Decision Instrument.

PART I – GENERAL PROVISIONS

2. DEFINITIONS AND INTERPRETATION

2.1. In this Decision Instrument, unless the context otherwise suggests:

"Access Regulations" means the European Communities (Electronic Communications Networks and Services) (Access) Regulations 2011 (S.I. No. 334 of 2011);

[102] Directive 2002/21/EC of the European Parliament and of the Council of 7 March 2002 on a common regulatory framework for electronic communications networks and services (Framework Directive), as amended by Directive 2009/140/EC of the European Parliament and of the Council of 25 November 2009.

"BEREC" means the Body of European Regulators for Electronic Communications, as established pursuant to Regulation (EC) No. 1211/2009 of the European Parliament and of the Council of 25 November 2009;

"ComReg Decision No. D11/12" means the decision contained in ComReg Document No. 12/24 entitled "*Market Review: Voice Call Termination on Individual Mobile Networks",* dated 21 November 2012;

"ComReg" means the Commission for Communications Regulation, established by Part 2 of the Communications Regulation Act, 2002;

"Effective Date" means the date set out in Section 7.1 of this Decision Instrument;

"Framework Regulations" means the European Communities (Electronic Communications Networks and Services) (Framework) Regulations 2011 (S.I. No. 333 of 2011);

"H3GI" means Hutchison 3G Ireland Limited and its subsidiaries, and any undertaking which it owns or controls and any undertaking which owns or controls it, and its successors, affiliates and assigns;

"Liffey Telecom" means Liffey Telecom Limited and its subsidiaries, and any undertaking which it owns or controls and any Undertaking which owns or controls it, and its successors, affiliates and assigns;

"Lycamobile" means Lycamobile Ireland Limited and its subsidiaries, and any undertaking which it owns or controls and any undertaking which owns or controls it, and its successors, affiliates and assigns;

"Meteor" means Meteor Mobile Communications Limited and its subsidiaries, and any undertaking which it owns or controls and any undertaking which owns or controls it, and its successors, affiliates and assigns;

"the Relevant Markets" are the six separate markets (relating to the market for voice call termination on individual mobile networks as identified by the European Commission in the 2007 Recommendation) as defined by ComReg in Section 4.2 of the Decision Instrument annexed to ComReg Decision No. D11/12 and in which the SMP Undertakings are designated as having SMP under the provisions of Regulations 25, 26 and 27 of the Framework Regulations*;*

"SMP" means significant market power, as the term is used in Regulation 25 of the Framework Regulations;

"SMP Undertakings" means H3GI, Lycamobile, Meteor, Telefónica, Tesco Mobile and Vodafone;

"Tesco Mobile" means Tesco Mobile Ireland Limited and its subsidiaries, and any undertaking which it owns or controls and any undertaking which owns or controls it, and its successors, affiliates and assigns, but excluding for, the purposes of this Decision Instrument, Telefónica;

"Telefónica" means Telefónica Ireland Limited, and its subsidiaries, and any undertaking which it owns or controls and any undertaking which owns or controls it, and its successors, affiliates and assigns, including Liffey Telecom, but excluding, for the purposes of this Decision Instrument, Tesco Mobile;

"Undertaking" has the meaning set out in Regulation 2 of the Framework Regulations;

"Vodafone" means Vodafone Ireland Limited and its subsidiaries, and any undertaking which it owns or controls and any undertaking which owns or controls it, and its successors, affiliates and assigns; and

"WACC" means the weighted average cost of capital.

3. SCOPE AND APPLICATION

3.1. This Decision Instrument applies to H3GI, Lycamobile, Meteor, Telefónica, Tesco Mobile and Vodafone.

3.2. This Decision Instrument is binding upon H3GI, Lycamobile, Meteor, Telefónica, Tesco Mobile and Vodafone and each of those SMP Undertakings shall comply with it in all respects.

PART II – DECISION

4. WACC

4.1. A nominal pre-tax WACC of X% will be used by ComReg as a basis for allowing the SMP Undertakings a reasonable rate of return in the context of obligations imposed on the SMP Undertakings in the appropriate Relevant Markets relating to cost recovery and price controls (pursuant to Regulation 13 of the Access Regulations in accordance with Regulations 8 and 18 of the Access Regulations), including the setting of regulated wholesale prices.

PART III – FURTHER GENERAL PROVISIONS AND EFFECTIVE DATE

5. STATUTORY POWERS NOT AFFECTED

5.1. Nothing in this Decision Instrument shall operate to limit ComReg in the exercise and performance of its statutory powers or duties conferred on it under any primary or secondary legislation (in force prior to or after the Effective Date of this Decision Instrument) from time to time.

6. MAINTENANCE OF OBLIGATIONS

6.1. Unless expressly stated otherwise in this Decision Instrument, all obligations and requirements contained in Decision Notices and Directions made by ComReg applying to the SMP Undertakings and in force immediately prior to the Effective Date of this Decision Instrument, are continued in force by this Decision Instrument and the Undertakings shall comply with same.

6.2. If any Section, clause or provision or portion thereof contained in this Decision Instrument is found to be invalid or prohibited by the Constitution, by any other law or judged by a court to be unlawful, void or unenforceable, that Section, clause or provision or portion thereof shall, to the extent required, be severed from this Decision Instrument and rendered ineffective as far as possible without modifying the remaining Section(s), clause(s) or provision(s) or portion thereof of this Decision Instrument, and shall not in any way affect the validity or enforcement of this Decision Instrument or other Decision Instruments.

7. EFFECTIVE DATE

7.1. The Effective Date of this Decision Instrument shall be, unless otherwise expressly stated in this Decision Instrument, the date of its notification to the SMP Undertakings and it shall remain in force until further notice by ComReg.

Commissioner

The Commission for Communications Regulation

THE X DAY OF X 2014

Annex: 2 Draft decision instrument – Fixed Line Telecommunications

Q. 8 Do you believe that the draft text of the proposed decision instrument for Fixed Line Telecommunications is from a legal, technical and practical perspective, sufficiently detailed, clear and precise with regards to the specifics proposed? Please explain your response and provide details of any specific amendments you believe are required.

1. STATUTORY POWERS GIVING RISE TO THIS DECISION

1.1. This Direction and Decision Instrument ("Decision Instrument") is made by the Commission for Communications Regulation ("ComReg") and relates to fixed line telecommunciations markets in Ireland.

1.2. This Decision Instrument is made:

(i) Pursuant to and having regard to the functions and objectives of ComReg as set out in Sections 10 and 12 of the Communications Regulation Acts 2002 to 2011 and in Regulation 16 of the Framework Regulations; and

(ii) Having taken account of ComReg's functions under Regulation 6(1) of the Access Regulations; and

(iii) Having, where appropriate, pursuant to Section 13 of the Communications Regulation Acts 2002 to 2011 complied with the policy directions made by the Minister for Communications, Marine and Natural Resources[103]; andHaving taken the utmost account of the European Commission's Recommendation of 7 May 2009 on the Regulatory Treatment of Fixed and Mobile Termination Rates in the EU[104]; and

(iv) Pursuant to and having had regard to the designation of Eircom as having significant market power on the Markets under the provisions of Regulations 25, 26 and 27 of the Framework Regulations and obligations imposed on Eircom pursuant to Regulations 11 and 13 of the Access Regulations in the Markets; and

(v) Pursuant to and having had regard to the designation of Other SMP Fixed Service Providers as having significant market power on the market for wholesale call termination services used to provide retail calls to end users on each public telephone network provided at a fixed location as set out in ComReg Decision No. D06/07 under the provisions of Regulations

[103] Policy Directions made by Dermot Ahern TD, then Minister for Communica5tions, Marine and Natural Resources, dated 21 February 2003 and 26 March 2004.
[104] European Commission Recommendation of 7 May 2009 on the Regulatory Treatment of Fixed and Mobile Termination Rates in the EU (2009/396/EC)(OJ L124/67).

25, 26 and 27 of the Framework Regulations and obligations imposed pursuant to Regulation 13 of the Access Regulations;

(vi) Having had regard to the reasoning and analysis set out in the consultation and draft decision entitled "Review of Cost of Capital - Mobile Telecommunications - Fixed Line Telecommunications - Broadcasting (Market A and Market B)" (ComReg Document No. 14/28) and having considered submissions received from interested parties in response to the consultation and draft decision (ComReg Document No. 14/28) following public consultation pursuant to Regulation 12 of the Framework Regulations; and

(vii) Having notified the draft measure and the reasoning on which same is based to the European Commission, BEREC and the national regulatory authorities in other EU Member States in accordance with Regulation 13 of the Framework Regulations and having taken the utmost account, pursuant to Regulation 13(6) of the Framework Regulations, of any comments made by the European Commission, BEREC and any national regulatory authority in another EU Member State in accordance with Article 7(3) of the Framework Directive[105]; and

(viii) Having had regard to the reasoning and analysis set out in the papers containing and relating to ComReg Decision No. D07/61, ComReg Decision No. D04/07, ComReg Decision No. D06/07, ComReg Decision No. D05/10, ComReg Decision No. D06/11, ComReg Decision No. D06/08 ; and

(ix) Pursuant to Regulations 8, 11, 13 and 18 of the Access Regulations.

1.3. The provisions of the consultation and draft decision (ComReg Document No. 14/28) and the "[Title of Response to Consultation and Decision]", (Document No. 14/XX), (ComReg Decision No. XX/13) shall, where appropriate, be construed with this Decision Instrument.

PART I – GENERAL PROVISIONS

2. DEFINITIONS AND INTERPRETATION

2.1. In this Decision Instrument, unless the context otherwise suggests:

"Access Regulations" means the European Communities (Electronic Communications Networks and Services) (Access) Regulations 2011 (S.I. No. 334 of 2011);

[105] Directive 2002/21/EC of the European Parliament and of the Council of 7 March 2002 on a common regulatory framework for electronic communications networks and services (Framework Directive), as amended by Directive 2009/140/EC of the European Parliament and of the Council of 25 November 2009.

"BEREC" means the Body of European Regulators for Electronic Communications, as established pursuant to Regulation (EC) No. 1211/2009 of the European Parliament and of the Council of 25 November 2009;

"**BT Communications**" means BT Communications Ireland Limited and includes its subsidiaries, and any undertaking which it owns or controls, and any undertaking which owns or controls it and its successors and assigns. For the avoidance of doubt, BT Communications includes British Telecommunications plc which is the Undertaking authorised in Ireland in accordance with Regulation 4 of the European Communities (Electronic Communications Networks and Services)(Authorisation) Regulations 2011;

"**Colt Technology Services**" means Colt Technology Services Limited and includes its subsidiaries, and any undertaking which it owns or controls, and any undertaking which owns or controls it and its successors and assigns;

"ComReg" means the Commission for Communications Regulation, established by Part 2 of the Communications Regulation Act, 2002;

"ComReg Decision No. D04/07" means the decision contained in ComReg Document No. 07/80 entitled *"Market Analysis –Interconnection Market Review Wholesale Call Origination & Transit Services"* dated 05 October 2007;

"ComReg Decision No. D06/07" means the decision contained in ComReg Document No. 07/109 entitled *"Market Analysis – Interconnection Market Review Fixed Wholesale Call Termination Services"* dated 21 December 2007;

"ComReg Decision No. D06/08" means the decision contained in ComReg Document No. 08/103 entitled *"Market Analysis – Leased Line Market Review"* dated 22 December 2008;

"ComReg Decision No. D05/10" means the decision contained in ComReg Document No. 10/39 entitled *"Market Review: Wholesale (Physical) Network Access Infrastructure (Market 4)"* dated 20 May 2010;

"ComReg Decision No. D06/11" means the decision contained in ComReg Document No. 11/49 entitled *"Market Review: Wholesale Broadband Access (Market 5)"* dated 8 July 2011; **"Eircom"** means Eircom Limited and its subsidiaries (excluding Meteor Mobile Communications Limited), and any Undertaking which it owns or controls, and any Undertaking which owns or controls Eircom Limited and its successors and assigns;

"Effective Date" means the date set out in Section 7.1 of this Decision Instrument;

"Framework Regulations" means the European Communities (Electronic Communications Networks and Services) (Framework) Regulations 2011 (S.I. No. 333 of 2011);

"**Magnet Networks**" means Magnet Networks Limited and includes its subsidiaries, and any undertaking which it owns or controls, and any undertaking which owns or controls it and its successors and assigns;

"**Other Significant Market Power (SMP) Fixed Service Provider(s)**" means a Fixed Service Provider designated with SMP in section 3 of the Decision Instrument annexed to ComReg Decision No. D06/07 and comprises BT Communications, Colt Technology Services, Magnet Networks, Smart Telecom, UPC Communications and Verizon Ireland but does not include Eircom;

"Regulated Accounts" means the financial information referred to in Section 5.1 of this Decision Instrument annexed to ComReg Decision No. D08/10;

"**Smart Telecom**" means Smart Telecom Holdings Limited and any undertaking which it owns or controls, and any undertaking which owns or controls it and its successors and assigns.

"SMP" means significant market power, as the term is used in Regulation 25 of the Framework Regulations;

"the Markets" are the markets for:

a. Call origination services on the public telephone network at a fixed location and wholesale national call transit services on the public telephone network at a fixed location (contained in ComReg Decision No. D04/07);

b. Wholesale call termination services used to provide retail calls to end users on each public telephone network provided at a fixed location (contained in ComReg Decision No. D06/07);

c. Wholesale (physical) network infrastructure access (including shared or fully unbundled access) at a fixed location (contained in ComReg Decision No. D05/10);

d. Wholesale broadband access (contained in ComReg Decision No. D06/11);

e. Wholesale terminating segments of leased lines (contained in ComReg Decision No. D06/08).

"Undertaking" has the meaning set out in Regulation 2 of the Framework Regulations;

"UPC Communications" means UPC Communications Ireland Limited and includes its subsidiaries, and any undertaking which it owns or controls, and any undertaking which owns or controls it and its successors and assigns. For the avoidance of doubt UPC Communications includes NTL Communications

(Ireland) Limited and Chorus Communications Limited and their successors and assigns;

"Verizon Ireland" means Verizon Ireland Limited and includes its subsidiaries, and any undertaking which it owns or controls and any undertaking which owns or controls it, and its successors, affiliates and assigns; and

"WACC" means the weighted average cost of capital.

3. SCOPE AND APPLICATION

3.1. This Decision Instrument applies to Eircom and the Other SMP Fixed Service Providers.

3.2. This Decision Instrument is binding upon Eircom and the Other SMP Fixed Service Providers. Eircom and the Other SMP Fixed Service Providers shall comply with it in all respects.

PART II – DECISION

4. WACC

4.1. A nominal pre-tax WACC of XX% will be used for the purpose of Eircom's Regulated Accounts; and by ComReg as a basis for allowing Eircom a reasonable rate of return in the context of obligations imposed on Eircom in the Markets relating to accounting separation, cost recovery and price controls (pursuant to Regulations 11 and 13 of the Access Regulations in accordance with Regulations 8 and 18 of the Access Regulations), including the setting of regulated wholesale prices.

4.2. A nominal pre-tax WACC of X% will be used by ComReg as a basis for allowing the Other SMP Fixed Service Providers a reasonable rate of return in the context of obligations imposed on the Other SMP Fixed Service Providers in the relevant markets defined in ComReg Decision No. D06/07 relating to cost recovery and price controls (pursuant to Regulation 13 of the Access Regulations in accordance with Regulations 8 and 18 of the Access Regulations), including the setting of regulated wholesale prices.

4.3. The WACC of X% referred to in Section 4.1 of this Decision Instrument supersedes the WACC of 10.21% as set in *"Eircom's Cost of Capital",* ComReg Document 08/35. Decision D01/08, dated 22 May 2008, for the purpose of all obligations relating to cost recovery and price controls (including regulated wholesale prices) imposed on Eircom after the Effective Date. Any obligations imposed on Eircom relating to cost recovery and price controls (including regulated wholesale prices) imposed prior to the Effective Date and calculated using a previous WACC set by ComReg (in particular that set in Decision D01/08, contained in ComReg Document 08/35, entitled *"Eircom's Cost of Capital",* dated 22 May 2008)

shall not be affected by this decision and shall continue to have full force and effect.

PART III – FURTHER GENERAL PROVISIONS AND EFFECTIVE DATE

5. STATUTORY POWERS NOT AFFECTED

5.1. Nothing in this Decision Instrument shall operate to limit ComReg in the exercise and performance of its statutory powers or duties conferred on it under any primary or secondary legislation (in force prior to or after the Effective Date of this Decision Instrument) from time to time.

6. MAINTENANCE OF OBLIGATIONS

6.1. Unless expressly stated otherwise in this Decision Instrument, all obligations and requirements contained in Decision Notices and Directions made by ComReg applying to Eircom and in force immediately prior to the Effective Date of this Decision Instrument, are continued in force by this Decision Instrument and Eircom shall comply with same.

6.2. If any Section, clause or provision or portion thereof contained in this Decision Instrument is found to be invalid or prohibited by the Constitution, by any other law or judged by a court to be unlawful, void or unenforceable, that Section, clause or provision or portion thereof shall, to the extent required, be severed from this Decision Instrument and rendered ineffective as far as possible without modifying the remaining Section(s), clause(s) or provision(s) or portion thereof of this Decision Instrument, and shall not in any way affect the validity or enforcement of this Decision Instrument or other Decision Instruments.

7. EFFECTIVE DATE

7.1. The Effective Date of this Decision Instrument shall be, unless otherwise expressly stated in this Decision Instrument, the date of its notification to Eircom, and it shall remain in force until further notice by ComReg.

Commissioner

The Commission for Communications Regulation

THE X DAY OF X 2014

Annex: 3 Draft decision instrument – Broadcasting (Market A)

Q. 9 Do you believe that the draft text of the proposed decision instrument for Broadcasting - Market A is from a legal, technical and practical perspective, sufficiently detailed, clear and precise with regards to the specifics proposed? Please explain your response and provide details of any specific amendments you believe are required.

1. STATUTORY POWERS GIVING RISE TO THIS DECISION

1.1. This Direction and Decision Instrument ("Decision Instrument") is made by the Commission for Communications Regulation ("ComReg") and relates to the market for wholesale access to national terrestrial broadcast transmission services, as defined and analysed in the document entitled "*Market Review: Broadcasting Transmission Services in Ireland",* ComReg Document 13/71.

1.2. This Decision Instrument is made:

(i) Pursuant to and having regard to the functions and objectives of ComReg as set out in Sections 10 and 12 of the Communications Regulation Acts 2002 to 2011 and in Regulation 16 of the Framework Regulations; and

(ii) Having taken account of ComReg's functions under Regulation 6(1) of the Access Regulations; and

(iii) Having had regard to the Broadcasting Act 2009; and

(iv) Having, where appropriate, pursuant to Section 13 of the Communications Regulation Acts 2002 to 2011 complied with the policy directions made by the Minister for Communications, Marine and Natural Resources[106]; and

(v) Pursuant to and having had regard to the designation of the 2rn as having significant market power on the Market under the provisions of Regulations 25, 26 and 27 of the Framework Regulations, and the accounting separation, price control and cost accounting obligations imposed on the Market pursuant to Regulations 11 and 13 of the Access Regulations; and

(vi) Having had regard to the reasoning and analysis set out in the consultation and draft decision entitled "Review of Cost of Capital - Mobile Telecommunications - Fixed Line Telecommunications - Broadcasting

[106] Policy Directions made by Dermot Ahern TD, then Minister for Communica5tions, Marine and Natural Resources, dated 21 February 2003 and 26 March 2004.

(Market A and Market B)" (ComReg Document No. 14/28) and having considered submissions received from interested parties in response to the consultation and draft decision (ComReg Document No. 14/28) following public consultation pursuant to Regulation 12 of the Framework Regulations; and

(vii) Having notified the draft measure and the reasoning on which same is based to the European Commission, BEREC and the national regulatory authorities in other EU Member States in accordance with Regulation 13 of the Framework Regulations and having taken the utmost account, pursuant to Regulation 13(6) of the Framework Regulations, of any comments made by the European Commission, BEREC and any national regulatory authority in another EU Member State in accordance with Article 7(3) of the Framework Directive[107]; and

(viii) Pursuant to Regulations 8, 11, 13 and 18 of the Access Regulations.

1.3. The provisions of the consultation and draft decision (ComReg Document No. 14/28) and the "[Title of Response to Consultation and Decision]", (Document No. 14/XX), (ComReg Decision No. XX/14) shall, where appropriate, be construed with this Decision Instrument.

PART I – GENERAL PROVISIONS

2. DEFINITIONS AND INTERPRETATION

2.1. In this Decision Instrument, unless the context otherwise suggests:

"Access Regulations" means the European Communities (Electronic Communications Networks and Services) (Access) Regulations 2011 (S.I. No. 334 of 2011);

"BEREC" means the Body of European Regulators for Electronic Communications, as established pursuant to Regulation (EC) No. 1211/2009 of the European Parliament and of the Council of 25 November 2009;

"ComReg" means the Commission for Communications Regulation, established by Part 2 of the Communications Regulation Act, 2002;

"ComReg Decision No. 11/13" means the decision contained in ComReg Document No. 13/71, entitled "*Market Review: Broadcasting Transmission Services in Ireland"*, dated 26 July 2013;

"Effective Date" means the date set out in Section 7.1 of this Decision Instrument;

[107] Directive 2002/21/EC of the European Parliament and of the Council of 7 March 2002 on a common regulatory framework for electronic communications networks and services (Framework Directive), as amended by Directive 2009/140/EC of the European Parliament and of the Council of 25 November 2009.

"Framework Regulations" means the European Communities (Electronic Communications Networks and Services) (Framework) Regulations 2011 (S.I. No. 333 of 2011);

"SMP" means significant market power, as the term is used in Regulation 25 of the Framework Regulations;

"the Market" is the market for wholesale access to national terrestrial broadcast transmission services as identified by ComReg in Section 4.1 of the decision instrument annexed to ComReg Decision No. 11/13 in which 2rn is designated as having significant market power under the provisions of Regulations 25, 26 and 27 of the Framework Regulations;

"Undertaking" has the meaning set out in Regulation 2 of the Framework Regulations;

"WACC" means the weighted average cost of capital; and

"2rn" means RTÉ Transmission Network Limited and its subsidiaries, and any Undertaking which it owns or controls, and any Undertaking which owns or controls RTÉ Transmission Network Limited and its successors and assigns, including for the avoidance of doubt Raidió Teilifís Éireann.

3. SCOPE AND APPLICATION

3.1. This Decision Instrument applies to 2rn.

3.2. This Decision Instrument is binding upon 2rn and 2rn shall comply with it in all respects.

PART II – DECISION

4. WACC

4.1. A nominal pre-tax WACC of XX% will be used as a basis for allowing 2rn a reasonable rate of return in the context of obligations imposed on 2rn in the Market relating to accounting separation, cost recovery and price controls (pursuant to Regulations 11 and 13 of the Access Regulations in accordance with Regulations 8 and 18 of the Access Regulations), including the setting of regulated wholesale prices.

PART III– FURTHER GENERAL PROVISIONS AND EFFECTIVE DATE

5. STATUTORY POWERS NOT AFFECTED

5.1. Nothing in this Decision Instrument shall operate to limit ComReg in the exercise and performance of its statutory powers or duties conferred on it

under any primary or secondary legislation (in force prior to or after the Effective Date of this Decision Instrument) from time to time.

6. MAINTENANCE OF OBLIGATIONS

6.1. Unless expressly stated otherwise in this Decision Instrument, all obligations and requirements contained in Decision Notices and Directions made by ComReg applying to 2rn and in force immediately prior to the Effective Date of this Decision Instrument, are continued in force by this Decision Instrument and 2rn shall comply with same.

6.2. If any Section, clause or provision or portion thereof contained in this Decision Instrument is found to be invalid or prohibited by the Constitution, by any other law or judged by a court to be unlawful, void or unenforceable, that Section, clause or provision or portion thereof shall, to the extent required, be severed from this Decision Instrument and rendered ineffective as far as possible without modifying the remaining Section(s), clause(s) or provision(s) or portion thereof of this Decision Instrument, and shall not in any way affect the validity or enforcement of this Decision Instrument or other Decision Instruments.

7. EFFECTIVE DATE

7.1. The Effective Date of this Decision Instrument shall be, unless otherwise expressly stated in this Decision Instrument, the date of its notification to 2rn and it shall remain in force until further notice by ComReg.

Commissioner

The Commission for Communications Regulation

THE X DAY OF X 2014

Annex: 4 Draft decision instrument – Broadcasting (Market B)

Q. 10 Do you believe that the draft text of the proposed decision instrument for Broadcasting – Market B is from a legal, technical and practical perspective, sufficiently detailed, clear and precise with regards to the specifics proposed? Please explain your response and provide details of any specific amendments you believe are required.

1. STATUTORY POWERS GIVING RISE TO THIS DECISION

1.1. This Direction and Decision Instrument ("Decision Instrument") is made by the Commission for Communications Regulation ("ComReg") and relates to the market for wholesale access to national terrestrial broadcast transmission services (as defined and analysed in the document entitled "*Market Review: Broadcasting Transmission Services in Ireland",* ComReg Document 13/71.

1.2. This Decision Instrument is made:

(i) Pursuant to and having regard to the functions and objectives of ComReg as set out in Sections 10 and 12 of the Communications Regulation Acts 2002 to 2011 and in Regulation 16 of the Framework Regulations; and

(ii) Having taken account of ComReg's functions under Regulation 6(1) of the Access Regulations; and

(iii) Having had regard to the Broadcasting Act 2009; and

(iv) Having, where appropriate, pursuant to Section 13 of the Communications Regulation Acts 2002 to 2011 complied with the policy directions made by the Minister for Communications, Marine and Natural Resources[108]; and

(v) Pursuant to and having had regard to the designation of the RTÉ as having significant market power on the Market under the provisions of Regulations 25, 26 and 27 of the Framework Regulations, and the accounting separation, price control and cost accounting obligations imposed on the Market pursuant to Regulations 11 and 13 of the Access Regulations; and

(vi) Having had regard to the reasoning and analysis set out in the consultation and draft decision entitled "Review of Cost of Capital - Mobile Telecommunications - Fixed Line Telecommunications - Broadcasting

[108] Policy Directions made by Dermot Ahern TD, then Minister for Communica5tions, Marine and Natural Resources, dated 21 February 2003 and 26 March 2004.

(Market A and Market B)" (ComReg Document No. 14/28) and having considered submissions received from interested parties in response to the consultation and draft decision (ComReg Document No. 14/28) following public consultation pursuant to Regulation 12 of the Framework Regulations; and

(vii) Having notified the draft measure and the reasoning on which same is based to the European Commission, BEREC and the national regulatory authorities in other EU Member States in accordance with Regulation 13 of the Framework Regulations and having taken the utmost account, pursuant to Regulation 13(6) of the Framework Regulations, of any comments made by the European Commission, BEREC and any national regulatory authority in another EU Member State in accordance with Article 7(3) of the Framework Directive[109]; and

(viii) Pursuant to Regulations 8, 11, 13 and 18 of the Access Regulations.

1.3. The provisions of the consultation and draft decision (ComReg Document No. 14/28) and the "[Title of Response to Consultation and Decision]", (Document No. 14/XX), (ComReg Decision No. XX/14) shall, where appropriate, be construed with this Decision Instrument.

PART I – GENERAL PROVISIONS

2. DEFINITIONS AND INTERPRETATION

2.1. In this Decision Instrument, unless the context otherwise suggests:

"Access Regulations" means the European Communities (Electronic Communications Networks and Services) (Access) Regulations 2011 (S.I. No. 334 of 2011);

"BEREC" means the Body of European Regulators for Electronic Communications, as established pursuant to Regulation (EC) No. 1211/2009 of the European Parliament and of the Council of 25 November 2009;

"ComReg" means the Commission for Communications Regulation, established by Part 2 of the Communications Regulation Act, 2002;

"ComReg Decision No. 11/13" means the decision contained in ComReg Document No. 13/71, entitled "*Market Review: Broadcasting Transmission Services in Ireland"*, dated 26 July 2013;

"Effective Date" means the date set out in Section 7.1 of this Decision Instrument;

[109] Directive 2002/21/EC of the European Parliament and of the Council of 7 March 2002 on a common regulatory framework for electronic communications networks and services (Framework Directive), as amended by Directive 2009/140/EC of the European Parliament and of the Council of 25 November 2009.

"Framework Regulations" means the European Communities (Electronic Communications Networks and Services) (Framework) Regulations 2011 (S.I. No. 333 of 2011);

"RTÉ" means Raidió Teilifís Éireann and its subsidiaries (excluding RTÉ Transmission Network Limited), and any Undertaking which it owns or controls, and any Undertaking which owns or controls RTÉ and its successors, affiliates and assigns;

"SMP" means significant market power, as the term is used in Regulation 25 of the Framework Regulations;

"the Market" is the market for wholesale access to DTT Multiplexing services as identified by ComReg in Section 4.1 of the decision instrument annexed to ComReg Decision No. 11/13 in which RTÉ is designated as having significant market power under the provisions of Regulations 25, 26 and 27 of the Framework Regulations;

"Undertaking" has the meaning set out in Regulation 2 of the Framework Regulations; and

"WACC" means the weighted average cost of capital.

3. SCOPE AND APPLICATION

3.1. This Decision Instrument applies to RTÉ.

3.2. This Decision Instrument is binding upon RTÉ and RTÉ shall comply with it in all respects.

PART II – DECISION

4. WACC

4.1. A nominal pre-tax WACC of XX% will be used as a basis for allowing RTÉ a reasonable rate of return in the context of obligations imposed on RTÉ in the Market relating to accounting separation, cost recovery and price controls (pursuant to Regulations 11 and 13 of the Access Regulations in accordance with Regulations 8 and 18 of the Access Regulations), including the setting of regulated wholesale prices.

PART III– FURTHER GENERAL PROVISIONS AND EFFECTIVE DATE

5. STATUTORY POWERS NOT AFFECTED

5.1. Nothing in this Decision Instrument shall operate to limit ComReg in the exercise and performance of its statutory powers or duties conferred on it under any primary or secondary legislation (in force prior to or after the Effective Date of this Decision Instrument) from time to time.

6. MAINTENANCE OF OBLIGATIONS

6.1. Unless expressly stated otherwise in this Decision Instrument, all obligations and requirements contained in Decision Notices and Directions made by ComReg applying to RTÉ and in force immediately prior to the Effective Date of this Decision Instrument, are continued in force by this Decision Instrument and RTÉ shall comply with same.

6.2. If any Section, clause or provision or portion thereof contained in this Decision Instrument is found to be invalid or prohibited by the Constitution, by any other law or judged by a court to be unlawful, void or unenforceable, that Section, clause or provision or portion thereof shall, to the extent required, be severed from this Decision Instrument and rendered ineffective as far as possible without modifying the remaining Section(s), clause(s) or provision(s) or portion thereof of this Decision Instrument, and shall not in any way affect the validity or enforcement of this Decision Instrument or other Decision Instruments.

7. EFFECTIVE DATE

7.1. The Effective Date of this Decision Instrument shall be, unless otherwise expressly stated in this Decision Instrument, the date of its notification to RTÉ and it shall remain in force until further notice by ComReg.

Commissioner

The Commission for Communications Regulation

X Day of X 2014

Annex: 5 Legal Basis

A 5.1 Pursuant to Regulation 8 of the European Communities (Electronic Communications Networks and Services)(Access)Regulations 2011 ("the Access Regulations"), where an operator has been designated has having significant market power on a relevant market as a result of a market analysis carried out in accordance with Regulation 27 of the European Communities (Electronic Communications Networks and Services) (Framework) Regulations ("the Framework Regulations"), ComReg shall impose on such operator such obligations set out in Regulation 9 to 13 of the Access Regulations as appropriate.

A 5.2 Regulation 13 of the Access Regulations provides for price control and cost accounting obligations, In particular Regulation 13(2) provides *"To encourage investments by the operator, including in next generation networks, the Regulator shall, when considering the imposition of obligations under paragraph (1), take into account the investment made by the operator which the Regulator considers relevant and allow the operator a reasonable rate of return on adequate capital employed, taking into account any risks involved specific to a particular new investment network project."* (emphasis added).

A 5.3 This consultation is part of a process whereby ComReg establishes the *"reasonable rate of return on adequate capital employed"* referred to above for the purposes of price controls in wholesale mobile call termination markets, fixed line telephone markets and broadcasting transmission services markets.

Functions and objectives of ComReg

A 5.4 The functions of ComReg are set out in section 10 of the Communications Regulation Acts 2002 to 2011 and Regulation 6 of the Access Regulations.

A 5.5 The objectives of ComReg are set out in section 12 of the Communications Regulation Acts 2002 to 2011 and Regulation 16 of the Framework Regulations. Of particular relevance to this consultation are:

- Section 12(1)(a) of the Communications Regulation Acts 2002 to 2011 provides that the objectives of ComReg in exercising its functions in relation to the provision of electronic communications networks, electronic communications services and associated facilities are *"(i)to promote competition, (ii) to contribute to the development of the internal market, and (iii) to promote the interests of users within the Community."*; and

- Section 16(1)(d) of the Framework Regulations provides that in pursuit of the objectives under section 12 of the Communications Regulation Acts 2001 to 2011 ComReg shall *"apply objective, transparent, non-discriminatory and proportionate regulatory principles by, amongst other things "promoting efficient investment and innovation in new and enhanced infrastructures…".*

Summary of consultation requirements

A 5.6 Regulation 12(3) of the Framework Regulations requires that, except in cases falling within Regulation 13(8) (i.e. exceptional cases involving urgency), where ComReg intends to take a measure which has a significant impact on a relevant market, ComReg must publish the text of the proposed measure, give the reasons for it, including information as to which of ComReg's statutory powers gives rise to the measure, and specify the period within which submissions relating to the proposal may be made by interested parties. Regulation 12(4) states that ComReg, having considered any representations received under Regulation 12(3), may take the measure with or without amendment.

A 5.7 Regulation 13(3) of the Framework Regulations provides that, upon completion of the consultation provided for in Regulation 12, where ComReg intends to take a measure which falls within the scope of Regulation 26 or 27 of the Framework Regulations, or Regulation 6 or 8 of the Access Regulations, and which would affect trade between Member States, it shall make the draft measure accessible to the European Commission, BEREC[110] and the national regulatory authorities in other Member States at the same time, together with the reasoning on which the measure is based.

[110] The Body of European Regulators for Electronic Communications as established by Regulation (EC) No. 1211/2009 of the European Parliament and of the Council of 25 November 2009, OJ No. L 337, 18.12.2009, p.1.

Annex: 6 Glossary of Terms

Term	Description
Asset Beta ("Beta")	A measure of a company's exposure to systematic risk. It is equal to the weighted sum of the betas of debt and equity, with weights determined by the level of gearing. It is also referred to the unlevered beta.
Debt Premium	The amount by which the return on a company's debt exceeds the risk free rate. The debt premium is company specific.
Equity Beta at nominal gearing	A measure of a company's equity's exposure to systematic risk at a notional level of gearing. (The systematic risk of equity changes with the level of the company's gearing.)
Equity Risk Premium ("ERP")	The additional remuneration required by investors for holding equity as opposed to risk-free assets.
Nominal pre-tax cost of debt	The return on a company's debt before adjusting for inflation. It is equal to the nominal risk-free rate plus the debt premium.
Nominal post-tax cost of equity	The nominal return on a company's equity after tax. It is equal to the risk free rate of return + (ERP * equity beta at notional gearing).
Nominal pre-tax cost of equity	The nominal return on a company's equity before taxation.
Nominal pre-tax WACC	The Weighted Average Cost of Capital before taxation. It is calculated as a weighted average of the pre-tax costs of debt and equity, with weights determined by the level of gearing.
Nominal risk-free rate	The risk-free rate in nominal terms, without adjusting for inflation.
Nominal Vanilla WACC	The Weighted Average Cost of Capital without adjusting for inflation. It is equal to the weighted average of the post-tax cost of equity and the pre-tax cost of debt, with weights determined by the level of gearing.
Notional gearing	The notional level of the proportion of a company's capital structure that is accounted for by debt. It is also the level of debt as a proportion of total assets.
Real risk-free rate	The risk-free rate adjusted for inflation.
Risk-free rate	The return an investor would receive if investing in a risk-free asset.
Tax rate	The tax rate refers to corporation tax. The rate is the statutory Irish corporation tax rate of 12.5%.

Questions

Section Page