Commission for
Communications Regulation

Cost of Capital

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

Response to Consultation and Decision

Reference: ComReg Document 14/136 & D15/14

Date: 18/12/2014

An Coimisiún um Rialáil Cumarsáide
Commission for Communications Regulation
Abbey Court Irish Life Centre Lower Abbey Street Dublin 1 Ireland
Telephone +353 1 804 9600 Fax +353 1 804 9680 Email info@comreg.ie Web www.comreg.ie

Redacted Information

Please note that this Response to Consultation is a non-confidential version of the response to consultation. Certain information within the Response to Consultation has been redacted for reasons of confidentiality and commercial sensitivity, with such redactions indicated by the symbol ✂.

Content

Section Page

Annex

Section Page

Tables

Section Page

Figures

Section Page

1 Introduction

1.1 This document is a response to the consultation published by the Commission for Communications Regulation ("ComReg") on 11 April 2014 in ComReg Document No. 14/28[1] (referred to throughout this document as "the Consultation Document") which detailed ComReg's proposed approach to estimating the appropriate costs of capital in the following three sectors:

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

1.2 This response to consultation (referred to throughout this document as the "Response to Consultation") provides a summary of ComReg's preliminary views in the Consultation Document, outlines the views of respondents and ComReg's assessment of respondents' views and indicates ComReg's final position.

1.3 ComReg acknowledges the time and effort of all respondents in preparing their responses, which are published alongside this Response to Consultation. It is not practical for ComReg to provide commentary on every issue raised, however it should be noted that all views were considered and account taken of the merits of the views expressed.

1.4 The non-confidential responses to the Consultation Document have been separately published in ComReg Document No 14/28s[2].

[1] *"Review of Cost of Capital, Mobile Telecommunications / Fixed Line Telecommunications / Broadcasting (Market A and Market B)",* Consultation and Draft Decision, Reference: ComReg 14/28, dated 11 April 2014.
[2] *"Review of Cost of Capital Mobile Telecommunications / Fixed Line Telecommunications / Broadcasting (Market A and Market B)",* Non-Confidential Submissions to Consultation Document 14/28s, Reference: ComReg 14/28s, dated 21 July 2014 ("ComReg 14/28s")

1.5 In September 2014 ComReg made the draft measures accessible to the European Commission (the "Commission")[3] pursuant to Article 7 of the Framework Directive[4] as transposed by Regulation 13 of the Framework Regulations[5]. On 13 October 2014 ComReg received a letter from the Commission making comments on the draft measures. The full text of the letter from the Commission is set out in Annex 6 of this Response to Consultation. In accordance with Regulation 14(2) of the Framework Regulations, ComReg has taken the utmost account of the comments made by the Commission, as discussed in detail in Annex 7 of this Response to Consultation.

1.6 This document is structured as follows:

- **Chapter 2** – Executive Summary: This section summarises the Response to Consultation.
- **Chapter 3** – Background: This section summarises the background to the Response to Consultation and the responses received from interested parties.
- **Chapter 4** – Methodological Framework: This section sets out the methodology that is used for calculating the costs of capital.
- **Chapter 5** – Generic WACC Parameters: This section sets out the parameters that are generic, and therefore applicable to each of the four costs of capital.
- **Chapter 6** – Mobile Telecommunications: This section sets out the parameters specific to the cost of capital for the mobile telecommunications sector.
- **Chapter 7** – Fixed Line Telecommunications: This section sets out the parameters specific to the cost of capital for the fixed line telecommunications sector.
- **Chapter 8** – Broadcasting (Market A and Market B): This section sets out the parameters specific to the cost of capital for the broadcasting sector.
- **Chapter 9** – Other issues regarding the Cost of Capital: this section covers other issues, such as circumstances in which it may be necessary to revisit the cost of capital during the period of price control as well as mechanisms for incentivising capital expenditure.

[3] Registered by the European Commission as Case Number IE20141649.
[4] 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 (the "Framework Directive").
[5] The European Communities (Electronic Communications Networks and Services) (Framework) Regulations 2011 (S.I. No. 333 of 2011) (the "Framework Regulations").

2 Executive Summary

2.1 This Response to Consultation relates to the appropriate costs of capital to be included in price controls in the mobile telecommunications, fixed line telecommunications and broadcasting sectors over the next 3-5 years.

2.2 Prior to deciding on the positions indicated in this paper and the costs of capital in each sector, ComReg conducted extensive analysis with the assistance of expert advisers European Economic Research Limited ("Europe Economics")[6], considered in detail the responses of respondents to the Consultation Document and took the utmost account of the comments provided by the Commission[7].

2.3 The correct determination of the cost of capital is a crucial element in the regulatory process. The objective for setting the costs of capital is to allow a sufficient return to investors that provides adequate incentives for investment in the respective sectors.

2.4 ComReg previously set the cost of capital for the fixed line telecommunications sector in 2000[8], 2003[9] and 2008[10]. This is the first occasion however in which ComReg has set costs of capital for both the mobile telecommunications and broadcasting sectors.

2.5 Prior to finalising the Response to Consultation ComReg commissioned Europe Economics to assess more recent data that had been used to inform the respective parameter values in calculating the WACC ("December 2014 Parameter Review"). ComReg deemed this to be appropriate as approximately ten months (January-October 2014) of additional data had become available since the analysis was published in the Consultation Document[11].

[6] The report prepared by Europe Economics entitled *"Cost of capital for Mobile Termination Rates, Fixed-Line and Broadcasting Price Controls" April* 2014 ("Europe Economics' Technical Report") is included as an Annex to this document.
[7] See in particular Annex 7 and sections 6, 7 and 8 below.
[8] *"Accounting Separation and Publication of Financial Information for Telecommunications Operators Decision Notice D9/00 and Issue for further consideration",* Document No. ODTR 00/59, 18 August 2000.
[9] *"Review of the Price Cap on certain Telecommunication Services"* Decision No. D3/03, Document No. 03/14, dated 3 February 2003.
[10] *"Response to Consultation and Decision Notice, Eircom's Cost of Capital"* Decision No. D01/08, Document No: 08/35, dated 22 May 2008
[11] Europe Economics Parameter Review December 2014

2.6 In summary, ComReg has considered the reviews of respondents and has decided that:

- The costs of capital in the mobile, fixed and broadcasting sectors will be estimated using the Capital Asset Pricing Model ("CAPM")[12] based Weighted Average Cost of Capital ("WACC") methodology.
- Both generic and industry specific parameters for each of the costs of capital will be estimated using the same approach that was consulted upon.
- Each of the respective WACCs will be set on a nominal pre-tax basis.
- The same WACC will apply to broadcasting markets A and B as ComReg does not consider that there is any compelling evidence for distinguishing between RTÉ and 2rn[13] in this context.

2.7 The costs of capital for each sector are estimated as follows:

Table 1: Nominal pre-tax Cost of Capital

Sector	Cost of Capital
Mobile Telecommunications	8.63%
Fixed Line Telecommunications	8.18%
Broadcasting (Market A)	8.11%
Broadcasting (Market B)	8.11%

2.8 The revisions to each of the above costs of capital since ComReg's preliminary views that were set out in April 2014 are solely attributable to changes resulting from consideration of more recent data following the December 2014 Parameter Review. The WACC values that were consulted upon were based on data as of end-2013 whereas the final WACC estimations incorporate data as of end-October 2014.

[12] Please refer to sections 3.4 to 3.7 of the Consultation Document for a detailed description of the CAPM-based WACC methodology.
[13] RTÉ Transmission Networks Limited t/a 2rn is a wholly owned subsidiary of RTÉ.

2.9 ComReg has "aimed-up" certain components of the WACC to reflect the asymmetry of consequences between setting the cost of capital too low and setting it too high and that the negative consequences of the former materially exceed those of the latter. Consequently the regulatory costs of capital are set above the central estimate of the market cost of capital. ComReg considers that choosing a value for the WACC that is above the regulator's expected value for the WACC has been standard practice for regulators for many years, across many regulated sectors and in particular in the communications sector, both in Europe and the rest of the world. The process by which this is done has often been implicit – via the choice of a "conservative" estimate of a particular parameter such as the beta or the equity risk premium. In effect, ComReg has made the process more transparent.

2.10 In the mobile telecommunications sector, the tariff is required as an input to the Bottom-Up Pure Long Run Incremental "BU Pure LRIC" model which is currently being developed. It is anticipated that this model, of which the proposed WACC is a key input, will be complete in the coming months.

2.11 In the fixed line telecommunications sector, the tariffs will be applied prospectively. The fixed line nominal pre-tax WACC of 10.21%, as per ComReg Decision 08/35, will remain in place as an input to existing price controls until these are reviewed, at which point it is anticipated that the most recent estimated fixed line WACC value will be required as an input to price controls in this sector.

2.12 The tariffs for the broadcasting markets apply to tariffs from 1 April 2014 as per ComReg Document No. 13/71[14] in which 2rn's and RTÉ's WACC was applied on an interim basis, while ComReg developed an appropriate WACC. This approach was outlined in ComReg Information Notice 14/15, published in February of this year[15].

2.13 On 11 September 2013, ComReg made the draft measures accessible to the Commission pursuant to Article 7 of the Framework Directive. On 23 September 2014 ComReg received a Request for Information ("RFI") from the Commission seeking additional information and clarifications in relation to the notified draft measures. ComReg provided its response to the RFI on 26 September 2014. On 13 October ComReg received a letter from the Commission making comments on the draft measures. In accordance with Regulation 14(2) of the Framework Regulations, ComReg has taken the utmost account of the comments made by the Commission[16].

[14] https://www.comreg.ie/_fileupload/publications/ComReg1371.pdf
[15] http://www.comreg.ie/_fileupload/publications/ComReg1415.pdf
[16] See in particular Annex 7.

3 Background

3.1 Introduction

3.1 The Consultation Document initiated a process to determine the appropriate costs of capital to be included in price controls in the mobile telecommunications, fixed line telecommunications and broadcasting sectors.

3.2 Following the designation of significant market power ("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 and it may also be relevant in other forms of 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.

3.3 The correct determination of the cost of capital is a crucial element in the regulatory process. It is central to any price-setting process (representing an influential component of the prices that 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[17]. Consequently ComReg has approached the setting of the cost of capital with care and following detailed analysis.

3.4 The costs 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 [18], 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.

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

[18] 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.

- Fixed telecommunications operators deemed to have SMP[19], 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.

- Broadcasters deemed to have SMP in broadcasting transmission services[20], namely 2rn and RTÉ. The broadcasting costs of capital are estimated for a hypothetical efficient broadcaster in an Irish context.

3.5 The costs of capital will be used as inputs to price controls in place in all fixed, mobile and broadcasting markets which have been found not to be effectively competitive and where relevant price controls are in place. Specifically at the date of publication of this paper these are:

- Market 1 - Retail access at a fixed location[21]
- Market 2 - Call origination on the public telephone network provided at a fixed location;
- Market 3 - Call termination on individual public telephone networks provided at a fixed location;
- Market 4 - Wholesale (physical) network infrastructure access (including shared or fully unbundled access) at a fixed location;
- Market 5 - Wholesale broadband access;
- Market 6 - Wholesale terminating segments of leased lines;
- Market 7 - Voice call termination on individual mobile networks;

[19] In the following markets, Retail Access to the Public Telephone Network at a Fixed Location for Residential and Non-Residential Customers (contained in ComReg Decision No. D12/14, Document No. 14/89),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).

[20] 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").

[21] Note: In Market 1 the WACC is currently relevant only to a small number of wholesale charges in Eircom's Reference Interconnect offer. It is proposed in Document 14/26 to regulate these charges via Market 2 in future.

- Broadcasting Market A: Wholesale access to national terrestrial broadcast transmission services; and
- Broadcasting Market B: Wholesale access to DTT multiplexing services.

3.6 The cost of capital may also be used to inform various other regulatory actions, such as the Universal Service Obligation ("USO") and decisions in relation to price caps or disputes.

3.7 ComReg previously set the cost of capital for the fixed line telecommunications sector in 2000[22], 2003[23] and 2008[24]. This is the first occasion however in which ComReg has set costs of capital for both the mobile telecommunications and broadcasting sectors.

3.2 Outcome of the Consultation Process

3.8 In accordance with Article 6 of the Framework Directive, ComReg carried out a public consultation on its approach to estimating the costs of capital over the period 11 April 2014 to 16 May 2014[25].

3.9 This Response to Consultation summarises the views of respondents received and outlines ComReg's final position regarding the costs of capital for these sectors over the next 3-5 years.

3.10 ComReg received nine responses to the Consultation Document. The respondents were as follows:

- Alternative Operators in the Communications Market ("ALTO");
- BT Communications Ireland Limited ("BT");
- Eircom Limited ("Eircom");
- Hutchison 3G Ireland Limited[26] ("H3GI");
- 2rn and RTÉ [27] ("RTÉ");

[22] *"Accounting Separation and Publication of Financial Information for Telecommunications Operators Decision Notice D9/00 and Issue for further consideration",* Document No. ODTR 00/59, 18 August 2000.
[23] *"Review of the Price Cap on certain Telecommunication Services"* Decision No. D3/03, Document No. 03/14, dated 3 February 2003.
[24] *"Response to Consultation and Decision Notice, Eircom's Cost of Capital"* Decision No. D01/08, Document No: 08/35, dated 22 May 2008
[25] The consultation period was originally due to close on 9 May 2014 but was extended to 16 May 2014.
[26] Since the date of submission this entity has changed its name to Three (Ireland) Hutchison Limited.
[27] RTÉ Transmission Networks Limited t/a 2rn is a wholly owned subsidiary of RTÉ.

- Sky Ireland ("Sky");
- Telefónica Ireland Limited ("Telefonica");
- TV3 Group ("TV3"); and
- Vodafone Ireland ("Vodafone").

3.11 ALTO, BT and Sky indicated that their responses relate to the cost of capital for fixed line telecommunications only. Eircom's response relates to the cost of capital for fixed line telecommunications and mobile telecommunications. TV3 responds in relation to the broadcasting sector. Vodafone stated that it *"concentrated on the WACC estimates for mobile and fixed communications."*

3.12 The non-confidential responses to the Consultation Document have been separately published in ComReg Document 14/28s.

3.13 In summary, the majority of respondents were broadly in agreement with the main proposals set out in the Consultation Document. However, respondents did raise some concerns and issues and these are addressed in this Response to Consultation.

3.14 On 11 September 2013, ComReg made the draft measures accessible to the Commission pursuant to Article 7 of the Framework Directive. On 23 September 2014 ComReg received a RFI from the Commission seeking additional information and clarifications in relation to the notified draft measures. ComReg provided its response to the RFI on 26 September 2014. On 13 October ComReg received a letter from the Commission making comments on the draft measures. In accordance with Regulation 14(2) of the Framework Regulations, ComReg has taken the utmost account of the comments made by the Commission[28].

3.15 Prior to finalising the Response to Consultation ComReg commissioned Europe Economics to assess more recent data that had been used to inform the respective parameter values in calculating the WACC. ComReg deemed this to be appropriate as approximately ten months (January-October 2014) of additional data had become available since the analysis was published in the Consultation Document i.e. the Consultation Document published in April was predominantly based on data as of end-2013.

[28] See in particular Annex 7

4 Methodological Framework

4.1 Introduction

4.1 This chapter discusses ComReg's methodology for estimating costs of capital for the purpose of price controls.

4.2 ComReg's preliminary views

4.2 In Chapter 3 of the Consultation Document ComReg outlined in detail its proposed methodological framework for assessing the costs of capital, namely the CAPM-based WACC methodology. The chapter also described alternative methods for estimating the cost of equity such as the Dividend Growth Model, the Fama-French three factor model and other multi-factor models.

4.3 ComReg was of the preliminary view that the WACC and CAPM is the most straightforward framework for estimating the costs of capital for fixed line telecommunications, mobile telecommunications and the broadcasting sectors. ComReg indicated that it sees no persuasive evidence to depart from taking the same approach in the current cost of capital review as it had in previous cost of capital estimations. ComReg's view was supported by Europe Economics' Technical Report[29] which noted that switching from the CAPM would represent a significant departure from regulatory precedent. ComReg proposed to maintain a consistent methodological approach for each of the WACC estimations.

4.4 In the Consultation Document, ComReg asked the following question:

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.

[29] See ComReg Document No. 14/28a: Cost of Capital for Mobile, Fixed Line and Broadcasting Price Controls - Report for ComReg

4.3 Views of respondents

Responses to Consultation Question 1.

4.5 Of the nine responses to the Consultation Document three did not offer any specific views or opinions in relation to this question. They were:

- BT;
- H3GI; and
- Sky.

4.6 Of the remaining six responses, three agreed with ComReg's preliminary views. They were:

- ALTO;
- Eircom; and
- Telefonica.

4.7 Two respondents, RTÉ and Vodafone partially agreed with ComReg's preliminary views. TV3 disagreed with ComReg's proposed approach of using the standard WACC-CAPM methodology to estimate the cost of capital for the Irish broadcasting sector.

4.8 ALTO generally supported ComReg's proposals regarding the CAPM-based WACC methodology.

4.9 BT welcomed the proposal to reduce the fixed line cost of capital. While it did not answer the specific questions posed, it agreed that the cost of capital should be based on an efficient capital structure.

4.10 While Eircom agreed that "*the CAPM based WACC methodology continues to be the most appropriate basis for calculating cost of capital estimates*", it noted that *"it is merely an estimate"* and *"very difficult to test in practice"*. Eircom noted that it is *"important to consider the implications of eircom's status as a privately held company both in terms of the liquidity premium and in terms of the cost of capital"* and that the CAPM model assumes that all assets are divisible and marketable.

4.11 RTÉ agreed that it was appropriate to estimate the cost of capital using the WACC and CAPM framework. It disagreed with the following:

(i) the exclusion of a "small company premium". It considered that there was precedent in the United Kingdom for the inclusion of such a premium and indicated that an estimate of 1% would be appropriate for 2rn and RTÉ; and

(ii) the omission of an "Irish Equity Issuance Premium". It suggested the addition of an Irish Equity Issuance Premium of at least 0.25% to the post tax cost of equity;

4.12 Telefonica agreed that a CAPM-based WACC was the most appropriate basis for calculating cost of capital.

4.13 TV3 considered that the WACC review was based on *"flawed and unsustainable"* assumptions. TV3 considered the assumption of setting the rate of return in the broadcasting market at the cost of capital that would occur in a competitive market to be wrong and inconsistent with the regulatory framework. It also argued that it was *"not appropriate to ignore the effect of state backing on RTE's cost of capital".* In TV3's view it is *"not appropriate to ignore the effect of state ownership and allow RTE to recover costs of capital which are evidently higher and less efficiently incurred than its actual costs of capital".*

4.14 Vodafone supported the use of the CAPM framework, but argued that ComReg's implementation of this framework was flawed and provides counter-intuitive outcomes. Vodafone made the following comments:

- ComReg's implementation of the CAPM framework suggests that the pre-tax WACC is increasing with all levels of gearing, thus indicating that the optimal capital structure is without any debt;
- The Modigliani-Miller theory put forward by Europe Economics has *"largely been replaced by alternative theories, including later variations of Modigliani-Miller"*; and
- The output of the WACC calculation appears counterintuitive as it results in a higher equity beta for fixed compared to mobile "*despite the inputs to the WACC calculation (gearing and asset beta) implying that the level of risk associated with fixed is lower than the risk associated with beta.*"

4.4 ComReg's assessment of responses

4.15 Having considered the views of respondents, ComReg sets out its views below.

4.16 ComReg notes Eircom's comments about the liquidity premium. The inclusion of a liquidity premium would be a departure from the standard CAPM based WACC methodology which ComReg considers to be the most appropriate methodology for estimating the cost of capital. Eircom has not offered a specific methodology for altering the CAPM to include a liquidity premium or evidence that such a model would be superior. Hence, ComReg does not propose to make provision for a liquidity premium when estimating the costs of capital.

4.17 ComReg disagrees with RTÉ that a small company premium should be included when estimating the cost of capital. ComReg is not aware of any evidence that demonstrates that small companies have consistently higher costs when raising capital compared to large companies. The Consultation Document demonstrated the reasons for choosing the standard CAPM framework as opposed to other methodologies that include a small company premium.

4.18 ComReg notes RTÉ's proposals in relation to the inclusion of Irish equity issuance premium. ComReg is of the view that if such a premium existed, it would have been reflected in a higher Irish Equity Risk Premium ("ERP") estimate. However, as highlighted in the Consultation Document, the Dimson Marsh and Staunton[30] ("DMS") estimates do not consider that the Irish ERP is above the average European ERP. Moreover, in 2014 the Competition Commission[31] rejected a Northern Ireland-specific ERP. Thus, ComReg's view is that no additional Irish equity issuance premium should be added to the cost of capital.

[30] Dimson, Elroy, Marsh, Paul and Staunton, Mike (2002) "Global evidence on the equity risk premium" London: London Business School.
[31] Competition Commission (2014) "Northern Ireland Electricity Limited price determination", p. 13-7 – 13-20.

4.19 ComReg disagrees with the arguments expressed by TV3. In ComReg's view, the purpose of price regulation is to introduce precisely those constraints on pricing the absence of which is the rationale for that price regulation - i.e. to impose as a price cap the price that would prevail, in equilibrium, in a competitive or contestable market. Economic theory indicates that the equilibrium price that would prevail in a competitive or contestable market is the price that would be charged by an efficient profit-maximising firm making (only) normal profit.

4.20 ComReg notes that there is no assumption, in regulatory theory, that a charity or government-backed firm will, in equilibrium, be able to charge systematically lower prices than a profit-maximising firm for providing the same quality of goods or services. On the contrary, the general idea in regulation is that State backing does not improve consumer welfare by resulting in sustainably lower equilibrium prices for the same quality of goods/services relative to other firms and this generally holds across a range of sectors including energy, communications, water and transport. It would be undesirable if State backing resulted in the systematic charging of lower prices for the same quality of goods/services in a competitive market as it would result in the foreclosure of competitive firms. Hence, this theory suggests that it will always be appropriate to base price caps upon the price that an efficient firm making normal profit would charge in a competitive market. For this reason, ComReg also does not agree that the State's involvement in RTÉ should affect the estimation of the broadcasting WACC.

4.21 ComReg notes that the pricing control in the broadcasting markets, into which the estimated WACC will be a key input, is based upon an efficient profit-maximising firm making a normal profit in a competitive market i.e. OPEX and depreciation, are estimated on the basis of an efficient company[32]. In this regard, ComReg notes TV3's agreement that the "Hypothetical Efficient Broadcaster" model is ''*appropriate for determining RTÉ's efficient operating and capital expenditure costs*''.

4.22 Therefore, in ComReg's view, it is appropriate and consistent that the reasonable rate of return (i.e. the WACC value) is also estimated on the basis of an efficient company rather than actual cost of capital faced by RTÉ. To do otherwise would result in a price cap that would be below the price levels occurring in the competitive market since the estimated WACC would be below the costs of capital faced by the efficient firms limited by shares.

[32] A summary of the approach to the price control is contained at paragraph 8.235 – 8.311 of ComReg Document No. 13/71. https://www.comreg.ie/_fileupload/publications/ComReg1371.pdf

4.23 ComReg does not share Vodafone's view that the implementation of the CAPM framework is flawed. While the straightforward application of the WACC formula would imply that the cost of capital is increasing with all levels of gearing, it is not correct to assume that the cost of debt is independent of gearing as the risk of bankruptcy increases significantly at high levels of gearing and this is reflected via the higher debt premium. It is also important to stress that the cost of debt was individually estimated for three separate industries in respect of which investors have different perceptions of risk and thus, it is not straightforward to compare gearing levels and the associated costs of debt as between the sectors.

4.24 ComReg does not agree that the Modigliani-Miller theorem has largely been replaced by alternative theories. In the Consultation Document ComReg indicated why the standard CAPM framework using the Modigliani-Miller theorem is still the most suitable framework to use when estimating the cost of capital. ComReg notes that in 2012[33] the Competition Commission rejected BT's attempts to rely on an alternative version of the Modigliani-Miller theorem in challenging the WBA charge control. However the Competition Commission was of the view that BT's proposed approach had not been shown to be a better alternative than the more orthodox Modigliani-Miller based approach adopted by Ofcom.

4.25 ComReg disagrees with Vodafone's view that the WACC calculation produces counterintuitive outcomes. ComReg notes that the relationship between asset and equity betas is dependent on the level of gearing, which was derived using two different sets of analysis. In the Consultation Document ComReg highlighted the reasons for selecting the ranges and point estimates for all of the aforementioned parameters. The proposed gearing level of an efficient fixed line operator reflects the gearing level of comparators with investment grade credit ratings thus, indicating that fixed line operators can support higher levels of gearing when compared to pure mobile operators with the same credit rating.

[33] Competition Commission (2012) "British Telecommunications plc v Office of Communications supported by British Sky Broadcasting Limited TalkTalk Telecom Group plc", Case 1187/3/3/11.

4.5 ComReg's position

4.26 Having fully considered the views expressed by respondents ComReg remains of the view that that the CAPM-based WACC methodology, as well as all associated assumptions, forms the most appropriate basis for separately estimating the nominal pre-tax cost of capital to be used in price controls for the (i) wholesale mobile call termination, (ii) fixed line telecommunications and (iii) broadcasting sectors.

5 Generic WACC parameters

5.1 Introduction

5.1 This chapter discusses the parameters which ComReg considers to be generic to each of the sectors considered for the purpose of the estimation of the costs of capital.

5.2 ComReg's preliminary views

5.2 In Chapter 4 of the Consultation Document ComReg outlined in detail its proposals for the various parameters considered to be common across each of the sector specific WACC estimates. These generic parameters were:[34]

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

Risk-free rate

5.3 ComReg proposed a nominal risk-free rate range of 3.28%-4.55% with a point estimate of 4.09%. ComReg calculated the nominal risk free rate using the Fisher Equation which involves separate estimations of the real risk-free rate and inflation. ComReg's preliminary views of these factors were as follows:

- ComReg was of the preliminary view that a real risk-free rate range is 1.75% - 2.5% with a point estimate of 2.3% was appropriate for the real risk-free rate. This was based on evidence from the yields on German government bonds and the risk-free rates indicated by Irish regulatory precedent.

- The 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%. This was based on Bloomberg's forecast of 1.5% annual inflation for 2015 and the expectation that Irish annual inflation will be close to the ECB's inflation target of '*below, but close to 2%*'.

[34] The Consultation Document should be read in full for a complete assessment of the analysis ComReg undertook to arrive at its preliminary views for both the generic and sector specific parameters.

Equity Risk Premium

5.4 The Europe Economics Technical Report estimated the ERP based on ERP estimates provided by DMS and review of ERP values applied in previous regulatory WACC estimations in Ireland (including those of other Irish regulators). The DMS estimate of ERP arithmetic mean for Ireland was 4.6%, with the Irish specific rate similar to the estimated European wide ERP of 4.8%. Regulatory precedent suggests an ERP range of 5% to 6% with the most recent decisions in the lower part of this range. ComReg analysed Europe Economics approach to estimating the ERP and agreed with its proposal of a range of 4.60% to 5.25% and a point estimate of 5.00% for ERP to apply to each of the costs of capital estimated.

Taxation

5.5 ComReg was of the preliminary view that Europe Economics' proposal that the costs of capital should be calculated on a pre-tax basis using the statutory corporation tax rate of 12.5% was appropriate. ComReg noted that this approach would be consistent with the treatment of taxation in previous reviews of the cost of capital in fixed line telecommunications.

Summary of proposed '*Generic'* Parameters

5.6 The proposed parameters detailed above are required as inputs to the respective WACC formulae and are summarised as follows:

Table 2: Summary of proposed Generic Parameters

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%

5.7 In the Consultation Document, ComReg asked the following question:

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.

5.3 Views of respondents

Responses to Consultation Question 2.

5.8 Of the nine responses to the Consultation Document three did not offer any specific views or opinions in relation to this question. They were:

- BT;
- H3GI; and
- Sky.

5.9 Of the remaining six responses, three agreed with ComReg's preliminary views. They were:

- ALTO;
- Vodafone (although Vodafone restricted its comments to the determination of the risk free rate); and
- RTÉ.

5.10 One respondent, Telefonica agreed in general with ComReg's preliminary views, however it made a number of observations including that consideration should be given to using bond yields from other larger countries such as Spain and Portugal as a base for the risk free rate.

5.11 Two respondents disagreed with ComReg's preliminary views. They were:

- Eircom; and
- TV3.

Risk-free rate

5.12 Eircom considered that basing the risk-free rate on the yields of German government bonds is not an appropriate approach. Eircom argued that the proposed range is set at a low level and noted the average risk-free rate set by regulatory decisions in Ireland since 2000, which it says is 2.5%.

5.13 In relation to the rate of inflation used to calculate the nominal risk free rate Eircom considered that the ECB target rate of 2.0% should be applied.

5.14 Vodafone agreed with ComReg's approach to estimating the real risk-free rate and noted that simply relying on unadjusted yields of German government bonds would not have been appropriate.

5.15 Telefonica agreed, in general, with ComReg's proposals. However, it was of the view that consideration should be given to using other larger countries (such as Spain or Portugal) when estimating the risk-free rate as Germany's sovereign yields reflect that country's performance and *"do not reflect the general experience of sovereign bond yields across Europe."*

Equity Risk Premium

5.16 In relation to the estimated ERP Eircom considered *that "the evidence presented…suggesting that the ERP for Ireland is lower than the European wide ERP (4.6% vs. 4.8%), is inconsistent with current market expectations in the aftermath of the country's recent economic collapse and expert advice provided to the company that indicates that Irish ERP can be expected to significantly exceed European averages"*. Furthermore, Eircom disagreed with the approach used to estimate the ERP and stated that it "*does not accept that a long term range in excess of 100 years is necessarily appropriate data to estimate a medium term equity risk premium.*" Eircom believes that "*a more medium term review of the ERP is required. Whilst the worst of the European economic crisis may be behind us the European markets are still extremely volatile")*." ✂[35].

5.17 TV3 contended that RTÉ is *"owned by the State and is a non-profit making organisation"* and thus, does not have risks associated with holding equity. Therefore, TV3 believed that *"there is no basis for inclusion of an equity premium in the cost of capital for RTE".* If an ERP was to be included, TV3 argued that it would be inappropriate to base it on average Irish market data given that RTÉ does not reflect the risk profile of average Irish companies.

Taxation

5.18 Eircom considered that tax legislation in Ireland "*ensures that operators are subject to effective rates of tax which are in excess of the statutory rate…"*

General comments related to generic parameters

5.19 RTÉ agreed with ComReg's preliminary views with regard to the methodology for estimated generic WACC parameters. It also considered that the specific parameter value estimates are appropriate as minimum values.

[35] ✂

5.20 Eircom expressed its belief that the WACCs proposed in the Consultation Document are set at ''*unjustifiably low levels*'' and noted the adjustments to the WACC made in the previous review of the cost of capital for the fixed line sector. Eircom was of the view that due to the ongoing uncertainty due to Ireland's emergence out of the financial crisis (which according to Eircom is not finished yet) the uplift should continue to be applied.

5.4 ComReg's assessment of responses

5.21 Having considered the views of respondents, ComReg sets out its views under the relevant subject headings below.

Risk-free rate

5.22 ComReg disagrees with Eircom's position that the yields of German government bonds should not be used in the assessment of this parameter. In the Consultation Document ComReg highlighted the reasons why the interest rate on the German government bonds is the best proxy for the real risk-free rate. ComReg also notes that German government bonds were not the only source of evidence relied upon when estimating the risk-free rate and that weight was also given to regulatory precedent in Ireland, which indicated higher values for the risk free rate relative to what German government bonds suggested. Hence, ComReg has proposed the risk free rate above the level indicated by German government bonds. In this regard, ComReg notes that Eircom did not propose an alternative figure for the risk-free rate. ✂

5.23 In relation to the estimate of inflation, ComReg notes that the ECB target rate is *"close, but below 2.0%*'' and highlights the fact that current inflation is well below this rate[36]. Thus, ComReg does not agree with Eircom's view that the inflation rate should be set at 2.0%.

5.24 ComReg notes Vodafone's agreement with the approach proposed to estimate the real risk-free rate.

[36] The Harmonised Index of Consumer Prices in Ireland increased by 0.6% year-on-year to August 2014.
http://www.finance.gov.ie/sites/default/files/Irish%20Monthly%20Economic%20Bulletin%20(MEB)%20-%20October%202014.pdf

5.25 ComReg notes Telefonica's general agreement with ComReg's estimates and parameters. In relation to Telefonica's suggestion that consideration be given to using bond yields from other larger countries such as Spain or Portugal as a basis for the real risk free rate, ComReg notes that the bond yields from Spain and Portugal were assessed in the Consultation Document, but were not included in the estimation of the risk-free rate as the yields on Spanish and Portuguese government bonds demanded risk premia (as evident from Figure 1 in the Consultation Document) due to the perceived default risk. This was the main reason why Irish government bonds were not used as a basis for the determination of the risk-free rate. In paragraph 4.8 and paragraph 4.9 of the Consultation Document ComReg highlighted the reasons why the interest rate on the German government bonds is the best proxy for the real risk-free rate, these reasons remain valid. Moreover, ComReg notes that this was not the only source of evidence relied upon when estimating the risk-free rate.

5.26 Therefore, ComReg remains of the view that its overall approach to estimating the pre-aimed up risk-free rate is appropriate. However, in light of the time that has passed since ComReg consulted on the Cost of Capital in April, and the fact that this analysis was based on data that was predominantly up to end-2013, ComReg has assessed more recent data used to inform the parameters – both generic and industry specific – that feed through to the calculated costs of capital.

5.27 The real risk free rate presented in the Consultation Document was informed by data predominantly up to end-2013. Following the December 2014 Parameter Review ComReg decided that the original estimate of the real risk free rate point estimate of 2.3% should be revised downwards. The new information which forms the basis for this revision is presented below.

5.28 In the Consultation Document the real risk free rate was based on key evidence such as:

- regulatory precedent, which suggested a recent (post-2008) real risk-free rate range of 1.5% to 2.5%[37],
- a forecast for Irish economic growth of around 2% out to 2015[38], and

[37] Europe Economics (2014) "Cost of capital for mobile, fixed line and broadcasting price controls: report for ComReg", Table 4.1, p16.

[38] Europe Economics (2014) "Cost of capital for mobile, fixed line and broadcasting price controls: report for ComReg", Figure 4.6, p26.

- an average real yield on German government bonds of 1.87% from 2000-2013 and 2.58 from 2000-2007[39].

5.29 Following the December 2014 Parameter Review, new information which has emerged since ComReg stated its view on the above parameters, is as follows:

- A forecast for Irish economic growth of around 2.55% out to 2015 i.e. an increase of 0.55% compared to what was presented in the Consultation Document.
- An average real yield on German government bonds of 1.86% from 2000-October 2014.
- Eurozone growth risks moving primarily to the downside, especially with a significant risk of deflation.

5.30 The 2.3% point estimate that was consulted upon was based upon the assumption of further normalisation from the economic environment in 2013. However, Europe Economics acknowledge that this assumption was accompanied with an element of uncertainty over when such normalisation would be achieved. While ComReg and Europe Economics remain of the view that there will be further normalisation, the latest information on movements in bond yields, including both the levels of German yields and the spreads of peripheral Eurozone over German bond yields, suggest that full normalisation might be further away than previously thought.

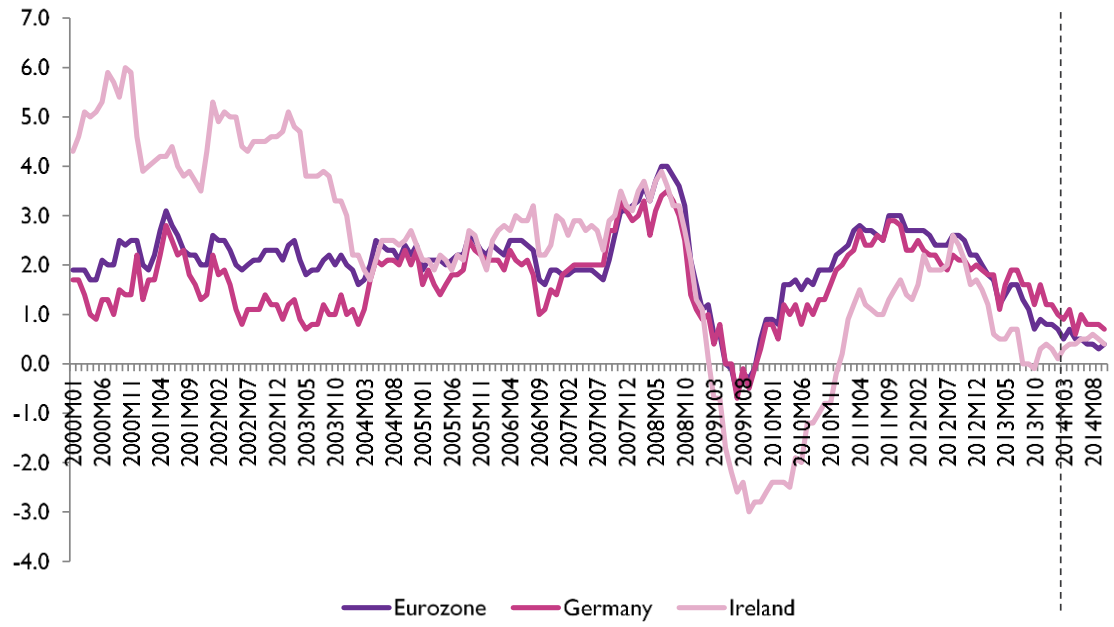
5.31 Taking into account key information in the December 2014 Parameter Review, ComReg has revised the real risk free rate to 2.1%, down from ComReg's preliminary view of 2.3% presented in the Consultation Document.

5.32 The original point estimate of 1.75% for inflation in the Consultation Document was within the proposed range of 1.5-2%.[40] Key information that informed this point estimate consisted of a forecast for inflation of 1.5% out to 2015[41] coupled with the ECB target rate of close to but below 2%[42].

39 Europe Economics (2014) "Cost of capital for mobile, fixed line and broadcasting price controls: report for ComReg", Table 4.3, p25.
40 Europe Economics (2014) "Cost of capital for mobile, fixed line and broadcasting price controls: report for ComReg", p27-28.
41 Europe Economics (2014) "Cost of capital for mobile, fixed line and broadcasting price controls: report for ComReg", Figure 4.8, p28.
42 Europe Economics (2014) "Cost of capital for mobile, fixed line and broadcasting price controls: report for ComReg", p28.

5.33 The December 2014 Parameter Review assessed new information on inflation and has resulted in ComReg revising its original point estimate for inflation. This includes a revised inflation forecast of 1.1%[43] out to 2015. Figure 1 below plots the year-over-year inflation in Eurostat's harmonised index of consumer prices for Ireland, Germany, and the Eurozone.

Figure 1: Year-on-year HICP inflation in Ireland, Germany, and the Eurozone



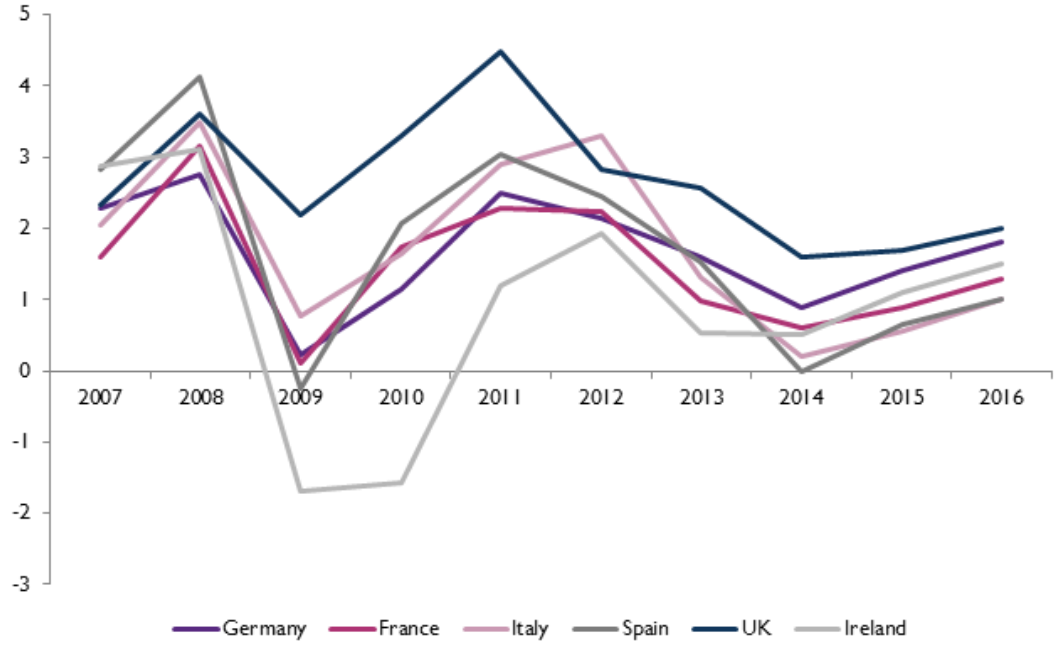
Source: Eurostat.

Source: Eurostat.

5.34 Figure 2 depicts the Bloomberg consensus for the year on year inflation forecasts for certain core and peripheral European countries, including Ireland, UK and Germany.

[43] See Europe Economics Parameter Review December 2014

Figure 2: Annual year-over-year inflation rates and consensus forecasts



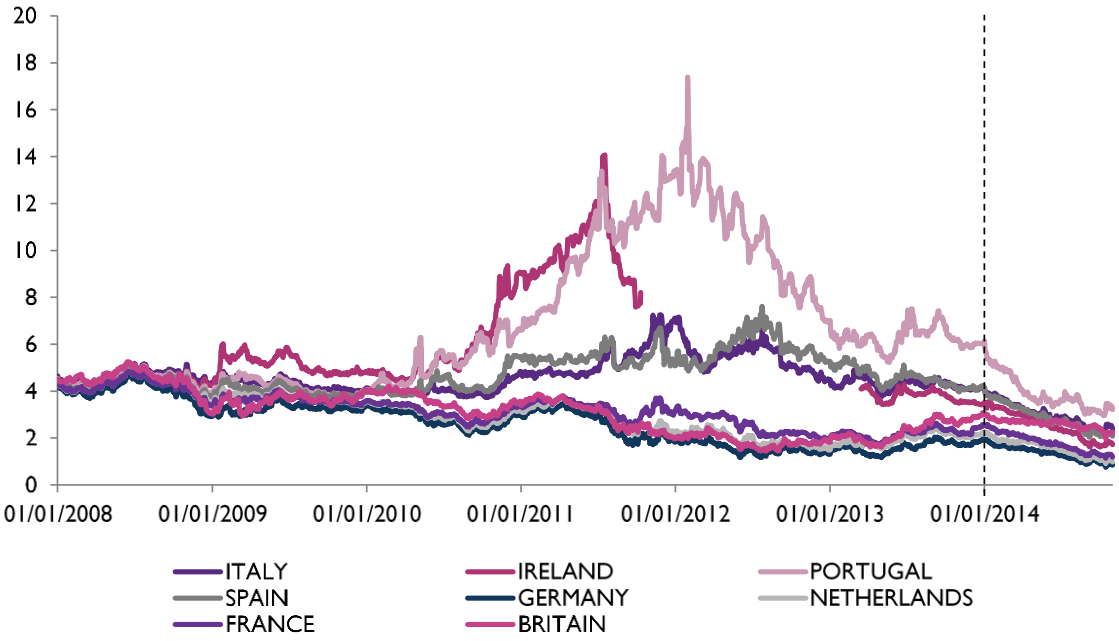
Note: 2014-2016 figures are forecasts.
Source: Bloomberg.

5.35 Both of the above figures are consistent with the analysis published in the Consultation Document showing an increasing inflationary trend for Ireland, although it has transpired that inflation in 2014 has not picked up at the pace that was originally envisaged in the Consultation Document. In light of the above information, and that recent data shows the expected inflation for 2015 to be 1.1%, ComReg has decided to revise the point estimate of inflation to 1.5% from 1.75%.

5.36 In the Consultation Document, ComReg and its consultants Europe Economics were of the preliminary view that the point estimate for the nominal risk-free rate was 4.09% and within a range of 3.28 per cent to 4.55 per cent.[44]

[44] Europe Economics (2014) "Cost of capital for mobile, fixed line and broadcasting price controls: report for ComReg", p2-5, 17-32.

Figure 3: Nominal yields on European sovereign 10 year bonds



Source: Bloomberg.

5.37 As can be seen from Figure 3, there remains a premium for bonds from peripheral as opposed to core countries. In the case of Ireland, this premium has fallen significantly relative to its peak in 2011, though it remains in excess of the yields on bonds issued for core Eurozone countries.

5.38 Following the updated real risk free rate of 2.1% and the updated inflation rate of 1.5%, the updated nominal risk free rate becomes 3.63%[45] i.e. a reduction of 0.92% compared to the point estimate of 4.55% for the nominal risk free rate in the Consultation Document.

Equity Risk Premium

5.39 Having considered Eircom's comment on the ERP estimation, ComReg remains of the view that using evidence on long-run equity returns from the DMS database for the purpose of estimating the ERP is appropriate as this is a well-established approach, supported by regulatory precedent.

5.40 ✂

[45] For more information on the calculation, see: Europe Economics (2014) "Cost of capital for mobile, fixed line and broadcasting price controls: report for ComReg", p17.

5.41 ComReg does not agree with TV3's view. ERP is one of the components in the standard CAPM-based WACC methodology. In paragraphs 4.19 to 4.22 ComReg has explained the reasons for estimating WACC on the basis of the CAPM methodology and the thought experiment of estimating the costs of capital for an efficient company. Hence, given that ComReg has estimated the cost of capital for an efficient company, it is ComReg's view that relying on the DMS database for estimating the ERP is appropriate. This approach is utilises a well-established methodology and is supported by regulatory precedent.

5.42 Therefore, ComReg remains of the view that its approach to estimating the ERP is appropriate.

5.43 In the Consultation Document an arithmetic average ERP from DMS of 4.6 per cent for Ireland was evident over the period 1900-2012.[46]

5.44 ComReg considered more recent information that has become available on ERP in 2014. Up to date DMS figures[47] are presented in Table 3 below.

[46] Europe Economics (2014) "Cost of capital for mobile, fixed line and broadcasting price controls: report for ComReg", p29-31. Note that this is the ERP over bonds, not bills.

[47] Dimson, Elroy, Marsh, Paul, and Staunton, Mike (2014) *Credit Suisse Global Investment Returns Sourcebook 2014*, p28.

Table 3: Worldwide equity risk premia over bonds, 1900-2013

Country	Geometric mean %	Arithmetic Mean %	Standard error %	Standard dev. %	Minimum return%	Min year	Maximum return %	Max year
Australia	5.7	7.6	1.9	20.0	-53.4	2008	66.3	1980
Austria	2.9	22.0	14.6	154.1	-81.1	1924	1571.8	1945
Belgium	2.4	4.5	2.0	21.1	-53.8	2008	80.1	1940
Canada	3.5	5.2	1.7	18.3	-40.7	2008	48.6	1950
Denmark	2.1	3.6	1.7	17.9	-54.3	2008	74.9	1972
Finland	5.3	8.9	2.8	30.2	-55.4	2008	173.1	1999
France	3.2	5.5	2.1	22.8	-49.2	2008	84.3	1946
Germany	5.3	8.7	2.7	28.6	-51.5	2008	116.6	1949
Ireland	2.6	4.6	1.8	19.7	-66.9	2008	83.2	1972
Italy	3.4	6.8	2.8	29.5	-48.1	2008	152.2	1946
Japan	5.1	9.2	3.1	32.7	-45.2	2008	193.0	1948
The Netherlands	3.4	5.7	2.1	22.3	-56.4	2008	107.6	1940
New Zealand	3.9	5.5	1.7	18.0	-59.7	1987	72.7	1983
Norway	2.4	5.4	2.6	27.8	-57.8	2008	192.1	1979
Portugal	3.0	7.7	3.1	33.1	-71.9	1978	142.9	1980
South Africa	5.4	7.2	1.8	19.6	-36.1	2008	70.9	1979
Spain	2.2	4.2	1.9	20.8	-43.7	2008	69.1	1986
Sweden	3.1	5.4	2.0	21.5	-49.5	2008	84.3	1999
Switzerland	2.1	3.7	1.6	17.6	-41.3	2008	51.9	1985
United Kingdom	3.9	5.2	1.6	17.2	-38.4	2008	80.8	1975
United States	4.5	6.6	1.9	20.8	-50.1	2008	57.2	1933
Europe	3.3	4.6	1.5	16.1	-48.0	2008	53.6	1923
World ex-USA	2.9	4.0	1.4	14.7	-48.0	2008	35.8	1999
World	3.3	4.6	1.5	15.5	-48.2	2008	37.5	1958

Source: Dimson, Marsh, and Staunton (2014)

5.45 The arithmetic[48] average Irish ERP over bonds from 1900-2013 is 4.6 per cent, which is the same as the figure presented in the Consultation Document. As the relevant data have not materially changed, ComReg does not change its point estimate for ERP of 5.0% originally presented in the Consultation Document.

[48] For a discussion on different averaging methods in calculating the ERP, see: Europe Economics (2014) "Cost of capital for mobile, fixed line and broadcasting price controls: report for ComReg", Figure 4.8, p30-31.

Taxation

5.46 ComReg does not consider that the approach to taxation when estimating the cost of capital should change. ComReg notes that Eircom has not provided any evidence that the effective rate, over the long-term, is materially different to the statutory rate. The most important cause of differences between statutory and effective tax rates, in the short run, is usually caused by the use of accelerated depreciation for tax purposes. This would tend to lower effective tax rates rather than increase them, notwithstanding this the two rates should converge in the long run. (We note that it is difficult to demonstrate this empirically in Eircom's case by reference to its published accounts because of the impact of losses and high interest charges). Thus, ComReg remains of the view that a consistent approach in the treatment of taxation should be used when estimating the cost of capital.

5.47 The point estimate of 12.5% for the tax rate – a generic parameter – was not reassessed in the December 2014 Parameter Review as ComReg is not aware of any changes or planned changes to the headline rate of corporation tax in Ireland. Therefore, ComReg remains of the view that its approach in relation to taxation based on the statutory tax rate of 12.5% is appropriate.

General comments related to generic parameters

5.48 ComReg notes RTÉ's agreement on the approach taken to estimate the generic parameters and the proposed point estimates of these parameters.

5.49 ComReg does not share Eircom's view that further upward adjustments to the WACC are required. ComReg disagrees that the proposed range for the risk-free rate was set at a low level. In ComReg's view, the current macroeconomic environment is markedly different from the environment in which the previous review of the fixed line cost of capital took place. This is evident from the latest estimates of Gross Domestic Product ("GDP") growth and the reduced yields on Irish government's bonds. Thus, ComReg remains of the view that the Irish economy will continue to normalise over the period of the price controls and that no further uplifts to the estimated costs of capital are required.

5.5 ComReg's position

5.50 Having taken into consideration the views expressed by respondents, and having taken the utmost account of the comments received from the Commission pursuant to Article 7(3) of the Framework Directive[49], ComReg remains of the view that its proposed approach to calculating the generic parameters (nominal risk free rate, ERP and taxation) proposed in the Consultation Document remains appropriate. Following the December 2014 Parameter Review, ComReg has decided to revise the point estimate for the nominal risk free rate to 3.63%.

Table 4: Summary of Generic Parameters

	Preliminary (April 2014)	Final (December 2014)
Nominal risk free rate	4.09%	3.63%
Equity Risk Premium	5.00%	5.00%
Taxation	12.5%	12.5%

[49] Received in response to ComReg's notification to the European Commission on 8 September 2014. See Annex 7 of this Response to Consultation for a further consideration.

6 Mobile Telecommunications

6.1 Introduction

6.1 This chapter discusses the appropriate parameter values to be used in estimating the cost of capital for mobile telecommunications.

6.2 ComReg's preliminary views

6.2 In Chapter 5 of the Consultation Document ComReg outlined in detail its proposals in relation to estimating the appropriate parameter values to be used in calculating the cost of capital for mobile telecommunications. Those parameters were:

- Gearing;
- Asset beta, debt beta and equity beta; and
- Debt premium.

Gearing

6.3 ComReg explained its proposed approach to gearing for the purposes of the mobile telecommunications WACC estimation. ComReg examined gearing levels of companies that provide telecommunication services in European countries. The analysis of actual gearing levels of pure-play mobile telecommunications companies indicated gearing in the region of 20%. However, operators owning both mobile and fixed networks tend to have gearing levels significantly higher than this (approximately 40% to 60%).

6.4 A notional gearing level of 30% was proposed by ComReg for the mobile telecommunications sector. This chosen level of gearing was broadly consistent with the observed gearing level of mobile operators outside of Ireland, regulatory precedent 'the Europe Economics' suggested target credit rating of Baa3/BBB-[50].

Asset beta, debt beta and equity beta

6.5 In Chapter 5 of the Consultation Document ComReg explained its proposed approach to estimating asset beta, debt beta and equity beta for the purposes of the mobile telecommunications WACC estimation.

[50] Vodafone, with a strong credit rating of A3/A-, had an average gearing of 22% (as of end-2013). It is ComReg's view however that a hypothetical efficient mobile telecommunications operator in the Irish market would have a credit rating that is not as strong as Vodafone's i.e. typically in the region of Baa3/BBB, and that Vodafone's gearing of 22% is therefore unlikely to be an accurate representation of a hypothetical efficient mobile telecommunications operator's gearing.

6.6 ComReg noted that two year asset betas for mobile telecommunications companies in Europe have generally converged since 2008 thus, indicating an approximate range of 0.4 to 0.6. In addition, Ofcom's most recent estimation of 0.56 in March 2011[51] was also considered[52]. ComReg's preliminary view was that asset beta point estimate of 0.55 should be used for the purpose of estimating the mobile telecommunications WACC.

6.7 For the purpose of determining the equity beta ComReg was of preliminary view that debt beta should be set to 0 thus resulting in an equity beta of 0.79

Debt premium and cost of debt

6.8 In Chapter 5 of the Consultation Document ComReg proposed the inclusion of a forward looking (i.e. excluding adjustments for the embedded debt) debt premium of 1.75% for the purposes of the mobile telecommunications WACC estimation. This debt premium has two components:

- Debt premium specific to mobile telecommunications; and
- Debt issuance premium specific to mobile telecommunications companies operating in Ireland.

6.9 The mobile telecommunications debt premium was determined by taking into account regulatory precedent and observing the spreads of corporate debt yields over benchmark bonds of the same maturity (namely German Government bonds). ComReg considered Vodafone, Orange and Deutsche Telekom to be appropriate comparators, and on this basis identified that a hypothetical efficient mobile operator would have a debt premium of 1.5%.

6.10 In order to determine the debt issuance premium specific to mobile telecommunications companies providing services in Ireland, the borrowing costs of Irish utility companies were compared to similar companies across Europe. The evidence suggested that Irish utilities' borrowing costs are at most 0.75 percentage points higher than borrowing costs of a similar French or German company. Thus, a range of 0 and 0.75 percentage points was considered to be appropriate. Taking into account the improving Irish economy and a more normal growth path in sight, a point estimate of 0.25% was chosen.

[51] http://stakeholders.ofcom.org.uk/binaries/consultations/mtr/statement/MCT_statement_Annex_6-10.pdf p 85
[52] It is noted that in its June 2014 Consultation, Ofcom proposed a point estimate of 0.54. See http://stakeholders.ofcom.org.uk/binaries/consultations/mobile-call-termination-14/annexes/z_Annex_11_to_17.pdf p 72

Summary of Mobile Telecommunication specific parameters

6.11 The proposed mobile telecommunication specific parameters, for use in the WACC-CAPM formula, are summarised as follows:

Table 5: Summary of Mobile Telecommunication Specific Parameters

Parameter	Range	Point Estimate
Gearing		30%
Asset Beta	0.40 – 0.60	0.55
Debt Premium	1.50% - 2.25%	1.75%

Aiming up

6.12 ComReg proposed 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, since the negative consequences of the former were deemed to materially exceed those of the latter. Therefore, ComReg proposed that the regulatory cost of capital should be set above the central estimate of the estimated market cost of capital.

6.13 Europe Economics analysed variances and aimed up to the 66th percentile (one standard deviation above the mean) on certain parameters that feed through to the preliminary estimate of the WACC[53]. The aiming up methodology was applied 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 was aimed up on the basis of applying a standalone uplift of 0.3%[54]. The tax rate and notional gearing are not aimed up because there is comparatively little uncertainty surrounding these parameters.

6.14 As 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 did not believe that it was 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 was of the preliminary view that aiming up should apply to the risk-free rate only.

[53] 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. The precise confidence interval at which it lies in each sector has been estimated and presented in Table 2.2 (Europe Economics analysis of aiming up and simulation) of Europe Economics Analysis of Responses to ComReg WACC Consultation – June 2014.

[54] 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.

6.15 The following table illustrates the pre and post aimed up values for the following parameters outlined in the Consultation Document:

Table 6: Preliminary Mobile Telecommunications – Pre and Post Aimed Up Values

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

6.16 The construction of the overall nominal pre-tax WACC required point estimates from each of the parameter ranges presented. As outlined in the Consultation Document the point estimates were not necessarily taken from the midpoint of the range and, as such, high and low points of parameter ranges were used to construct an overall WACC range[55].

[55] The table presents the WACC as if calculated on the basis of the lowest and highest parameters. However, in calculating both the low and high nominal pre-tax WACC it should be noted that the lowest or highest risk free rate and ERP cannot be used simultaneously as they both tend to move inversely to each other.

Table 7: Proposed 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%

6.17 The nominal pre-tax WACC was preliminarily estimated to be 8.17%, with high and low bounds estimated to be at 9.28% and 6.16% respectively (see Table 7).

6.18 Aiming up certain parameters estimates (Table 6) implied 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[56].

6.19 The nominal pre-tax WACC percentage after aiming up in Table 7 is the cumulative value after aiming up was applied to the parameters in Table 6[57].

[56] Europe Economics suggests aiming up certain parameter point estimates to the 66th percentile, which reflects one standard deviation above the mean.
[57] Rounding differences may occur due to the calculation of figures to two decimal places.

6.20 In the mobile telecommunications sector, the tariff is required as an input to the Bottom-Up Pure Long Run Incremental "BU Pure LRIC" model which is currently being developed. It is anticipated that this model, of which the proposed WACC is a key input, will be complete in the coming months.

6.21 In the Consultation Document, ComReg asked the following question:

> 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.

6.3 Views of respondents

Responses to Consultation Question 3.

6.22 Of the nine responses to the Consultation Document, six did not offer any specific views or opinions in relation to this question. They were:

- ALTO;
- BT;
- H3GI;
- RTÉ;
- Sky; and
- TV3.

6.23 Three responses engaged specifically with ComReg's preliminary views. They were:

- Eircom, who disagreed with ComReg's preliminary views;
- Telefonica, who offered comments in relation to specific aspects of ComReg's preliminary views; and
- Vodafone, who agreed with the high level approach to estimating the WACC for the mobile sector, but expressed concerns that ComReg has incorrectly treated some of the inputs used.

6.24 ComReg has grouped respondents' views under the relevant subject headings below.

Gearing

6.25 Eircom did not agree that the gearing ratios for mobile telecommunications was necessarily lower than that for fixed line telecommunications. Eircom was of the view that mobile telecommunications companies had significant levels of investment in intangible assets. In Eircom's view, recently made investments, as in 4G Spectrum, and related infrastructure will have necessitated increased gearing and this should be reflected in the proposed gearing levels.

6.26 Telefonica noted the differing values for gearing in fixed and mobile industries. In Telefonica's view, the corporate group is the correct source of gearing estimates and in that context, for many Irish operators fixed and mobile gearing levels are essentially the same. Telefonica urged ComReg to consider the fact that both Vodafone and Telefonica are part of multi service operating companies and as such have higher gearing ratios than pure mobile only operators. It also noted the increased levels of gearing in recent years for the companies tracked by Europe Economics.

6.27 Vodafone agreed with the "high level approach" taken by ComReg in relation to the estimation of the cost of capital for mobile telecommunications, but made the observation that the available evidence suggests higher gearing differential between fixed line and mobile industries than the differential proposed by ComReg.

Asset Beta, Debt Beta, Equity Beta

6.28 Eircom considered that the asset beta for mobile operators may be "*more materially higher than that of purely Fixed Line operators*'' and argued that ComReg made excessive reference to an Ofcom 2011 determination with little regard taken to WACC determinations in France as described in the Europe Economics Report.

6.29 Telefonica noted an increase in asset betas in 2013 and stated its belief that asset betas are likely to remain at a high level.

6.30 Vodafone considered that the available evidence suggests the asset beta differential between fixed and mobile industries to be higher than the differential proposed by ComReg;

Debt premium and cost of debt

6.31 Eircom was of the opinion that ComReg did not take sufficient account of existing market conditions when estimating the debt premium. In Eircom's view Irish State controlled utilities (ESB and Bord Gais), do not reflect market sentiment toward Irish telecommunications companies generally. Eircom also noted the exclusion of Telefonica and peripheral Eurozone countries from the analysis.

6.32 Vodafone considered that applying the same debt premium for mobile telecommunications and fixed line telecommunications is only appropriate when the gearing spread (between mobile telecommunications and fixed line telecommunications) is greater than that assumed by ComReg.

Aiming up

6.33 In the respective summary of submissions, Vodafone and Eircom expressed general agreement with the principle of aiming up.

6.4 ComReg's assessment of responses

6.34 Having considered the views of respondents, ComReg sets out its views under the relevant subject headings below.

Gearing

6.35 In relation to Eircom, Telefonica and Vodafone's comments that the fixed and mobile gearing levels differ, ComReg notes that gearing for fixed and mobile industries was derived from two separate sets of analysis and this is why two gearing estimates are different. In the Consultation Document ComReg highlighted the reasons for using a notional gearing approach as opposed to gearing indicated by market evidence. The proposed gearing reflects the level of gearing that an efficient mobile operator could support in order to maintain an investment grade credit rating. ComReg also notes that the implied differential between mobile and fixed gearing is in line with regulatory precedent - mobile operators in general had lower gearing than fixed-line incumbent operators. The average mobile gearing was around 20 per cent at the end of 2013 and around 22 per cent between 2012 and 2013. This compares with average gearing levels of around 42 per cent and 46 per cent in those two time periods, respectively, for fixed-line. This is based on an analysis of the European countries in the Consultation Document which has been supplemented with a number of North American companies[58].

[58] Table 1.1 - Europe Economics Analysis of Responses to ComReg WACC Consultation – June 2014

6.36 ComReg also notes Eircom's comments in relation to the likely increase in the level of gearing due to additional investments made by mobile operators. In order for an additional investment to increase the gearing of a company, it must be overwhelmingly financed by debt. It is not clear to ComReg why this would necessarily be the case in practice. The mobile telecommunications WACC assumes that an efficient operator would finance new investment with a debt/equity split of 30%/70% thus, maintaining its overall gearing level at 30% in order to secure an investment grade credit rating.

6.37 As noted previously, the proposed gearing for mobile telecommunications reflects the level of gearing that an efficient mobile operator could support in order to maintain an investment grade credit rating.

6.38 ComReg notes Telefonica's comments in relation to gearing. ComReg reiterates that the cost of capital estimated in the Consultation Document represents the cost of capital incurred by an efficient pure mobile operator in an Irish context. The difference between gearing levels of operators that were considered to be more representative of pure mobile operators (such as Vodafone) and multi service operators (such as BT) was highlighted in the Consultation Document. Therefore ComReg has placed more weight on purer-play mobile service providers when estimating gearing for the mobile sector.

6.39 The respective point estimates for gearing – an industry specific parameter – was not reassessed in the December 2014 Parameter Review for several reasons. Firstly, Europe Economics is not aware of any new data that would potentially justify a reassessment of its original advice surrounding the estimation of the respective point estimates for gearing. Secondly, the rationale presented for determining the point estimates in the Consultation Document was not heavily influenced by up to date information.

6.40 Therefore, ComReg remains of the view that its approach to estimating gearing for a Hypothetical Efficient Mobile Operator, with a point estimate of 30%, is appropriate.

Asset Beta, Debt Beta, Equity Beta

6.41 ComReg does not agree with Eircom's assertion that asset beta of mobile operators may be materially higher than the asset beta of purely fixed operators. The asset betas for fixed and mobile sectors were derived from two separate sets of analysis and the difference between these parameters was not targeted by ComReg. In the Consultation Document ComReg highlighted that five year rolling asset betas suggest a lower asset beta for purely mobile operator and a higher asset beta for fixed line operator, thus lowering the differential between these parameters compared to the differential indicated by two year rolling asset betas.

6.42 ComReg also does not agree that excessive reference was made to Ofcom's 2011 WACC determination. Europe Economics placed appropriate weight on post-financial crisis regulatory precedent and the survey of BEREC members (including France).

6.43 ComReg notes that the ranges and point estimates for individual industry specific parameters were derived from two separate sets of analysis. The separate sets of analysis in the Consultation Document were based upon international evidence and regulatory precedent. Thus, the differentials between the parameters of fixed and mobile industries were estimated independently of each other.

6.44 ComReg notes Telefonica's view in respect of the asset beta. ComReg considers that the general increase in asset betas in 2013 was appropriately reflected in the proposed range and point estimates of the asset betas.

6.45 ComReg disagrees with Vodafone's assertion that the implied differential between asset betas in the fixed and mobile industries is higher than the differential proposed in the Consultation Document. ComReg notes that the ranges and point estimates for individual industry specific parameters were derived from two separate sets of analysis. These sets of analysis were based upon international evidence and regulatory precedent. Thus, the ranges and point estimates for asset betas of fixed and mobile industries were estimated independently of each other. In the Consultation Document ComReg highlighted that five year rolling asset betas suggest a lower asset beta for purely mobile operator and a higher asset beta for fixed line operator, thus lowering the differential or "wedge" between these parameters compared to the "wedge" indicated by two year rolling asset betas. Furthermore, the proposed mobile asset beta was consistent with:

- Ofcom's May 2014 draft determination proposed a fixed line asset beta of 0.5. Ofcom's June 2014 MTR consultation proposed a mobile asset beta of 0.54 to calculate the WACC to be used in its MTR pricing model; and

- The Brattle Group's advice to Ofcom in the context of the recent MTR price control (it estimated two year asset betas for UK mobile network operators at 0.49).

6.46 ComReg remains of the view that its approach to estimating the asset beta for a Hypothetical Efficient Mobile Operator is appropriate. However, taking into consideration more recent data (i.e. January-October) used to inform this parameter value, ComReg has decided to revise the point estimate upwards from 0.55 to 0.65. The reasons for this are set out below.

6.47 In the Consultation Document, ComReg proposed a point estimate of 0.55 for the mobile telecommunications asset beta and this was based on a notional gearing of 30%. As part of the aiming-up process 0.05 was subsequently added to this point estimate.

6.48 The mobile telecommunications asset beta presented in the Consultation Document was informed by data predominantly up to end-2013. The December 2014 Parameter Review assessed new information that has emerged since ComReg's preliminary view presented in the Consultation Document detailing a mobile telecommunications asset beta of 0.55. This new information is presented below.

6.49 In the Consultation Document the mobile telecommunications asset beta was based on key information such as:

- regulatory precedent, which suggested a range between 0.56 and 1.35.[59]

- an empirical observation of mobile providers' betas, which suggested a range of around 0.4 to 0.6.[60]

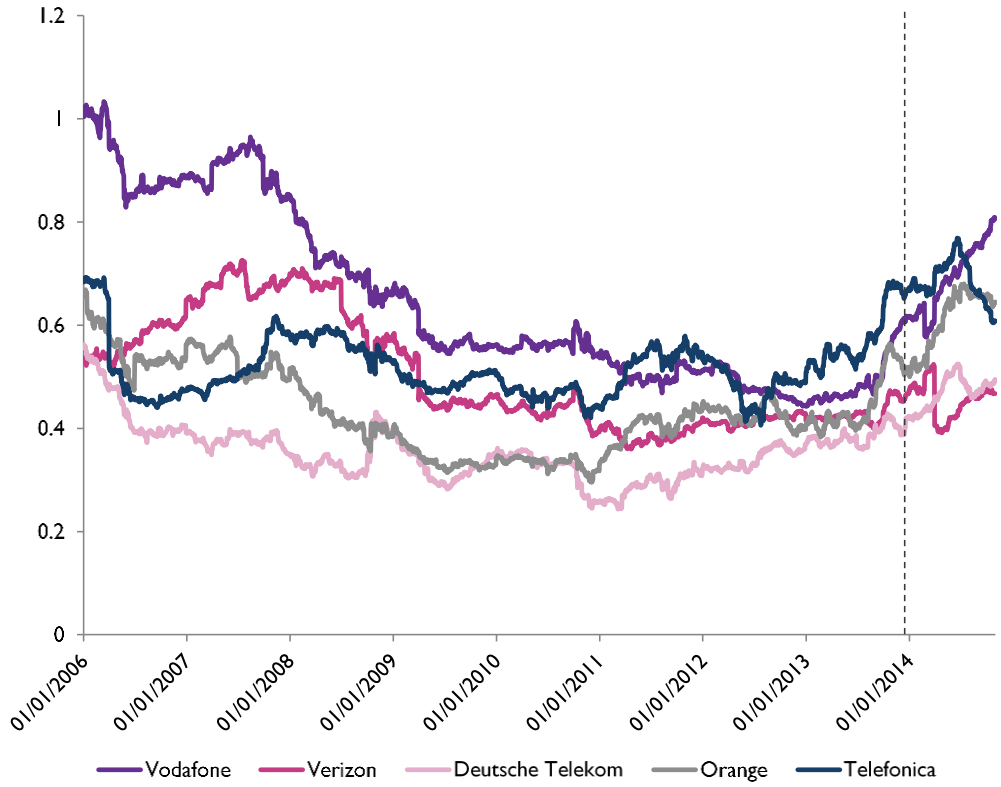
- a survey of BEREC members suggested ranges, which indicated that the ranges assessed by ComReg were reasonable.[61]

[59] Europe Economics (2014) "Cost of capital for mobile, fixed line and broadcasting price controls: report for ComReg", Table 6.7, p50.
[60] Europe Economics (2014) "Cost of capital for mobile, fixed line and broadcasting price controls: report for ComReg", p52.
[61] Europe Economics (2014) "Cost of capital for mobile, fixed line and broadcasting price controls: report for ComReg", p51.

6.50 The December 2014 Parameter Review assessed new information, which has resulted in ComReg revising its original point estimate for the mobile telecommunications asset beta. The new information is as follows:

- Recent market evidence on mobile providers' betas suggests that betas have increased in 2014. This is presented in the case of two year rolling asset betas below.

Figure 4: Two year rolling average asset betas for mobile operators



Source: Bloomberg.

6.51 Figure 4 above shows that two year rolling asset betas for various mobile operators have changed since the end of 2013. Notably, Vodafone's beta has risen from around 0.61 at the end of 2013 to around 0.80 at the end of October 2014. Deutsche Telekom, Orange, and Telefonica have seen asset beta changes of +0.07, +0.14, and -0.06, respectively. The average between the four operators for October 2014 was around 0.64, compared with an average of roughly 0.55 in December 2013.

6.52 Taking into account key information that has emerged since the Consultation Document published in April 2014, ComReg has decided to revise the mobile telecommunications asset beta upwards to 0.65, from 0.55.

6.53 In the Consultation Document, ComReg proposed to use a debt beta of zero having considered debt betas of zero and 0.1. ComReg did not receive any response to the consultation which disagreed with this approach to estimating the mobile telecommunications WACC. ComReg notes that the debt beta was not reassessed in the December 2014 Parameter Review due to the low materiality that having a non-zero debt beta has on the overall WACC. The views of both ComReg and its consultants Europe Economics have not changed since the Consultation Document.

6.54 ComReg remains of the view that its approach to estimating the mobile telecommunications WACC with a zero debt beta is appropriate.

Debt premium and cost of debt

6.55 ComReg does not share Eircom's view in relation to the debt premium. ComReg notes that debt premium analysis was based on debt premium observed in European countries, primarily those in the Eurozone. Hence, in ComReg's view the analysis presented in the Consultation Document captures the dynamics of European telecommunication companies raising debt in public capital markets. ComReg considers that comparing spreads of average European utility bonds over German Government bonds (proxy for the risk-free rate) is an appropriate basis for estimating debt issuance premium specific to mobile telecommunications companies operating in Ireland. Europe Economics outlined the reasoning for choosing this approach in its Technical Report. Eircom has not provided any evidence that an alternative method would provide a better estimate. Thus, in ComReg's view, 0.25% Irish operator premium is a reasonable reflection of existing market conditions.

6.56 In relation to Vodafone's comments on the debt premium, ComReg notes that this parameter was calculated on the basis of two different sets of evidence for mobile and fixed line sectors[62]. In other words, the parameters were calculated independently of each other and based on the best available evidence. In paragraph 6.35[63] ComReg has explained its reasoning for selecting the gearing values for mobile and fixed line sectors (and the resulting spread between the two parameters). Hence, ComReg does not agree with Vodafone's view that debt premium for fixed and mobile sectors are equal only when the gearing differential between the two sectors is much larger than the 10% differential implied by ComReg's analysis.

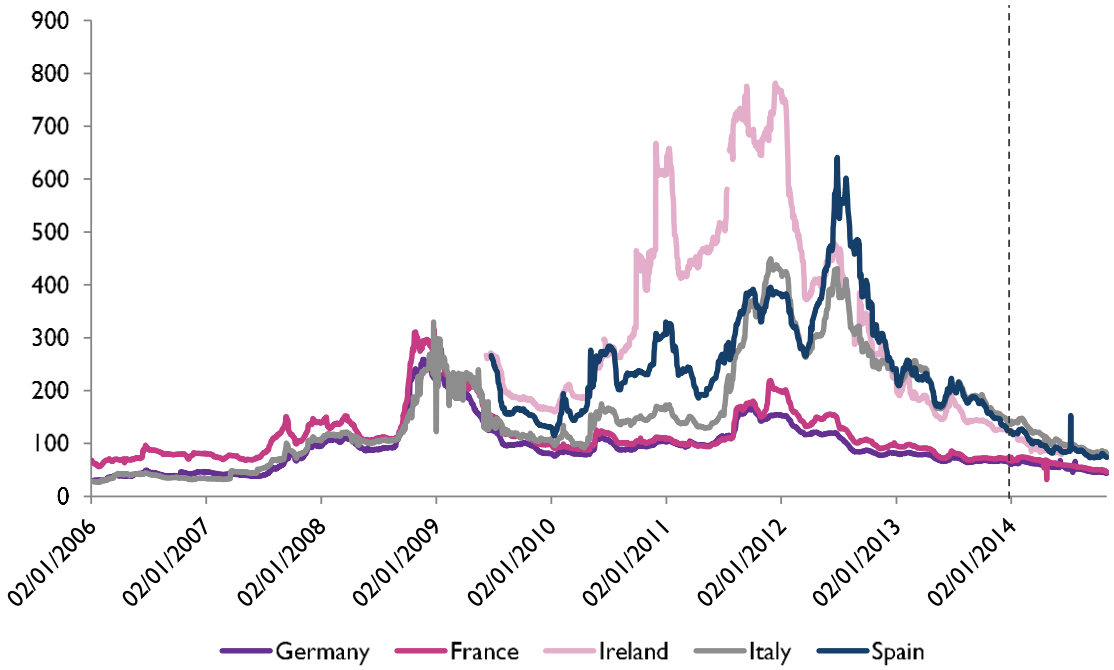
[62] See Section 6 and Section 7 of Europe Economics Technical Report and in particular Figure 6.5 and Figure 7.5.
[63] See also section 1.5.3 of Europe Economics Analysis of Responses to ComReg WACC Consultation – June 2014.

6.57 ComReg remains of the view that its approach to estimating the debt premium for a Hypothetical Efficient Mobile Operator is appropriate. However, taking into consideration more recent data used to inform this parameter value, ComReg has decided to revise the point estimate downwards from 1.75% to 1.45%.

6.58 In the Consultation Document, ComReg proposed a point estimate of 0.25%, which was based on a forward looking range of 0-0.55% for an Irish operator debt premium. The spot premium was 0.55%. This original point estimate was based on an analysis of spreads of European regulated utility companies which suggested an Irish operator debt premium of between 0 and 0.75% towards the end of 2013.

6.59 The December 2014 Parameter Review suggests that the recent spot premium has declined from 0.55% to 0.30% for the most recent observation shown in Figure 5 below.

Figure 5: Spreads of average European utility bonds over benchmark government bonds



6.60 In spite of this downward trend, ComReg has not revised its original point estimate as it had previously accounted for the downward trend in its analysis, which has subsequently materialised. Therefore ComReg has applied a 0.25% Irish operator debt premium to the WACC before the aiming up process.

6.61 In the Consultation Document, ComReg proposed a point estimate of 1.75% for debt premium composed of 1.5% for the mobile telecommunications debt premium and 0.25% for an Irish operator premium. The range for the debt premium was 1.5%-2.25%.

6.62 The mobile telecommunications debt premium presented in the Consultation Document was informed by data predominantly up to end-2013. The December 2014 Parameter Review assessed new information that has emerged since ComReg's preliminary view presented in the Consultation Document detailing a mobile telecommunications debt premium point estimate of 1.75%.

6.63 In the Consultation Document the mobile telecommunications debt premium was based on key information such as:

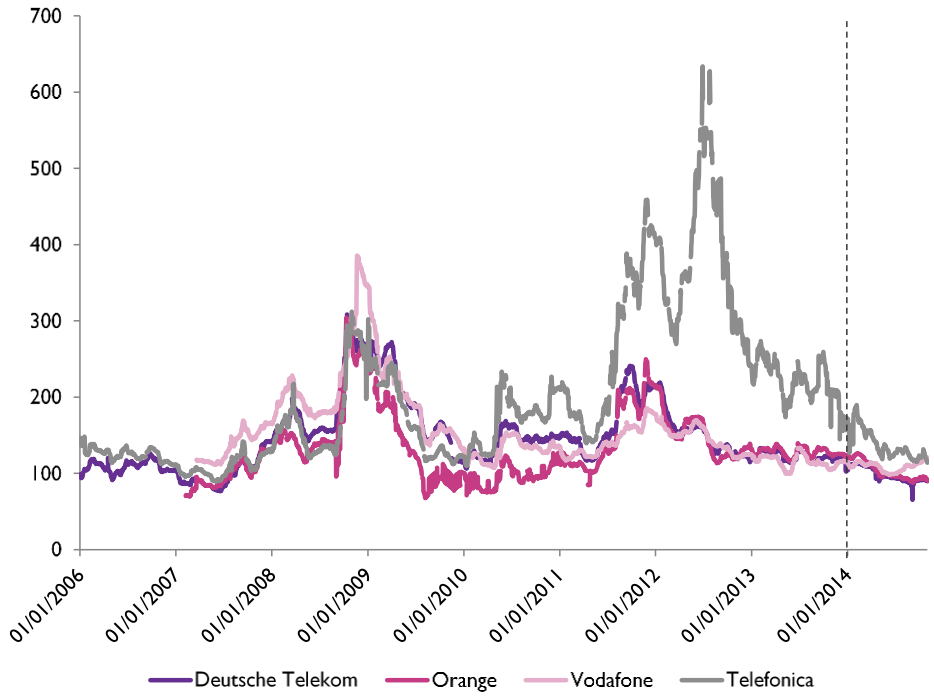
- regulatory precedent, which suggested a range between 1.0% and 4.0%.[64]
- an empirical observation of the debt premium range suggested a relatively wide range of around between 1.0% and 2.0%.[65]

6.64 New information assessed in the December 2014 Parameter Review is as follows:

- Debt premiums have declined in 2014, with a more recent range being 1.0%-1.3%, as per Figure 6 below.

[64] Europe Economics (2014) "Cost of capital for mobile, fixed line and broadcasting price controls: report for ComReg", Table 6.10, p54.
[65] Europe Economics (2014) "Cost of capital for mobile, fixed line and broadcasting price controls: report for ComReg", p56.

Figure 6: Average debt premiums over the risk-free rate for European telecommunications companies (bps)



Source: Bloomberg and Europe Economics calculations.

6.65 The debt premiums for the telecommunication companies have broadly fallen over the years 2012-2014. For the year 2014, the debt premium has continued to descend for all the companies with the exception of Vodafone whose premium over the risk free rate rises starting July 2014, albeit only slightly.

6.66 Given recent changes in market data, ComReg has therefore decided to update the original point estimate for the mobile telecommunications debt premium to 1.2% (down from 1.5% in the Consultation Document) which leads to an updated point estimate of 1.45% when the 0.25% Irish operator premium is incorporated to the debt premium.

6.67 Taking into account key information that has emerged since the Consultation Document published in April 2014, ComReg has updated the mobile telecommunications debt premium to 1.45%, down 0.3% from 1.75%.

6.68 Therefore, for the purposes of the mobile telecommunications WACC estimation, the forward looking nominal pre-tax cost of debt should be 5.08% i.e. 3.63% (risk free rate) + 1.45% (debt premium).

Aiming up

6.69 ComReg notes Vodafone's and Eircom's agreement with the aiming up principle.

6.70 ComReg considers that choosing a value for the WACC that is above the regulator's expected value for the WACC has been common practice for regulators for many years, across many regulated sectors and in particular in the communications sector, both in Europe and the rest of the world. The process by which this is done has often been implicit – via the choice of a "conservative" estimate of a particular parameter such as the beta or the equity risk premium. In other situations, it is done by choosing, as a point estimate, a value above the mid-point of quoted range for the WACC as a whole or some key building block thereof.

6.71 This implicit conservativeness is not straightforward to evidence, but the practice of choosing a point estimate above the mid-point can be seen in a number of determinations. This practice was explored in more detail by the consultancy "Economic Insights" in a recent report for the New Zealand Commerce Commission[66]. Of 53 decisions reviewed in that document, 35 involved choices of the point determination of the WACC at above the mid-point of the quoted range. The authors remarked that, for those cases where the point estimate used of the WACC is not explicitly above the mid-point of the range, "*This often reflects adopting a conservative view of the market risk premium and equity beta that are used in the Capital Asset Pricing Model (CAPM) for determining the return on equity, where 'conservative' means erring on the high side.*"[67]

6.72 The justification for such conservativeness was set out by the UK regulator Ofcom in its 2005 methodological paper[68] where Ofcom stated '*Traditionally, Ofcom has considered that the downside risk associated with taking too low a value for the ERP (discouraging discretionary investment) is more detrimental to the interests of consumers than taking too high a value (leading to higher prices to customers) and has tended to the higher end of the possible range. Having reviewed its approach in this area, Ofcom remains of this view…*"[69]. This methodological position was confirmed in Ofcom's Final Statement of August 2005[70].

[66] ''Regulatory Precedents for Setting the WACC within a Range'' published on 16 June 2014. The report is available at http://www.comcom.govt.nz/dmsdocument/11974
[67] Page 3 of Economic Insights report.
[68] "Ofcom's approach to risk in the assessment of the cost of capital" published on 26 January 2005. The report is available at http://stakeholders.ofcom.org.uk/binaries/consultations/cost_capital/summary/cost_capital.pdf
[69] Page 4 of Ofcom's report.
[70] — See paragraph 4.73 of http://stakeholders.ofcom.org.uk/binaries/consultations/cost_capital2/statement/final.pdf

6.73 Europe Economics Technical Report has argued that since most of the regulators apply aiming up principle (although in an implicit way), it would be better to do so via explicit procedure that ensured that the degree of aiming up was transparent and that the regulator did not aim up by more than is required to meet its regulatory objectives. The aiming up procedure proposed by Europe Economics to ComReg was not intended to result in ComReg making a final determination figure that was higher than ComReg would have chosen absent aiming up. In Europe Economics' view, by making the aiming up procedure systematic the objective is to reduce the degree of aiming up needed by ensuring that no more upward adjustments are made than is required to meet the relevant regulatory objectives.

6.74 ComReg agrees with Europe Economics and is of the opinion that utilising the aiming up approach increases the transparency of the cost of capital estimation.

6.75 Therefore, in light of the above and having taken utmost account of the comments of the European Commission, ComReg remains of the view that it is appropriate to aim up the cost of capital estimation for a Hypothetical Efficient Fixed Line Operator.

6.76 The following three parameters were aimed up in the Consultation Document and despite the nominal risk-free rate and asset betas for mobile and fixed-line being updated following the December 2014 Parameter Review, Europe Economics does not recommend changing the absolute level of aiming up on these parameters.

- Nominal risk-free rate
- Asset beta
- Debt premium[71]

6.77 The impact of incorporating more recent data into the final calculations of the respective WACCs has been minor with respect to the uncertainty regarding the nominal risk-free rate. Europe Economics has considered the impact to be of such insignificance that it does not change its recommendation on the appropriate level of aiming-up for the nominal risk-free rate and that it therefore should continue to be aimed up in absolute terms by 0.1%.

[71] The component of the debt premium that is the Irish operator premium has not been updated since the Consultation Document and therefore the level of aiming up on this particular component of the debt premium remains the same.

6.78 Despite reassessing asset betas to reflect more recent data, Europe Economics remains of the view that the fixed-line and mobile asset betas should both continue to be aimed up by 0.5 and that the broadcasting asset beta should continue to be aimed up by 0.7. Asset beta standard errors have not changed materially since the analysis that was presented in the Consultation Document and this is confirmed by data up to the end-October 2014. This is outlined in Table 8 below.

Table 8: Mobile Telecommunications: Asset beta standard errors[72]

Mobile	2 year	5 year
Vodafone	0.064	0.035
Deutsche Telekom	0.058	0.035
Orange	0.067	0.033
Telefonica	0.053	0.039

Source: Bloomberg; Europe Economics analysis.

6.79 As Europe Economics has not revised its view on the Irish operator premium component of the debt premium, it recommends that the WACC should be calculated on the basis of continuing to aim up the debt premium by 0.3%.

6.5 December 2014 Parameter Review

6.80 For reasons already specified in paragraph 2.6 above, ComReg has not deviated from the methodology detailed in the Consultation Document when estimating the final cost of capital for mobile telecommunications. In setting the final WACC it was however considered prudent to do a final assessment of more recent data in addition to the data that informed ComReg's preliminary views in the Consultation Document published in April 2014. Certain information was deemed by Europe Economics to be material and this led to a revised Mobile Telecommunications WACC compared to the preliminary estimate presented in the Consultation Document.

6.81 The following is a summary of revisions that apply to the final Mobile Telecommunications WACC since ComReg outlined its preliminary views on the Mobile Telecommunications WACC in the Consultation Document, published in April 2014.

[72] Table 8 is comparable to Table 6.14, p59 (Mobile) in the Europe Economics Technical Report.

Generic Parameters in which revisions apply to each final cost of capital

- The real risk free rate has been revised to 2.10% from 2.30%.
- Inflation has been revised to 1.50% from 1.75%.

Parameters in which revisions apply to the cost of capital specific to the industry

- Asset Beta has been revised upwards to 0.65 from 0.55.
- Debt Premium has been revised downwards to 1.45% from 1.75%.

Table 9: Preliminary and Final Cost of Capital for Mobile Telecommunications

	Preliminary (April 2014)	Final (Dec 2014)
Gearing (%)	30%	30%
Tax rate (%)	12.5%	12.5%
Real risk-free rate (%)	2.30%	2.10%
Inflation (%)	1.75%	1.50%
Nominal risk-free rate (%)	4.09%	3.63%
Equity risk premium (%)	5.00%	5.00%
Asset Beta	0.55	0.65
Equity Beta at notional gearing	0.79	0.93
Nominal post-tax cost of equity (%)	8.02%	8.27%
Nominal pre-tax cost of equity (%)	9.16%	9.46%
Debt Premium (%)	1.75%	1.45%
Nominal pre-tax cost of debt (%)	5.84%	5.08%
Nominal Vanilla WACC (%)	7.37%	7.32%
Nominal pre-tax WACC (%)	8.17%	8.14%
Aimed-Up Nominal pre-tax WACC (%)	8.66%	**8.63%**

Source: Europe Economics' calculations from sources previous cited

6.6 ComReg's position

6.82 Having taken into consideration the views expressed by respondents, and having taken the utmost account of the comments received from the Commission pursuant to Article 7(3) of the Framework Directive[73], ComReg remains of the view that its proposed approach to estimating the WACC for the mobile communications sector is appropriate. Following the December 2014 Parameter Review, ComReg has decided to revise the Mobile Telecommunications WACC downward, slightly, by 0.03% from the preliminary value set out in the Consultation Document. Therefore, ComReg is of the view that a nominal pre-tax WACC of 8.63% (based on the aimed up parameters illustrated in Table 10) should be used in the mobile telecommunications sector.

Table 10: Final Mobile Telecommunications Pre and Post Aimed Up Values

Parameter	Pre aiming up	Post aiming up
Nominal risk free rate	3.63%	3.73%
Notional gearing	30%	30%
Asset beta	0.65	0.70
Debt premium	1.45%	1.75%

6.83 The cumulative effect of the revisions to the final Mobile Telecommunications WACC, when compared to ComReg's preliminary views set out in April 2014, is a reduction in the aimed up nominal pre-tax WACC of 0.03% to 8.63%[74].

[73] Received in response to ComReg's notification to the European Commission on 8 September 2014. See Annex 7 of this Response to Consultation for a further consideration.

[74] As per footnote 53, 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. The precise confidence interval at which it lies in each sector has been estimated as being aimed-up at the 84th percentile under a one-tailed test and the accompanying analysis is presented in Section 6.4 of Europe Economics WACC Parameter Review - December 2014. The uplift to the baseline WACC, following this aiming up methodology, is 5.96%, resulting in a final WACC of 8.63% (i.e. 8.14% * 1.06 = 8.63%). Rounding differences may occur due to the calculation of figures to two decimal places.

6.84 Table 11 is the final Cost of Capital for Mobile Telecommunications.

Table 11: Final Cost of Capital for Mobile Telecommunications

	Point Estimate – Final
Gearing (%)	30%
Tax rate (%)	12.5%
Real risk-free rate (%)	2.10%
Inflation (%)	1.50%
Nominal risk-free rate (%)	3.63%
Equity risk premium (%)	5.00%
Asset Beta	0.65
Equity Beta at notional gearing	0.93
Nominal post-tax cost of equity (%)	8.27%
Nominal pre-tax cost of equity (%)	9.46%
Debt Premium (%)	1.45%
Nominal pre-tax cost of debt (%)	5.08%
Nominal Vanilla WACC (%)	7.32%
Nominal pre-tax WACC (%)	8.14%
Aimed-Up Nominal pre-tax WACC (%)	**8.63%**

Source: Europe Economics' calculations from sources previous cited

7 Fixed Line Telecommunications

7.1 Introduction

7.1 This chapter discusses the appropriate parameter values to be used in estimating the cost of capital for fixed line telecommunications.

7.2 ComReg's preliminary views

7.2 In Chapter 6 of the Consultation Document, ComReg outlined in detail its proposed approach to the appropriate parameter values to be used in estimating the cost of capital for fixed line telecommunications. Those parameters were:

- Gearing;
- Asset beta, debt beta and equity beta; and
- Debt premium.

Gearing

7.3 ComReg explained its proposed approach to gearing for the purposes of the fixed telecommunications WACC estimation. ComReg explained the rationale behind assuming a notional level of gearing i.e. the level of debt which reflects the capital structure of an efficiently financed operator.

7.4 ComReg assessed regulatory precedent and the gearing levels of comparator companies in Europe. An un-weighted average of gearing for 13 European comparators was c. 37% and that Belgium (2010), France (2013), Norway (2013) and UK (2013 proposal) have all implemented notional gearing of 40%.

7.5 ComReg's noted that its previous nominal pre-tax WACC estimation of 10.21% for the fixed line telecommunications market in 2008 was based on a notional gearing point estimate of 40%.

7.6 ComReg proposed that for the purposes of the fixed line telecommunications WACC estimation, a notional gearing approach should be used and that a point estimate of 40% was appropriate.

Asset beta, debt beta and equity beta

7.7 In Chapter 6 of the Consultation Document ComReg explained its proposed approach to estimating asset beta, debt beta and equity beta for the purposes of the fixed line telecommunications WACC estimation.

7.8 In relation to the estimation of the asset beta, ComReg noted that asset beta precedent from recent European comparator countries indicated a range of 0.42 to 0.60[75].

7.9 Market data on listed European fixed line incumbents suggested a marginally wider range, 0.30 to 0.60. However, ComReg was concerned that this range may have been influenced downwards by outliers. Subsequent analysis involving five year rolling betas suggested that the upper end of this range is likely to be the most appropriate range. For the reasons outlined in Chapter 6 of the Consultation Document ComReg's preliminary view was that, for the purposes of the fixed line telecommunication WACC estimation, an unlevered beta point estimate of 0.50 should be used.

7.10 For the purpose of determining the equity beta, ComReg was of the preliminary view that, for the fixed line telecommunication WACC estimation, the debt beta should be set to 0 thus resulting in an equity beta of 0.83.

Debt premium and cost of debt

7.11 In Chapter 6 of the Consultation Document ComReg proposed the inclusion of a forward looking (i.e. excluding adjustments for the embedded debt) debt premium of 1.75% which has two components:

- Debt premium specific to fixed line telecommunications; and
- Debt issuance premium specific to fixed line telecommunications companies operating in Ireland.

7.12 The fixed line telecommunications debt premium was determined by taking into account regulatory precedent and observing the spreads of corporate debt yields over benchmark bonds of the same maturity (namely German Government bonds). ComReg considered BT, Orange and Deutsche Telekom to be appropriate comparators and on this basis identified that a hypothetical efficient fixed line operator would have a debt premium of 1.5%.

7.13 In order to determine the debt issuance premium specific to fixed line telecommunications companies providing services in Ireland, the borrowing costs of Irish utility companies were compared to similar companies across Europe. The evidence suggested that Irish utilities' borrowing costs are at most 0.75 percentage points higher than borrowing costs of a similar French or German company. Thus, a range of 0 and 0.75 percentage points was considered to be appropriate. Taking into account the improving Irish economy and a more normal growth path in sight, a point estimate of 0.25% was chosen.

[75] This analysis included Portugal (2012) 0.42, France (2013) 0.48 and UK Consultation (2013) 0.60.

Summary of Fixed Line Telecommunication specific parameters

7.14 The proposed fixed line telecommunication specific parameters, for use in the WACC-CAPM formula, were summarised as follows:

Table 12: Summary of Fixed Line Telecommunications Specific Parameters

Parameter	Range	Point Estimate
Gearing		40%
Asset Beta	0.40 – 0.60	0.50
Debt Premium	1.50% - 2.25%	1.75%

Aiming up

7.15 ComReg proposed 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 and that the negative consequences of the former materially exceed those of the latter. It therefore proposed that the regulatory cost of capital should be set above the central estimate of the market cost of capital.

7.16 Europe Economics analysed variances and aimed up to the 66th percentile (one standard deviation above the mean) on certain parameters that fed through to the preliminary estimate of the WACC[76]. The aiming up methodology was applied 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 was aimed up on the basis of applying a standalone uplift of 0.3%[77]. The tax rate and notional gearing are not aimed up because there is comparatively little uncertainty surrounding these parameters.

[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 was aimed up by precisely one standard deviation above the mean. Rather, Europe Economics has confirmed that the aiming up methodology that was applied results in an uplift of the WACC by more than one standard deviation i.e. above the 66th percentile. The precise confidence interval at which it lies in each sector has been estimated and presented in Table 2.2 (Europe Economics analysis of aiming up and simulation) of Europe Economics Analysis of Responses to ComReg WACC Consultation – June 2014.
[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.

7.17 As 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 did not believe that it was 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 was of the preliminary view that aiming up should apply to the risk-free rate only.

7.18 The following table represents the pre and post aimed up values for the following parameters in the Consultation Document:

Table 13: Preliminary Fixed Line Telecommunications Pre and Post Aimed Up Values

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

7.19 The construction of the overall nominal pre-tax WACC required point estimates from each of the parameter ranges presented. As outlined in the Consultation Document the point estimates were not necessarily taken from the midpoint of the range and as such high and low points of parameter ranges were used to construct an overall WACC range[78].

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

Table 14: Proposed Cost of Capital for 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%	2.50%	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	0.67	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%

7.20 The nominal pre-tax WACC was preliminarily estimated to be 8.00%, with high and low bounds estimated to be 9.44% and 6.26% respectively (see Table 14).

7.21 Aiming up certain parameter estimates (Table 13) implies an uplift of c. 6% to the nominal pre-tax WACC point estimate of 8.00% resulting in a nominal pre-tax WACC of 8.48% for the fixed line telecommunications sector[79].

7.22 The nominal pre-tax WACC percentage after aiming up in Table 14 is the cumulative value after aiming up was applied to the parameters in Table 13[80].

7.23 In the Consultation Document, ComReg asked the following question:

[79] Europe Economics suggests aiming up certain parameter point estimates to the 66th percentile, which reflects one standard deviation above the mean.
[80] Rounding differences may occur due to the calculation of figures to two decimal places.

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.

7.3 Views of respondents

Responses to Consultation Question 4.

7.24 Of the nine responses to the Consultation Document four did not offer any specific views or opinions in relation to this question. They were:

- H3GI;
- RTÉ;
- Telefonica; and
- TV3.

7.25 Of the remaining five responses, ALTO and BT agreed with ComReg's preliminary views. Sky broadly agreed with ComReg's preliminary views while Vodafone agreed with the high level approach to estimating the WACC, but expressed concerns that ComReg has incorrectly treated some of the inputs used.

7.26 Eircom considered the gearing point estimate proposed by ComReg to be reasonable, however raised issues with ComReg's proposed approaches to asset beta and debt premium.

7.27 ComReg has grouped respondents' views under the relevant subject headings below.

Gearing

7.28 Eircom considered the point estimate adopted (for gearing in relation to the fixed line WACC estimation) to be reasonable. Eircom stated its opinion that gearing levels are likely to increase as a result of additional investments required by the industry to fund the latest technological advancements in fibre access. In Eircom's view, *"this should be reflected by ComReg in its forward-looking review of the WACC"*.

7.29 Vodafone agreed with the "high level approach" taken by ComReg in relation to the estimation of the cost of capital for fixed line telecommunications, but made the observation that the available evidence suggests higher gearing differential between fixed line and mobile industries than the differential proposed by ComReg.

Asset Beta, Debt Beta, Equity Beta

7.30 Eircom argued that a review of peer data suggests ✂ and did not consider ComReg's sample of comparators used for the purpose of estimating the asset beta for fixed line telecommunications to be fully representative.

7.31 Sky broadly agreed with ComReg's proposals. However, it considered that "*in order for the final estimate of Beta to be reflective of a HEO* [a hypothetical efficient fixed line operator]*, the precedents and comparators that inform that analysis should, where possible, be equally reflective of a HEO".* Sky noted that six regulatory precedents were used by Europe Economics to inform its analysis, but noted that Europe Economics had not *"indicated whether or not the precedents were selected on the basis of the HEO in those jurisdictions"*. Sky also stated that "*it is not clear what analysis has been conducted by EE to establish to what extent these incumbents are a good proxy for a HEO".*

7.32 Sky was of the opinion that disaggregated betas (based on each of the operator's different lines of business) are likely to result in lower asset betas for fixed line businesses, than for the company beta as a whole. Sky considers that such disaggregation should be considered by ComReg as it could have a significant bearing on the selection of an appropriate beta. Sky recognised that this disaggregation may not be a straightforward exercise.

7.33 Sky also considered that it was likely that the proposed range and point estimate of asset beta already included *"upwardly biased"* allowances (independent of aiming up) and urged ComReg to factor in this likelihood in its final determination of the fixed line WACC.

7.34 Vodafone considered that the available evidence suggests the asset beta differential between fixed and mobile industries to be higher than the differential proposed by ComReg.

7.35 In the Consultation Document, ComReg proposed to use a debt beta of zero having considered debt betas of zero and 0.1. ComReg did not receive any response to the consultation which disagreed with this approach to estimating the mobile telecommunications WACC. ComReg remains of the view that its approach to estimating the mobile telecommunications WACC with a zero debt beta is appropriate.

Debt premium and cost of debt

7.36 ALTO generally supported ComReg's proposals in relation to estimating the WACC specific to the fixed line telecommunications sector.

7.37 Eircom was of the opinion that ComReg did not take sufficient account of market conditions for Irish corporate debt when estimating the debt premium. In Eircom's view *"the analysis of the Irish Debt Issuance Premium, which only refers to Irish State controlled companies ESB and Bord Gáis, does not reflect market sentiment toward Irish telecommunications companies generally, given the levels of market saturation, as evidenced by the elevated prices incurred for recent bond issuances by eircom".*

7.38 Vodafone considered that applying the same debt premium for mobile telecommunications and fixed line telecommunications is only appropriate when the gearing spread (between mobile telecommunications and fixed line telecommunications) is greater than that assumed by ComReg.

Aiming up

7.39 In the respective summary of submissions, Vodafone and Eircom expressed general agreement with the principle of aiming up.

7.4 ComReg's assessment of responses

7.40 Having considered the views of respondents, ComReg sets out its views under the relevant subject headings below.

Gearing

7.41 ComReg notes Eircom's comments in relation to the likely increase in the level of gearing due to additional investments required by fixed line operators. In order for an additional investment to increase the gearing of a company, it must be overwhelmingly financed by debt. It is not clear to ComReg why this would necessarily be the case in practice. The fixed line sector WACC assumes that an efficient operator would finance new investment with a debt/equity split of 40%/60%, thus maintaining its overall gearing level at 40% in order to secure an investment grade credit rating.

7.42 The respective point estimates for gearing – an industry specific parameter – was not reassessed in the December 2014 Parameter Review for several reasons. Firstly, Europe Economics is not aware of any new data that would potentially justify a reassessment of its original advice surrounding the estimation of the respective point estimates for gearing. Secondly, the rationale presented for determining the point estimates in the Consultation Document was not heavily influenced by up to date information.

7.43 Therefore, ComReg remains of the view that its approach to estimating gearing for a Hypothetical Efficient Fixed Line Operator, with a point estimate of 40%, is appropriate

Asset Beta, Debt Beta, Equity Beta

7.44 ComReg disagrees with Eircom's assertion that sample of comparators used for the estimation of asset beta was not fully representative. ✂. These operators also featured in Europe Economics analysis. Europe Economics analysed the asset betas of 13 fixed line incumbents and ComReg considers this to be a representative sample.

7.45 ComReg notes Sky's comments in relation to the estimation of the asset beta. It is ComReg's view that there is no reason *a priori* to assume that relying on regulatory determinations not made on the basis of a hypothetical efficient operator would bias ComReg's asset beta estimate upwards. For example, an actual entity in a different country might have a lower asset beta than an Irish hypothetical efficient operator, due to the lower risk profile of operations in that country. A number of comparators and regulatory precedents were used in determining the asset beta and ComReg considers that this approach has lower risk of distortion than relying on one operator or precedent. In addition, the asset beta analysis was adjusted for outliers among peer comparisons.

7.46 ComReg notes Sky's view on asset beta disaggregation, and considers that there is merit to its suggestion. ComReg did consider beta disaggregation as proposed by Sky but concluded that this approach would not be possible due to the lack of availability of data for the regulated entities involved, the challenge of determining the correct asset base and general lack of other relevant data for multiple comparators across multiple business lines (increasing exponentially the cost and challenge when using comparator analysis). ComReg notes that Sky recognised that such disaggregation might not be a straightforward exercise. It is also important to note that in instances where asset beta is disaggregated, it results in relatively low WACC differentials between disaggregated businesses.

7.47 In relation to Sky's comment on aiming up, ComReg notes that the point estimate for the fixed asset beta was the midpoint of the proposed range and it was deemed to be the best estimate of the real asset beta. Thus, no upward adjustments for asset beta was made prior to the aiming up exercise.[81]

7.48 Regarding Vodafone's assertion that the implied differential between asset betas in the fixed and mobile industries is higher than the differential proposed in the Consultation Document, ComReg notes that the ranges and point estimates for individual industry specific parameters were derived from two separate sets of analysis. These sets of analysis were based upon international evidence and regulatory precedent. Thus, the ranges and point estimates for asset betas of fixed and mobile industries were estimated independently of each other. In the Consultation Document ComReg highlighted that five year rolling asset betas suggest a lower asset beta for purely mobile operator and a higher asset beta for fixed line operator, thus lowering the differential or "wedge" between these parameters compared to the "wedge" indicated by two year rolling asset betas. Furthermore, the proposed mobile asset beta was consistent with:

- Ofcom's May 2014 draft determination proposed a fixed line asset beta of 0.5. Ofcom's June 2014 MTR consultation proposed a mobile asset beta of 0.54 to calculate the WACC to be used in its MTR pricing model; and
- The Brattle Group's advice to Ofcom in the context of the recent MTR price control (it estimated two year asset betas for UK mobile network operators at 0.49).

7.49 ComReg remains of the view that its approach to estimating the asset beta for a Hypothetical Efficient Fixed Line Operator is appropriate. However, taking into consideration more recent data (to October 2014) used to inform this parameter value, ComReg has decided to revise the point estimate upwards from 0.50 to 0.55.

7.50 In the Consultation Document, ComReg proposed a point estimate of 0.50 for the fixed-line telecommunications asset beta and this was based on a notional gearing of 40%. As part of the aiming-up process 0.05 was subsequently added to this point estimate.

[81] ComReg notes that in instances where any upward (or downward) adjustments were made to the midpoint of identified WACC parameters' ranges, these were made on the basis of best estimates given available evidence on a forward looking basis and did not relate to any implicit aiming up.

7.51 The fixed-line telecommunications asset beta presented in the Consultation Document was informed by data predominantly up to end-2013. New information assessed in the December 2014 Parameter Review has resulted in ComReg revising the fixed-line telecommunications preliminary asset beta point estimate of 0.50 that was presented in the Consultation Document. This new information is presented below.

7.52 In the Consultation Document the fixed-line telecommunications asset beta was based on key information such as:

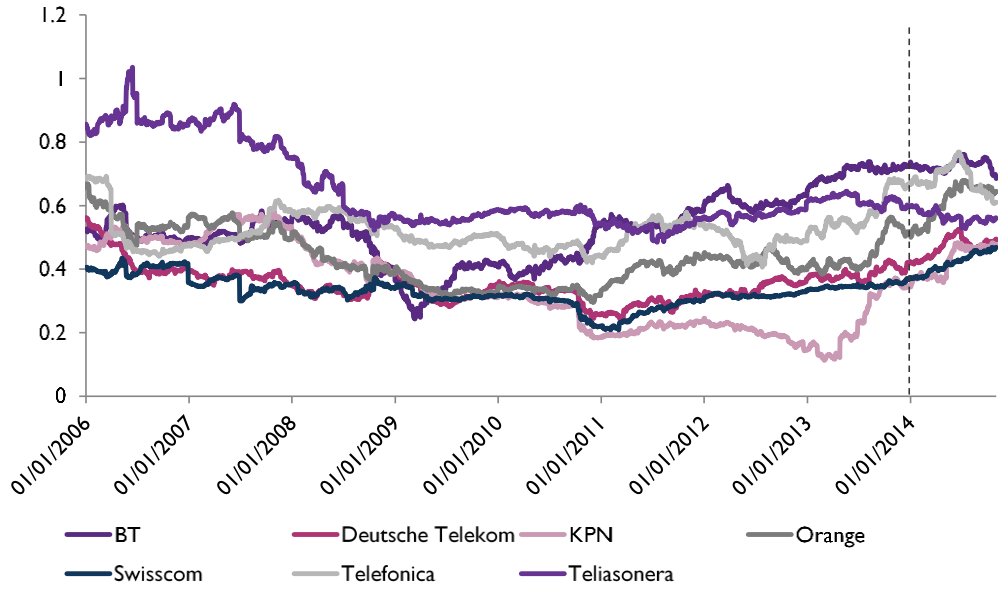
- regulatory precedent, which suggested a range between 0.42 and 0.60.[82]
- previous analysis of Eircom's beta in 2008 which suggested a beta of between 0.42 and 0.68.[83]
- an empirical observation of European fixed-line incumbents' betas, which suggested a range of around 0.3 to 0.6.[84]

7.53 The December 2014 Parameter Review considered the following information with regard to the fixed line asset beta:

- Recent market information on fixed-line providers' betas suggests that betas have increased slightly in 2014. This is presented in the case of two year rolling asset betas below. Similarly, five year rolling betas have, on the whole, moved slightly upwards since the information presented in the Consultation Document.

82 Europe Economics (2014) "Cost of capital for mobile, fixed line and broadcasting price controls: report for ComReg", Table 7.5, p65.
83 Europe Economics (2014) "Cost of capital for mobile, fixed line and broadcasting price controls: report for ComReg", Table 7.4, p64.
84 Europe Economics (2014) "Cost of capital for mobile, fixed line and broadcasting price controls: report for ComReg", p66-67.

Figure 7: Two year rolling average asset betas for fixed-line operators



Source: Bloomberg.

7.54 Figure 7 above shows that two year rolling betas for fixed-line operators have risen since the end of 2013 to the end of October 2014. The two year rolling betas have increased by 0.13 and 0.14 for KPN and Orange respectively. For other fixed-line operators, the betas have remained relatively stable. However, the average beta for all the operators for January to October 2014 is 0.56, or 0.08 higher than the 2013 average of 0.48.

7.55 ComReg and Europe Economics are not aware of a good reason to assume that this movement in the data will reverse in the short term.

7.56 Taking into account key information that has emerged since the Consultation Document published in April 2014, ComReg has decided to revise the fixed-line telecommunications asset beta upwards to 0.55, from 0.50.

7.57 In the Consultation Document, ComReg proposed to use a debt beta of zero having considered debt betas of zero and 0.1. ComReg did not receive any response to the consultation which disagreed with this approach to estimating the fixed line telecommunications WACC. ComReg notes that the debt beta was not reassessed in the December 2014 Parameter Review due to the low materiality that having a non-zero debt beta has on the overall WACC. The views of both ComReg and its consultants Europe Economics have not changed since the Consultation Document.

7.58 ComReg remains of the view that its approach to estimating the mobile telecommunications WACC with a zero debt beta is appropriate.

Debt premium and cost of debt

7.59 ComReg does not share Eircom's view in relation to the debt premium and reiterates the view outlined above. In ComReg's view, the elevated prices of Eircom's bonds might be due to factors specific to Eircom which are not applicable to the general industry. Eircom has not provided any evidence that an alternative method would provide a better estimate for the debt premium.

7.60 ComReg notes ALTO's agreement on the approach used to estimate the WACC for the fixed line telecommunications sector.

7.61 In relation to Vodafone's comments on the debt premium, ComReg notes that this parameter was calculated on the basis of two different sets of evidence for mobile and fixed line sectors[85]. In other words, the parameters were calculated independently of each other and based on the best available evidence. In paragraph 6.35[86] ComReg has explained its reasoning for selecting the gearing values for mobile and fixed line sectors (and the resulting spread between the two parameters) above. Hence, ComReg does not agree with Vodafone's view that debt premium for fixed and mobile sectors are equal only when the gearing differential between the two sectors is much larger than the 10% differential implied by ComReg's analysis.

7.62 Therefore, ComReg remains of the view that its approach to estimating the debt premium for a Hypothetical Efficient Fixed Line Operator is appropriate. However, taking into consideration more recent data used to inform this parameter value, ComReg has decided to revise the point estimate downwards from 1.75% to 1.45%.

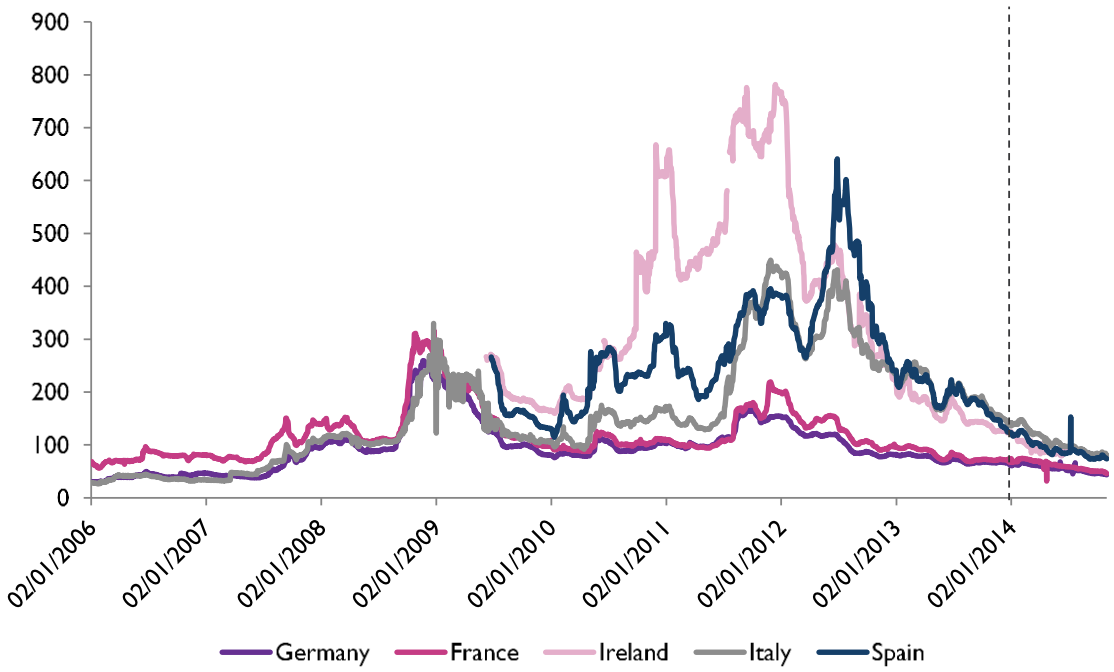
7.63 In the Consultation Document, ComReg proposed a point estimate of 0.25%, which was based on a forward looking range of 0-0.55% for an Irish operator debt premium. This original point estimate was based on an analysis of spreads of European regulated utility companies which suggested an Irish operator debt premium of between 0 and 0.75% towards the end of 2013.

[85] See Section 6 and Section 7 of Europe Economics Technical Report and in particular Figure 6.5 and Figure 7.5.
[86] See also section 1.5.3 of Europe Economics Analysis of Responses to ComReg WACC Consultation – June 2014.

7.64 In the Consultation Document, ComReg proposed a point estimate of 0.25%, which was based on a forward looking range of 0-0.55% for an Irish operator debt premium. The spot premium was 0.55%. This original point estimate was based on an analysis of spreads of European regulated utility companies which suggested an Irish operator debt premium of between 0 and 0.75% towards the end of 2013.

7.65 The December 2014 Parameter Review suggests that the recent spot premium has declined from 0.55% to 0.30% for the most recent observation shown in Figure 8 below.

Figure 8: Spreads of average European utility bonds over benchmark government bonds



7.66 In spite of this downward trend, ComReg has not revised its original point estimate as it had previously accounted for the downward trend in its analysis, which has subsequently materialised. Therefore ComReg has applied a 0.25% Irish operator debt premium to the WACC before the aiming up process.

7.67 In the Consultation Document, ComReg proposed a point estimate of 1.75% for debt premium composed of 1.5% for the fixed-line sector debt premium and 0.25% for an Irish operator premium. The range for the debt premium was 1.5%-2.25%.

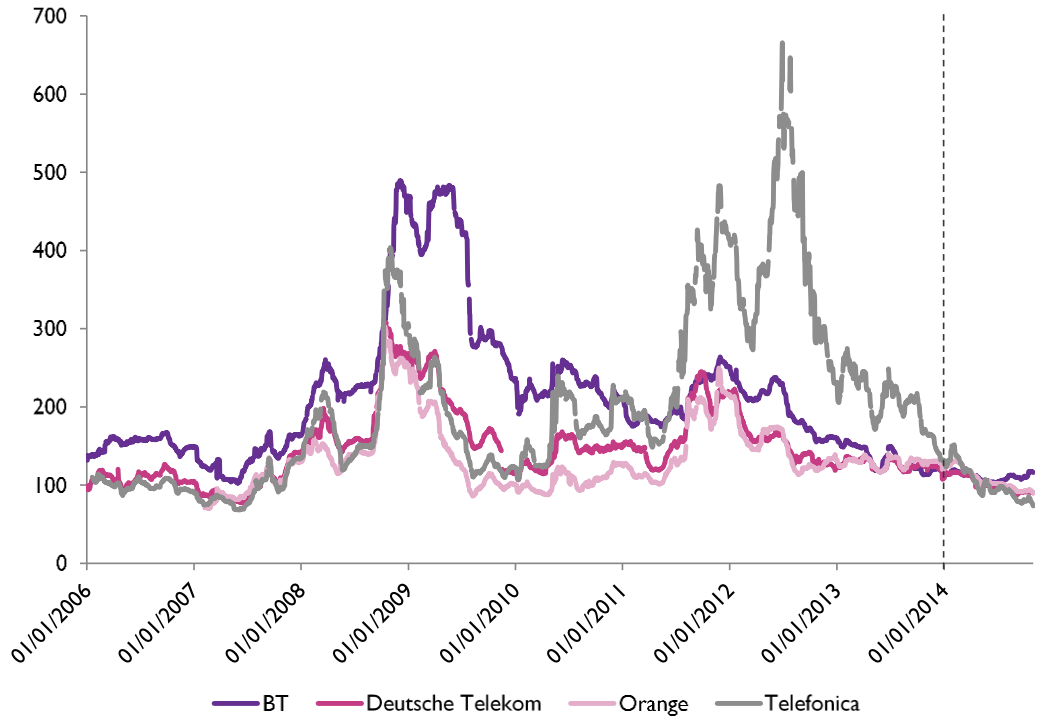
7.68 The preliminary fixed-line debt premium of 1.75% presented in the Consultation Document was informed by data predominantly up to end-2013. It was based on key information such as:

- regulatory precedent, which suggested a range between 1.00% and 2.79%.[87]
- an empirical observation of the debt premium range suggested a range of around between 1.0% and 2.0%.[88]

7.69 The December 2014 Parameter Review considered the following:

- Debt premiums have declined in 2014, with a more recent range being 1.0%-1.3%, as per Figure 9 below.

Figure 9: Debt premiums for fixed-line operators



Source: Bloomberg and Europe Economics calculations.

87 Europe Economics (2014) "Cost of capital for mobile, fixed line and broadcasting price controls: report for ComReg", Table 7.8, p70.

88 Europe Economics (2014) "Cost of capital for mobile, fixed line and broadcasting price controls: report for ComReg", p71.

7.70 The debt premium of fixed-line European incumbents has declined in 2014 with mostly ranging from 100 to 130 bps. However, considering the fluctuations in the past couple of years and the clustering of most of the companies between 75 to 225 bps since 2013, ComReg has settled on a point estimate of 1.2%.

7.71 Given recent changes in market data, ComReg has therefore decided to update the original point estimate for the fixed-line sector debt premium to 1.2% (down from 1.5% in the Consultation Document) which leads to an updated point estimate of 1.45% when the 0.25% Irish operator premium is incorporated to the debt premium.

7.72 Taking into account key information that has emerged since the Consultation Document published in April 2014, ComReg has updated the fixed-line sector debt premium to 1.45%, down 0.3% from 1.75%.

7.73 Therefore, for the purposes of the fixed-line telecommunications WACC estimation, the forward looking nominal pre-tax cost of debt should be 5.08% i.e. 3.63% (risk free rate) + 1.45% (debt premium).

Aiming up

7.74 ComReg notes Vodafone's and Eircom's agreement with the aiming up principle.

7.75 ComReg considers that choosing a value for the WACC that is above the regulator's expected value for the WACC has been standard practice for regulators for many years, across many regulated sectors and in particular in the communications sector, both in Europe and the rest of the world. The process by which this is done has often been implicit – via the choice of a "conservative" estimate of a particular parameter such as the beta or the equity risk premium. In other situations, it is done by choosing, as a point estimate, a value above the mid-point of quoted range for the WACC as a whole or some key building block thereof.

7.76 Wholly implicit conservativeness is not straightforward to evidence, but the practice of choosing a point estimate above the mid-point can be seen in a number of determinations. This practice was explored in more detail by the consultancy "Economic Insights" in a recent report for the New Zealand Commerce Commission[89]. Of 53 decisions reviewed in that document, 35 involved choices of the point determination of the WACC at above the mid-point of the quoted range. The authors remarked that, for those cases where the point estimate used of the WACC is not explicitly above the mid-point of the range, "*This often reflects adopting a conservative view of the market risk premium and equity beta that are used in the Capital Asset Pricing Model (CAPM) for determining the return on equity, where 'conservative' means erring on the high side.*"[90]

7.77 The justification for such conservativeness was set out by the UK regulator Ofcom in its 2005 methodological paper[91] where Ofcom stated ''*Traditionally, Ofcom has considered that the downside risk associated with taking too low a value for the ERP (discouraging discretionary investment) is more detrimental to the interests of consumers than taking too high a value (leading to higher prices to customers) and has tended to the higher end of the possible range. Having reviewed its approach in this area, Ofcom remains of this view…*"[92]. This methodological position was confirmed in Ofcom's Final Statement of August 2005[93].

7.78 Europe Economics Technical Report has argued that, since most of the regulators apply aiming up principle (although in an implicit way), it would be better to do so via explicit procedure that ensured that the degree of aiming up was transparent and that the regulator did not aim up by more than is required to meet its regulatory objectives. The aiming up procedure proposed by Europe Economics to ComReg was not intended to result in ComReg making a final determination figure that was higher than ComReg would have chosen absent aiming up. In Europe Economics' view, by making the aiming up procedure systematic the objective is to reduce the degree of aiming up needed by ensuring that no more upward adjustments are made than is required to meet the relevant regulatory objectives.

[89] ''Regulatory Precedents for Setting the WACC within a Range'' published on 16 June 2014. The report is available at http://www.comcom.govt.nz/dmsdocument/11974
[90] Page 3 of Economic Insights report.
[91] "Ofcom's approach to risk in the assessment of the cost of capital" published on 26 January 2005. The report is available at http://stakeholders.ofcom.org.uk/binaries/consultations/cost_capital/summary/cost_capital.pdf
[92] Page 4 of Ofcom's report.
[93] — See paragraph 4.73 of http://stakeholders.ofcom.org.uk/binaries/consultations/cost_capital2/statement/final.pdf

7.79 ComReg agrees with Europe Economics and is of the opinion that utilising the aiming up approach increases the transparency of the cost of capital estimation.

7.80 Therefore, in light of the above and having taken utmost account of the comments of the European Commission, ComReg remains of the view that it is appropriate to aim up the cost of capital estimation for a Hypothetical Efficient Fixed Line Operator.

7.81 The following three parameters were aimed up in the Consultation Document and despite the nominal risk-free rate and asset betas for mobile and fixed-line being updated following the December 2014 Parameter Review, Europe Economics does not recommend changing the absolute level of aiming up on these parameters.

- Nominal risk-free rate
- Asset beta
- Debt premium[94]

7.82 The impact of incorporating more recent data into the final calculations of the respective WACCs has been minor with respect to the uncertainty regarding the nominal risk-free rate. Europe Economics has considered the impact to be of such insignificance that it does not change its recommendation on the appropriate level of aiming-up for the nominal risk-free rate and that it therefore should continue to be aimed up in absolute terms by 0.1%.

7.83 Despite reassessing asset betas to reflect more recent data, Europe Economics remains of the view that the fixed-line and mobile asset betas should both continue to be aimed up by 0.5 (in absolute terms) and that the broadcasting asset beta should continue to be aimed up by 0.7 (in absolute terms). Asset beta standard errors have not changed materially since the analysis that was presented in the Consultation Document and this is confirmed by data up to the end-October 2014. This is outlined in Table 15 below.

[94] The component of the debt premium that is the Irish operator premium has not been updated since the Consultation Document and therefore the level of aiming up on this particular component of the debt premium remains the same.

Table 15: Fixed Line Telecommunications: Asset beta standard errors[95]

Fixed-line	2 year	5 year
BT	0.067	0.033
Deutsche Telekom	0.058	0.035
KPN	0.126	0.048
Orange	0.067	0.033
Swisscom	0.038	0.019
Telefonica	0.053	0.039
Teliasonera	0.045	0.028

Source: Bloomberg; Europe Economics analysis.

7.84 As Europe Economics has not revised its view on the Irish operator premium component of the debt premium, it recommends that the WACC should be calculated on the basis of continuing to aim up the debt premium by 0.3%.

7.5 December 2014 Parameter Review

7.85 For reasons already specified in paragraph 2.6 above, ComReg has not deviated from the methodology detailed in the Consultation Document when estimating the final cost of capital for fixed line telecommunications. In setting the final WACC it was however considered prudent to do a final assessment of more recent data in addition to the data that informed ComReg's preliminary views in the Consultation Document published in April 2014. Certain information was deemed by Europe Economics to be material and this led to a revised Fixed Line Telecommunications WACC compared to the preliminary estimate presented in the Consultation Document.

7.86 The following is a summary of revisions that apply to the final Fixed Line Telecommunications WACC since ComReg outlined its preliminary views on the Fixed Line Telecommunications WACC in the Consultation Document, published in April 2014.

[95] Table 15 is comparable to Table 7.10, p73 (Fixed-Line) in the Consultation Document.

Generic Parameters in which revisions apply to each final cost of capital

- The real risk free rate has been revised to 2.10% from 2.30%
- Inflation has been revised to 1.50% from 1.75%

Parameters in which revisions apply to the cost of capital specific to the industry

- Asset Beta has been revised upwards to 0.55 from 0.50
- Debt Premium has been revised downwards to 1.45% from 1.75%

Table 16: Preliminary and Final Cost of Capital for Fixed Line Telecommunications

	Preliminary (April 2014)	Final (December 2014)
Gearing (%)	40%	40%
Tax rate (%)	12.5%	12.5%
Real risk-free rate (%)	2.30%	2.10%
Inflation (%)	1.75%	1.50%
Nominal risk-free rate (%)	4.09%	3.63%
Equity risk premium (%)	5.00%	5.00%
Asset Beta	0.50	0.55
Equity Beta at notional gearing	0.83	0.92
Nominal post-tax cost of equity (%)	8.26%	8.21%
Nominal pre-tax cost of equity (%)	9.44%	9.39%
Debt Premium (%)	1.75%	1.45%
Nominal pre-tax cost of debt (%)	5.84%	5.08%
Nominal Vanilla WACC (%)	7.29%	6.96%
Nominal pre-tax WACC (%)	8.00%	7.67%
Aimed-Up Nominal pre-tax WACC (%)	8.48%	**8.18%**

Source: Europe Economics' calculations from sources previous cited

7.6 ComReg's position

7.87 Having taken into consideration the views expressed by respondents, and having taken the utmost account of the comments received from the European Commission pursuant to Article 7(3) of the Framework Directive[96], ComReg remains of the view that its proposed approach to estimating the WACC for the fixed line communications sector is appropriate. Following the December 2014 Parameter Review, ComReg has decided to revise the Fixed Line Telecommunications WACC downward by 0.30% from the preliminary value set out in the Consultation Document. Therefore ComReg is of the view that a nominal pre-tax WACC of 8.18% (based on the aimed up parameters illustrated in Table 17) should be used in the fixed line telecommunications sector.

Table 17: Final Fixed Line Telecommunications Pre and Post Aimed Up Values

Parameter	Pre aiming up	Post aiming up
Nominal risk free rate	3.63%	3.73%
Notional gearing	40%	40%
Asset beta	0.55	0.60
Debt premium	1.45%	1.75%

7.88 The cumulative effect of the revisions to the final Fixed Line Telecommunications WACC, when compared to ComReg's preliminary views set out in April 2014, is a reduction in the aimed up nominal pre-tax WACC of 0.30% to 8.18%[97].

[96] Received in response to ComReg's notification to the European Commission on 8 September 2014. See Annex 7 of this Response to Consultation for a further consideration.

[97] As per footnote 76, 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. The precise confidence interval at which it lies in each sector has been estimated as being aimed-up at the 87th percentile under a one-tailed test and the accompanying analysis is presented in Section 6.4 of Europe Economics WACC Parameter Review - December 2014. The uplift to the baseline WACC, following this aiming up methodology, is 6.71%, resulting in a final WACC of 8.18% (i.e. 7.67% * 1.07 = 8.18%). Rounding differences may occur due to the calculation of figures to two decimal places.

7.89 Table 18 is the final Cost of Capital for Fixed Line Telecommunications.

Table 18: Final Cost of Capital for Fixed Line Telecommunications

	Point Estimate – Final
Gearing (%)	40%
Tax rate (%)	12.5%
Real risk-free rate (%)	2.10%
Inflation (%)	1.50%
Nominal risk-free rate (%)	3.63%
Equity risk premium (%)	5.00%
Asset Beta	0.55
Equity Beta at notional gearing	0.92
Nominal post-tax cost of equity (%)	8.21%
Nominal pre-tax cost of equity (%)	9.39%
Debt Premium (%)	1.45%
Nominal pre-tax cost of debt (%)	5.08%
Nominal Vanilla WACC (%)	6.96%
Nominal pre-tax WACC (%)	7.67%
Aimed-Up Nominal pre-tax WACC (%)	**8.18%**

Source: Europe Economics' calculations from sources previous cited

8 Broadcasting (Market A and Market B)

8.1 Introduction

8.1 This chapter discusses the appropriate parameter values to be used in estimating the cost of capital for the broadcasting sector.

8.2 ComReg's preliminary views

8.2 In Chapter 7 of the Consultation Document ComReg outlined in detail its proposed approach to estimate the appropriate parameter values to be used in calculating the cost of capital for broadcasting sector. Those parameters were:

- Gearing;
- Asset beta, debt beta and equity beta; and
- Debt premium.

8.3 ComReg stated its preliminary view that the same WACC should be applied in both Market A and Market B. This preliminary view was primarily based on Europe Economics conclusion to the same effect which was based on the following reasons:

a. 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[98] as well as Ofcom[99] in the UK;

b. there is a lack of pure play DTT operators. Among the few[100] 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

c. the underlying drivers 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.

8.4 Due to the lack of data available for broadcasting companies (including a lack of comparable publicly listed companies), ComReg relied on evidence from:

[98] See the Copenhagen Economics' report on WACC estimation which was prepared for PTS in 2007.
99 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.
[100] 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.

- recent regulatory decisions of European telecommunications regulators; and
- data of tower and mast companies, integrated telecommunications operators and utility operators.

Gearing

8.5 In Chapter 7 of the Consultation Document ComReg explained its proposed approach to gearing for the purposes of the broadcasting WACC estimation. ComReg explained the rationale behind assuming a notional level of gearing i.e. the level of debt which reflects the capital structure of an efficiently financed operator.

8.6 ComReg outlined Europe Economics' approach to estimating gearing and the following aspects of its analysis:

- Regulatory precedent indicates that notional gearing in the broadcasting sector should be within the range of 25% to 55%;
- Gearing of towers and mast companies has generally been between 20% and 40%[101]. 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; and
- The assessment of actual gearing of companies operating in the fixed line telecommunications sector indicates the range of 30% to 50%[102].

8.7 Based on the analysis summarised above, ComReg indicated its preliminary view that a notional gearing approach should be used with a point estimate of 25% being appropriate.

Asset beta, debt beta and equity beta

8.8 In Chapter 7 of the Consultation Document ComReg explained its proposed approach to estimating asset beta, debt beta and equity beta for the purposes of the broadcasting WACC estimation.

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

8.9 The asset beta was estimated based on evidence from regulatory precedent and comparator companies. ComReg noted that regulatory precedent suggested a range of 0.49 to 0.65 for the asset beta. Two year asset betas for tower and mast companies (which were used as the most relevant comparators) indicated the relevant range of 0.4 to 0.6. However, five year asset betas for the same companies indicated a higher range of 0.6 to 0.8, while the asset betas of fixed line tower and mast companies indicated a range of 0.4 to 0.6.

8.10 For the reasons outlined in Chapter 7 ComReg's preliminary view was that, for the purposes of the broadcasting WACC estimation, an unlevered beta point estimate of 0.55 for the asset beta should be used.

8.11 For the purpose of determining the equity beta, ComReg was of the preliminary view that, debt beta should be set to 0 thus resulting in equity beta of 0.73 for the broadcasting WACC estimation.

Debt premium and cost of debt

8.12 In Chapter 7 of the Consultation Document ComReg proposed the inclusion of a forward looking (i.e. excluding adjustments for the embedded debt) debt premium of 1.75% which has two components:

- Debt premium specific to broadcasting; and
- Debt issuance premium specific to broadcasting companies operating in Ireland.

8.13 The debt premium specific to the broadcasting sector was determined by taking into account regulatory precedent and observing the spreads of corporate debt yields over benchmark bonds of the same maturity (namely German Government bonds). The debt premium on bonds issued by tower and mast companies has varied, but generally falls within a range of 1% to 2%. Within this range a point estimate of 1.5% was chosen.

8.14 In order to determine debt issuance premium specific to broadcasting companies providing services in Ireland, the borrowing costs of Irish utility companies were compared to similar companies across Europe. The evidence suggested that Irish utilities' borrowing costs are at most 0.75 percentage points higher than borrowing costs of a similar French or German company. Thus, a range of 0 and 0.75 percentage points was considered to be appropriate. Taking into account the improving Irish economy and a more normal growth path in sight, a point estimate of 0.25% was chosen.

Summary of Broadcasting (Market A and Market B) specific parameters

8.15 The proposed broadcasting (market A and market B) specific parameters, for use in the WACC-CAPM formula, are summarised as follows:

Table 19: Broadcasting (Market A and Market B) specific parameters

Parameter	Range	Point Estimate
Gearing		25%
Asset Beta	0.40 – 0.60	0.55
Debt Premium	1.50% - 2.25%	1.75%

Aiming up

8.16 ComReg proposed 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 and that the negative consequences of the former materially exceed those of the latter. It therefore proposed that the regulatory cost of capital should be set above the central estimate of the market cost of capital.

8.17 Europe Economics analysed variances and aimed up to the 66th percentile (one standard deviation above the mean) on certain parameters that feed through to the preliminary estimate of the WACC[103]. The aiming up methodology was applied 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 was aimed up on the basis of applying a standalone uplift of 0.3%[104]. The tax rate and notional gearing are not aimed up because there is comparatively little uncertainty surrounding these parameters.

[103] 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 was aimed up by precisely one standard deviation above the mean. Rather, Europe Economics has confirmed that the aiming up methodology that was applied results in an uplift of the WACC by more than one standard deviation i.e. above the 66th percentile. The precise confidence interval at which it lies in each sector has been estimated and presented in Table 2.2 (Europe Economics analysis of aiming up and simulation) of Europe Economics Analysis of Responses to ComReg WACC Consultation – June 2014.
[104] 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.

8.18 As 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 did not believe that it was 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 was of the preliminary view that aiming up should apply to the risk-free rate only.

8.19 The following table illustrates the pre and post aimed up values for the following parameters:

Table 20: Preliminary Broadcasting (Market A and Market B) Pre and Post Aimed Up Values

Parameter	Pre aiming up	Post aiming up
Nominal risk free rate	4.09%	4.19%
Asset beta	0.55	0.62
Debt premium	1.75%	2.05%

Proposed WACC for a Hypothetical Efficient Broadcaster

8.20 As outlined in the Consultation Document the point estimates are not necessarily taken from the midpoint of the range and as such high and low points of parameter ranges are used to construct an overall WACC range[105].

The table presents the WACC as if calculated on the basis of the lowest and highest parameters. However, in calculating both the low and high nominal pre-tax WACC it should be noted that the lowest or highest risk free rate and ERP cannot be used simultaneously as they both tend to move inversely to each other.

Table 21: Proposed 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

8.21 The nominal pre-tax WACC is preliminarily estimated to be 8.11%, with high and low bounds estimated to be 9.20% and 6.11% respectively (Table 21).

8.22 Aiming up certain parameter estimates (Table 20) implied an uplift of c. 7% to the nominal pre-tax WACC point estimate resulting in a nominal pre-tax WACC of 8.68% for the broadcasting sector[106].

8.23 The nominal pre-tax WACC percentage after aiming up in Table 21 is the cumulative value after aiming up was applied to the parameters in Table 20[107].

8.24 The respective costs of capital for the broadcasting markets are going to be applied to tariffs from 1 April 2014 as per ComReg Document No. 13/71[108] in which RTÉ's WACC was applied on an interim basis, while ComReg developed an appropriate WACC. This approach was outlined in ComReg Information Notice 14/15, published in February of this year[109].

[106] Europe Economics suggests aiming up certain parameter point estimates to the 66th percentile, which reflects one standard deviation above the mean.
[107] Rounding differences may occur due to the calculation of figures to two decimal places.
[108] https://www.comreg.ie/_fileupload/publications/ComReg1371.pdf
[109] http://www.comreg.ie/_fileupload/publications/ComReg1415.pdf

8.25 In the Consultation Document, ComReg asked the following question:

> 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.

8.3 Views of respondents

Responses to Consultation Question 5.

8.26 Of the nine responses to the Consultation Document seven did not offer any specific views or opinions in relation to this question. They were:

- ALTO;
- BT;
- Eircom;
- H3GI.
- Sky;
- Telefonica; and
- Vodafone;

8.27 RTÉ partially agreed with ComReg's preliminary views, while TV3 disagreed with them.

8.28 RTÉ agreed that it is appropriate to jointly assess the company specific components of the WACC and CAPM formulas for 2rn and RTÉ as insufficient data availability prevents meaningful separate assessments. RTÉ also agreed with ComReg's approach to government support and stated that *"consistent with financial theory, the cost of capital should reflect the risks associated with supplying the regulated product in question."*

8.29 ComReg has grouped respondents' views under the relevant subject headings below.

Gearing

8.30 RTÉ, while agreeing with the proposed approach to gearing estimation, considered that evidence presented in the Consultation Document supported an efficient gearing of at least 30%.

8.31 In relation to gearing, TV3 noted that RTÉ is not subject to financing problems as the State provides finance to it through licence fees. Furthermore, it expressed the view that RTÉ appears to have large cash reserves to fund its investment and does not operate in a way resembling competitive market operator. TV3 considered these factors to be further evidence of the inappropriateness of using a hypothetical operator in a competitive market to estimate the WACC in the broadcasting sector. TV3 also that Ofcom used actual gearing levels in its WACC review.

Asset Beta, Debt Beta, Equity Beta

8.32 In relation to the asset beta, RTÉ, while agreeing with the proposed approach for this parameter, considered that an asset beta of at least 0.6 should have been set by ComReg based on evidence presented in the Consultation Document. One such reason for RTÉ's belief that the range for proposed asset beta appearing too low was due in its view to ComReg and Europe Economics analysis not considering that "the risk of stranded DTT assets may not be sufficiently addressed through the beta benchmarks".

8.33 TV3 did not agree that an equity beta should apply when estimating the cost of capital in the broadcasting sector as RTÉ is "*owned by the State"*. In TV3's view, RTÉ's state backing shields it from equity market fluctuations.

Debt premium and cost of debt

8.34 RTÉ agreed that the estimated debt premium was an appropriate estimate.

8.35 TV3 was of the view that a debt premium should not apply as "*Any deficit incurred by RTE Group is ultimately paid by raising television licence fees. No interest rate is charged to RTÉ Group by the state. RTE Group is therefore not required to engage in any borrowing or debt issuance. Therefore any debt premium allowable to RTE would reflect an inefficient choice to take on debt. RTE is only allowed to recover efficiently incurred costs."*

8.36 TV3 also disagreed with the comparator companies used for estimating the parameters specific to broadcasting sector. TV3 argued that the chosen comparators do not reflect the circumstances faced by RTÉ. In TV3's view it would be more appropriate to use international regulatory precedent, where the general trend is a progressive fall in determined WACCs. TV3 refers to a report which compared WACC determinations across a range of cross-sectoral regulators in the UK and replicated a chart which shows that in the United Kingdom many of the WACCs now lie within the range of 4.11% to 5.7%.

Aiming Up

8.37 RTÉ, while agreeing with the application of aiming up principle in the broadcasting sector, was concerned that the applied aiming up was lower than the level of aiming up suggested by regulatory precedent.

8.38 TV3 did not agree with the application of aiming up principle in the broadcasting sector. It noted the following:

"[…] RTÉ's investment and innovation is state-driven and not based on availability of capital in the way it would be for a hypothetical privately owned efficient operator. This is yet further evidence that the use of a hypothetical privately owned efficient operator is inappropriate. In circumstances where RTÉ Group is funded largely by the television licence fees, the risks of underestimating the WACC are not higher than the costs of an overestimation. […] Therefore, no premium should be applied over and above the vanilla WACC to provide for these risks. […] This cannot be allowed, given that the asymmetry of consequences normally associated with inaccurate estimations of the WACC does not apply to Irish broadcasting infrastructure."

8.4 ComReg's assessment of responses

8.39 ComReg notes RTÉ's agreement on the approach taken for estimating the parameters specific to broadcasting sector and its agreement on the aiming up principle. RTÉ's agreement on the proposed value of debt premium is also acknowledged.

8.40 Having considered the views of respondents, ComReg sets out its views under the relevant subject headings below.

Gearing

8.41 ComReg has taken into consideration RTÉ's comments in relation to gearing. ComReg notes that the 25% gearing proposed in the Consultation Document was based upon companies with an investment grade credit rating. As gearing of these companies is below 30%, a notional gearing of 25% was preliminary chosen for estimating the broadcasting WACC. In ComReg's view this approach is consistent with the approach used for estimating the debt premium, which was supported by RTÉ.

8.42 ComReg disagrees with TV3's view in relation to gearing estimation. In paragraphs 4.19 to 4.22 ComReg has explained the reasons for estimating the WACC on the basis of the thought experiment of estimating the costs of capital for an efficient company. ComReg agrees that in some cases regulators have relied on the actual gearing of the companies subject to price controls. However, in instances where the actual gearing is uninformative or is not at a level which is consistent with the company having an investment grade credit rating, notional gearing is usually used.

8.43 The respective point estimates for gearing – an industry specific parameter – was not reassessed at the December 2014 Parameter Review for several reasons. Firstly, Europe Economics is not aware of any new data that would potentially justify a reassessment of its original advice surrounding the estimation of the respective point estimates for gearing. Secondly, the rationale presented for determining the point estimates in the Consultation Document was not heavily influenced by up to date information.

8.44 Therefore, ComReg remains of the view that its approach to estimating gearing for a Hypothetical Efficient Broadcaster, with a point estimate of 25%, is appropriate.

Asset Beta, Debt Beta, Equity Beta

8.45 ComReg disagrees with RTÉ's view that the risk of write-downs on stranded assets should be reflected in the WACC via the asset beta. ComReg considers that the task of regulation is not to guarantee regulated entities any return on assets as such. The cost of capital is above the risk-free rate precisely because companies take the risk, at the time of investment, in that returns will be above or below the risk-free rate. The compensation for bearing this variability in returns is the expected additional return over the risk-free rate. Furthermore, it is ComReg's view that the cost of capital is meant to remunerate, via an expected return at the time of investment i.e. efficient investment at the margin. It is not meant to compensate for investments that did not turn out as planned ex-post.

8.46 ComReg also does not agree that the asset beta should be adjusted to 0.6. ComReg notes that two year asset betas for tower and mast companies suggested the range of 0.4 – 0.6 with a midpoint estimate of 0.5. Nevertheless, ComReg placed weight on regulatory precedent and five year asset betas for tower and mast companies as these sources of evidence indicate higher asset betas. All the data identified by RTÉ was considered prior to ComReg formulating its preliminary proposal of a point estimate of 0.55.

8.47 ComReg also does not agree that the equity beta should be excluded from the cost of capital estimation in the broadcasting sector. These parameters form a part of the standard CAPM framework. In paragraphs 4.19 to 4.22 ComReg has explained the reasons for estimating WACC on the basis of the CAPM methodology and the thought experiment of estimating the costs of capital for an efficient company. Hence, given that ComReg has estimated the cost of capital for an efficient company, it is ComReg's view that the equity beta and debt premium should be estimated and applied in the WACC calculation.

8.48 Therefore, ComReg remains of the view that its approach to estimating the asset beta for a Hypothetical Efficient Broadcaster, with a range of 0.4 to 0.6 and pre-aiming up point estimate of 0.55, is appropriate. Further reasoning for this, in light of more recent information, is set out below.

8.49 In the Consultation Document, ComReg proposed a point estimate of 0.55 for the broadcasting asset beta and this was based on notional gearing of 25%. As part of the aiming-up process 0.07 was subsequently added to this point estimate.

8.50 The preliminary broadcasting asset beta point estimate of 0.55 presented in the Consultation Document was informed by data predominantly up to end-2013. It was based on key information such as:

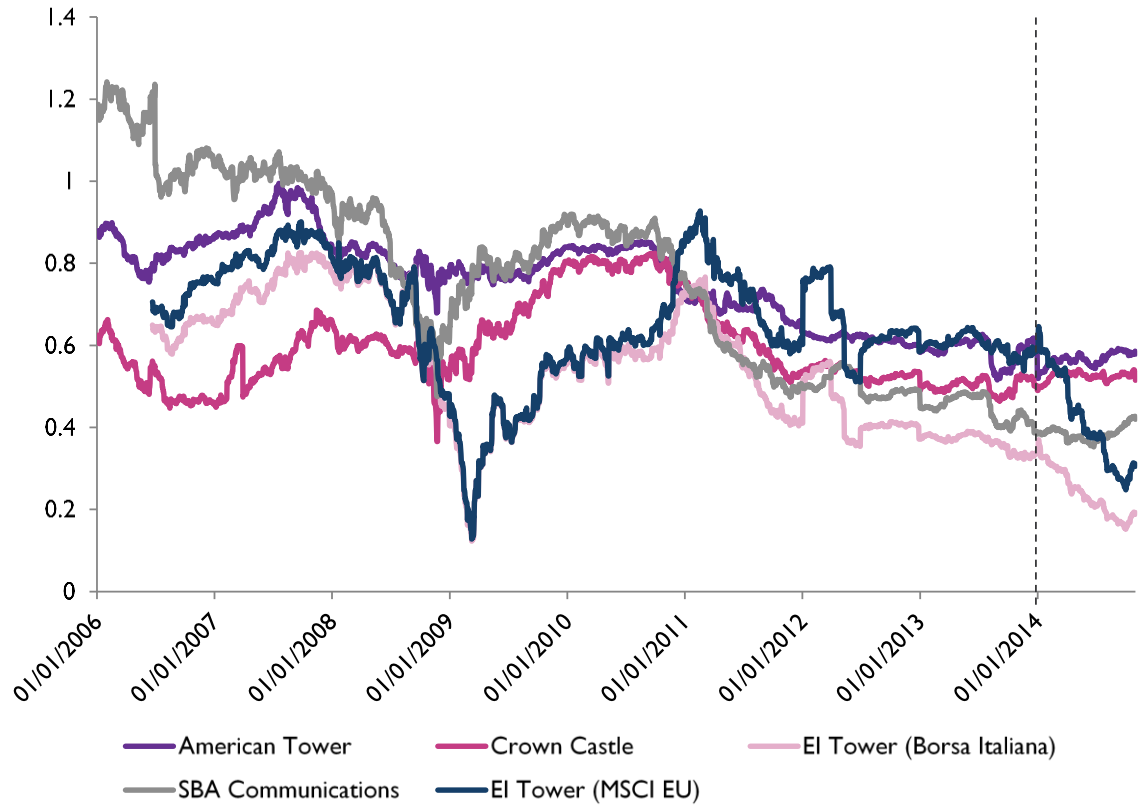
- regulatory precedent, which suggested a range between 0.49 and 0.65.[110]
- an empirical observation of tower and mast companies' betas, which suggested a range of around 0.4 to 0.6.[111]

8.51 The December 2014 Parameter Review assessed the following key information:

[110] Europe Economics (2014) "Cost of capital for mobile, fixed line and broadcasting price controls: report for ComReg", Table 8.6, p81.
[111] Europe Economics (2014) "Cost of capital for mobile, fixed line and broadcasting price controls: report for ComReg", p82-83.

- With the exception of EI Tower, recent market data information on tower and mast companies' betas suggests that betas have remained broadly similar in 2014. ComReg and its consultants Europe Economics believe the broad pattern in the data is of unchanged industry performance.

Figure 10: Two year rolling average asset betas for tower and mast operators



Source: Bloomberg.

8.52 Figure 10 above shows that amongst tower and mast companies, two year rolling betas are largely unchanged whereas betas for EI Tower have come down.

8.53 ComReg has therefore not altered from the original point estimate on the basis of movements solely in EI Tower which seem likely to reflect company-specific circumstances.

8.54 Taking into account key information that has emerged since the Consultation Document published in April 2014, ComReg has not revised the original broadcasting asset beta of 0.55.

8.55 In the Consultation Document, ComReg proposed to use a debt beta of zero having considered debt betas of zero and 0.1. ComReg notes RTÉ's response in which it noted that "*2rn and RTÉ agree that it is appropriate to assume a debt beta of zero. 2rn and RTÉ are not aware of any regulatory precedent based on non-zero debt betas*". ComReg notes that the debt beta was not reassessed in the December 2014 Parameter Review due to the low materiality that having a non-zero debt beta has on the overall WACC. The views of both ComReg and its consultants Europe Economics have not changed since the Consultation Document.

8.56 ComReg remains of the view that its approach to estimating the mobile telecommunications WACC with a zero debt beta is appropriate.

Debt premium and cost of debt

8.57 ComReg does not agree with TV3's view that debt premium should not apply in the broadcasting WACC calculation. ComReg refers to its analysis in paragraph 8.41 above.

8.58 In relation to TV3's comments on the appropriateness of comparator companies used to estimate the debt premium, ComReg notes that the credit ratings of comparator companies used in the debt premium estimation are consistent with the investment grade rating which the efficient operator must maintain[112]. Thus, in ComReg's view the selected comparator companies are appropriate for inferring the debt premium of an efficient broadcaster.

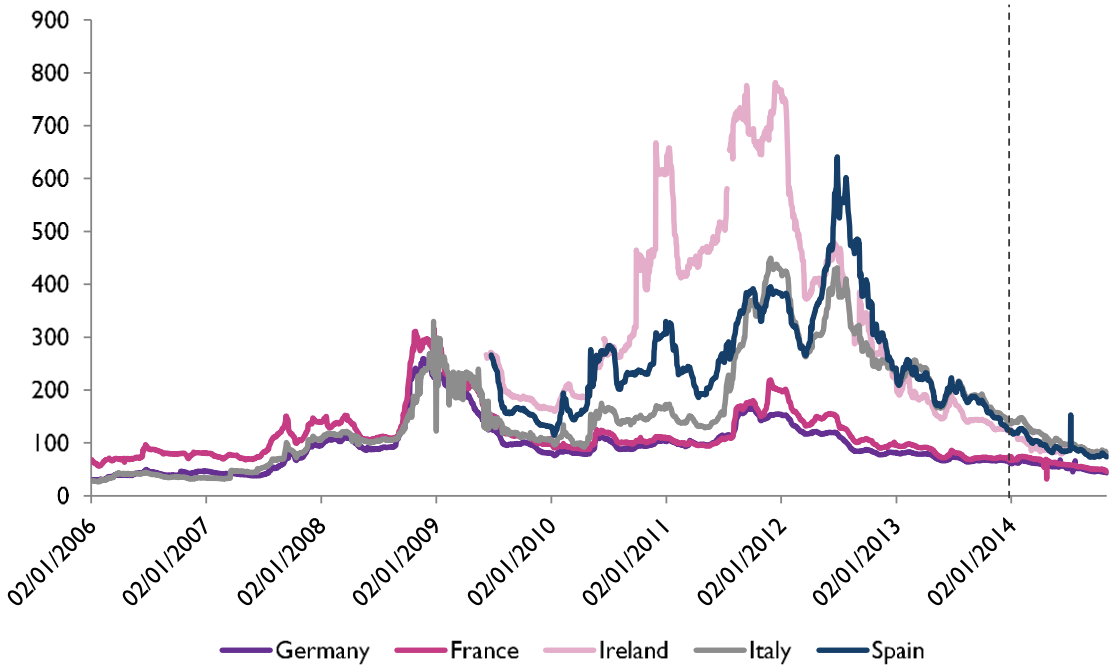
8.59 Therefore, ComReg remains of the view that its approach to estimating the debt premium for a Hypothetical Efficient Broadcaster is appropriate. However, taking into consideration more recent data used to inform this parameter value, ComReg has decided to revise the point estimate downwards from 1.75% to 1.45%.

8.60 In the Consultation Document, ComReg proposed a point estimate of 0.25%, which was based on a forward looking range of 0-0.55% for an Irish operator debt premium. The spot premium was 0.55%. This original point estimate was based on an analysis of spreads of European regulated utility companies which suggested an Irish operator debt premium of between 0 and 0.75% towards the end of 2013.

[112] Europe Economics estimated the cost of capital on the assumption that an efficient operator would have the investment grade rating.

8.61 The December 2014 Parameter Review suggests that the recent spot premium has declined from 0.55% to 0.30% for the most recent observation shown in Figure 11 below.

Figure 11: Spreads of average European utility bonds over benchmark government bonds



8.62 In spite of this downward trend, ComReg has not revised its original point estimate as it had previously accounted for the downward trend in its analysis, which has subsequently materialised. Therefore ComReg has applied a 0.25% Irish operator debt premium to the WACC before the aiming up process.

8.63 In the Consultation Document, ComReg proposed a point estimate of 1.75% for debt premium composed of 1.5% for the towers and masts sector debt premium and 0.25% for an Irish operator premium. The range for the debt premium was 1.5%-2.25%.

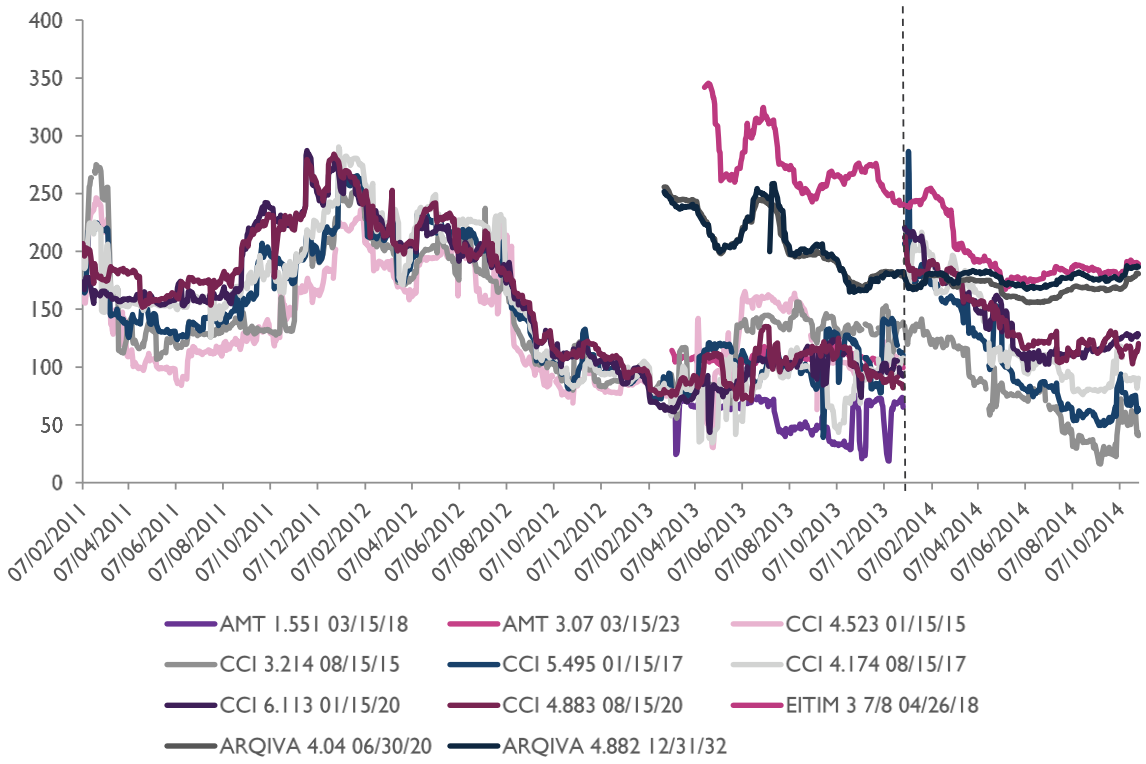
8.64 The preliminary broadcasting debt premium of 1.75% presented in the Consultation Document was informed by data predominantly up to end-2013. It was based on key information such as:

- regulatory precedent, which suggested a range between 0.70% and 1.75%.[113]
- an empirical observation of the debt premium range suggested a relatively wide range of around between 0.8% and 2.40%.[114]

8.65 The December 2014 Parameter Review considered the following key information:

- Debt premiums have declined in 2014, with a more recent range being 0.7%-2.0%, as per Figure 12 below.

Figure 12: Tower and Mast company debt premiums (bps)



Source: Bloomberg and Europe Economics calculations.

[113] Europe Economics (2014) "Cost of capital for mobile, fixed line and broadcasting price controls: report for ComReg", Table 8.4, p79.
[114] Europe Economics (2014) "Cost of capital for mobile, fixed line and broadcasting price controls: report for ComReg", Figure 8.1, p80.

8.66 Debt premiums among towers and masts companies have varied over the past couple of years and this trend has continued in 2014 as can be seen in Figure 12. However, the premiums have decreased since the start of 2014 with majority of the bonds ranging from 70 to 200 bps.

8.67 Given recent changes in market data, ComReg has therefore decided to update the original point estimate for the broadcasting industry specific debt premium to 1.2% (down from 1.5% in the Consultation Document) which leads to an updated point estimate of 1.45% when the 0.25% Irish operator premium is incorporated to the debt premium.

8.68 Taking into account key information that has emerged since the Consultation Document published in April 2014, ComReg has updated the broadcasting debt premium to 1.45%, down 0.3% from 1.75%.

8.69 Therefore, for the purposes of the broadcasting WACC estimation, the forward looking nominal pre-tax cost of debt should be 5.08% i.e. 3.63% (risk free rate) + 1.45% (debt premium).

Aiming Up

8.70 In relation to RTÉ's comments on aiming up, ComReg notes that while individual parameters were aimed up by one standard deviation, the overall WACC was aimed up by more than one standard deviation (but less than by two standard deviations). ComReg remains of the opinion that the purpose of aiming up is not to eliminate all possibility of the estimated WACC being lower than the central WACC estimate and hence, does not consider that aiming up individual parameters by two standard deviations is appropriate[115].

8.71 ComReg does not agree with TV3's view that aiming up should not be applied to the broadcasting sector. In paragraphs 4.19 to 4.22 ComReg has explained the reasons for estimating the WACC on the basis of the thought experiment of estimating the costs of capital for an efficient company operating in the competitive broadcasting market. In such a market the asymmetry of consequences between those of setting the cost of capital too low and those of setting it too high remains relevant (just like in any other competitive market). In addition, ComReg is of the view that consistency across sectors should be applied when using the principle of aiming up as the asymmetry of consequences of underestimating the WACC applies across all sectors.

[115] With various components of the respective WACC estimations aimed up by more than 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' aiming up methodology results in an uplift of the WACC by more than one standard deviation i.e. above the 66th percentile, but below two standard deviations. This has been confirmed by Europe Economics having applied a "Monte Carlo" analysis.

8.72 ComReg considers that choosing a value for the WACC that is above the regulator's expected value for the WACC has been standard practice for regulators for many years, across many regulated sectors and in particular in the communications sector, both in Europe and the rest of the world. The process by which this is done has often been implicit – via the choice of a "conservative" estimate of a particular parameter such as the beta or the equity risk premium. In other situations, it is done by choosing, as a point estimate, a value above the mid-point of quoted range for the WACC as a whole or some key building block thereof.

8.73 Wholly implicit conservativeness is not straightforward to evidence, but the practice of choosing a point estimate above the mid-point can be seen in a number of determinations. This practice was explored in more detail by the consultancy "Economic Insights" in a recent report for the New Zealand Commerce Commission[116]. Of 53 decisions reviewed in that document, 35 involved choices of the point determination of the WACC at above the mid-point of the quoted range. The authors remarked that, for those cases where the point estimate used of the WACC is not explicitly above the mid-point of the range, "*This often reflects adopting a conservative view of the market risk premium and equity beta that are used in the Capital Asset Pricing Model (CAPM) for determining the return on equity, where 'conservative' means erring on the high side.*"[117]

8.74 The justification for such conservativeness was set out by the UK regulator Ofcom in its 2005 methodological paper[118] where Ofcom stated ''*Traditionally, Ofcom has considered that the downside risk associated with taking too low a value for the ERP (discouraging discretionary investment) is more detrimental to the interests of consumers than taking too high a value (leading to higher prices to customers) and has tended to the higher end of the possible range. Having reviewed its approach in this area, Ofcom remains of this view…*"[119]. This methodological position was confirmed in Ofcom's Final Statement of August 2005[120].

[116] ''Regulatory Precedents for Setting the WACC within a Range'' published on 16 June 2014. The report is available at http://www.comcom.govt.nz/dmsdocument/11974
[117] Page 3 of Economic Insights report.
[118] "Ofcom's approach to risk in the assessment of the cost of capital" published on 26 January 2005. The report is available at http://stakeholders.ofcom.org.uk/binaries/consultations/cost_capital/summary/cost_capital.pdf
[119] Page 4 of Ofcom's report.
[120] — See paragraph 4.73 of http://stakeholders.ofcom.org.uk/binaries/consultations/cost_capital2/statement/final.pdf

8.75 In the report written by ComReg's consultants Europe Economics has argued that, since most of the regulators apply aiming up principle (although in an implicit way), it would be better to do so via explicit procedure that ensured that the degree of aiming up was transparent and that the regulator did not aim up by more than is required to meet its regulatory objectives. The aiming up procedure proposed by Europe Economics to ComReg was not intended to result in ComReg making a final determination figure that was higher than ComReg would have chosen absent aiming up. In Europe Economics' view, by making the aiming up procedure systematic the objective is to reduce the degree of aiming up needed by ensuring that no more upward adjustments are made than is required to meet the relevant regulatory objectives.

8.76 ComReg agrees with Europe Economics and is of the opinion that utilising the aiming up approach increases the transparency of the cost of capital estimation.

8.77 Therefore, in light of the above and having taken utmost account of the comments of the European Commission, ComReg remains of the view that it is appropriate to aim up the cost of capital estimation for a Hypothetical Efficient Broadcaster.

8.78 The following three parameters were aimed up in the Consultation Document and despite the nominal risk-free rate and asset betas for mobile and fixed-line being updated in light of the availability of new data, Europe Economics does not recommend changing the absolute level of aiming up on these parameters:

- Nominal risk-free rate
- Asset beta
- Debt premium[121]

8.79 The impact of incorporating more recent data into the final calculations of the respective WACCs has been minor with respect to the uncertainty regarding the nominal risk-free rate. Europe Economics has considered the impact to be of such insignificance that it does not change its recommendation on the appropriate level of aiming-up for the nominal risk-free rate and that it therefore should continue to be aimed up in absolute terms by 0.1%.

[121] The component of the debt premium that is the Irish operator premium has not been updated since the Consultation Document and therefore the level of aiming up on this particular component of the debt premium remains the same.

8.80 Despite reassessing asset betas to reflect more recent data, Europe Economics remains of the view that the fixed-line and mobile asset betas should both continue to be aimed up by 0.5 and that the broadcasting asset beta should continue to be aimed up by 0.7. Asset beta standard errors have not changed materially since the analysis that was presented in the Consultation Document and this is confirmed by data up to the end-October 2014. This is outlined in Table 22 below.

Table 22: Broadcasting: Asset beta standard errors[122]

Broadcasting	2 year	5 year
Crown Castle	0.077	0.044
SBA Communications	0.059	0.035
American Tower	0.076	0.042
EI Tower	0.074	0.112

Source: Bloomberg; Europe Economics analysis.

8.81 As Europe Economics has not revised its view on the Irish operator premium component of the debt premium, it recommends that the WACC should be calculated on the basis of continuing to aim up the debt premium by 0.3%.

8.5 December 2014 Parameter Review

8.82 For reasons already specified in paragraph 2.6 above, ComReg has not deviated from the methodology detailed in the Consultation Document when estimating the final cost of capital for broadcasting (Market A and Market B). In setting the final WACC it was however considered prudent to do a final assessment of more recent data in addition to the data that informed ComReg's preliminary views in the Consultation Document published in April 2014. Certain information was deemed by Europe Economics to be material and this led to a revised Broadcasting (Market A and Market B) WACC compared to the preliminary estimate presented in the Consultation Document.

8.83 The following is a summary of revisions that apply to the final Broadcasting (Market A and Market B) WACC since ComReg outlined its preliminary views on the Broadcasting WACC in the Consultation Document, published in April 2014.

[122] Table 22 is comparable to Table 8.9, p84 (Broadcasting) in the Consultation Document.

Generic Parameters in which revisions apply to each final cost of capital

- The real risk free rate has been revised to 2.10% from 2.30%
- Inflation has been revised to 1.50% from 1.75%

Parameters in which revisions apply to the cost of capital specific to the industry

- Debt Premium has been revised downwards to 1.45% from 1.75%

Table 23: Preliminary and Final Cost of Capital for Broadcasting

	Preliminary (April 2014)	Final (December 2014)
Gearing (%)	25%	25%
Tax rate (%)	12.5%	12.5%
Real risk-free rate (%)	2.30%	2.10%
Inflation (%)	1.75%	1.50%
Nominal risk-free rate (%)	4.09%	3.63%
Equity risk premium (%)	5.00%	5.00%
Asset Beta	0.55	0.55
Equity Beta at notional gearing	0.73	0.73
Nominal post-tax cost of equity (%)	7.76%	7.30%
Nominal pre-tax cost of equity (%)	8.87%	8.34%
Debt Premium (%)	1.75%	1.45%
Nominal pre-tax cost of debt (%)	5.84%	5.08%
Nominal Vanilla WACC (%)	7.28%	6.74%
Nominal pre-tax WACC (%)	8.11%	7.53%
Aimed-Up Nominal pre-tax WACC (%)	8.68%	**8.11%**

Source: Europe Economics' calculations from sources previous cited

8.6 ComReg's position

8.84 Having taken into consideration the views expressed by respondents, ComReg remains of the view that its proposed approach to estimating the WACC for the broadcasting sector is appropriate. Following the December 2014 Parameter Review, ComReg has decided to revise the Broadcasting WACC downward by 0.57% from the preliminary value set out in the Consultation Document. Therefore, ComReg is of the view that a nominal pre-tax WACC of 8.11% (based on the aimed up parameters illustrated in Table 24) should be used in the broadcasting sector.

Table 24: Final Broadcasting (Market A and B) Pre and Post Aimed Up Values

Parameter	Pre aiming up	Post aiming up
Nominal risk free rate	3.63%	3.73%
Notional gearing	25%	25%
Asset beta	0.55	0.62
Debt premium	1.45%	1.75%

8.85 The cumulative effect of the revisions to the final Broadcasting (Market A and Market B) WACC, when compared to ComReg's preliminary views set out in April 2014, is a reduction in the aimed up nominal pre-tax WACC of 0.57% to 8.11%[123].

[123] As per footnote 103, 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. The precise confidence interval at which it lies in each sector has been estimated as being aimed-up at the 89th percentile under a one-tailed test and the accompanying analysis is presented in Section 6.4 of Europe Economics WACC Parameter Review - December 2014. The uplift to the baseline WACC, following this aiming up methodology, is 7.78%, resulting in a final WACC of 8.11% (i.e. 7.53% * 1.08 = 8.11%). Rounding differences may occur due to the calculation of figures to two decimal places.

8.86 Table 25 is the final Cost of Capital for Broadcasting (Market A and Market B).

Table 25: Final Cost of Capital for Broadcasting (Market A and Market B)

	Point Estimate – Final
Gearing (%)	25%
Tax rate (%)	12.5%
Real risk-free rate (%)	2.10%
Inflation (%)	1.50%
Nominal risk-free rate (%)	3.63%
Equity risk premium (%)	5.00%
Asset Beta	0.55
Equity Beta at notional gearing	0.73
Nominal post-tax cost of equity (%)	7.30%
Nominal pre-tax cost of equity (%)	8.34%
Debt Premium (%)	1.45%
Nominal pre-tax cost of debt (%)	5.08%
Nominal Vanilla WACC (%)	6.74%
Nominal pre-tax WACC (%)	7.53%
Aimed-Up Nominal pre-tax WACC (%)	**8.11%**

Source: Europe Economics' calculations from sources previous cited

9 Other issues regarding the Cost of Capital

9.1 Introduction

9.1 This chapter discusses other possible mechanisms for the purpose of promoting investment incentives such as trigger mechanisms and capex incentive mechanisms. It also addresses issues raised by respondents, not directly in response to a particular question asked in the Consultation Document.

9.2 ComReg's preliminary views

9.2 In Chapter 8 of the Consultation Document, ComReg noted that 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. ComReg was of the preliminary view that the proposed four individual WACCs were reasonable measures of the four investment and business risk profiles and noted that the introduction of a trigger mechanism could increase regulatory uncertainty.

9.3 In Chapter 8 of the Consultation Document ComReg noted that it is exploring a number of possible incentive based measures that may be used, if appropriate, to promote efficient investment incentive, including the possibility of setting different levels of WACC for certain activities or assets that carry more risk than a typical investment. ComReg asked for views on the possibility of implementing an incentive-based mechanism that would allow a higher WACC on investments that were deemed to be particularly risky or capital-intensive.

9.4 In the Consultation Document, ComReg asked the following question:

> 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.

9.3 Views of respondents

Responses to Consultation Question 6.

9.5 Of the nine responses to the Consultation Document three respondents provided their views in response to this question. They were:

- ALTO;
- Eircom; and
- Vodafone

ALTO

9.6 ALTO indicated its belief that ComReg should always be considering additional incentive based mechanisms in order to incentivise long term investments in infrastructure assets and provide adequate allowance for bearing any associated systematic risks.

Eircom

9.7 Eircom considered that setting a sufficiently high WACC across the entire portfolio of investments is the principal way that ComReg can incentivise long term investments in infrastructure assets and provide an adequate allowance for bearing any associated risks. It noted that Europe Economics' analysis relies exclusively upon historical data for its empirical support and considered that the WACC calculation does not take into account specific risks going forward associated with current or future investments. Thus, Eircom expressed the belief that there must be a mechanism whereby Eircom's WACC can be adjusted if fundamental changes to the business risk of Eircom's regulated business would occur over the period of the price control.

9.8 In relation to Capex incentive mechanisms, Eircom was of the view that there would be a number of practical difficulties in applying different estimates of WACC to different parts of the business and that specific cost of capital estimates should only be used where there is a high degree of confidence that accurate estimates can be obtained.

Vodafone

9.9 Vodafone was of the view that the WACC should not be used as a means for incentivising investment as the link between a higher WACC for the purpose of setting regulated wholesale prices and investment in infrastructure is not clear. Vodafone agreed with ComReg's approach in developing the central estimate of the WACC as it considered that the central estimate would ensure that the incentive to invest is not damaged by the regulation of wholesale services. Vodafone also supported ComReg's approach to aiming up the WACC.

9.4 ComReg's assessment of responses

9.10 ComReg has considered ALTO's comment in the setting of the respective costs of capital.

9.11 ComReg notes Eircom's comments. While ComReg agrees that most of the analysis presented in the Consultation Document relied on the historic data, it is important to highlight the fact that in selecting the ranges and point estimates for the WACC parameters ComReg considered the most likely values that would persist over the period of the price control. For example, in selecting the appropriate value for the risk-free rate ComReg assumed the normalisation of the economic environment, thus setting the risk-free rate above the rates currently observed. Thus, ComReg remains of the view that a review of the respective WACCs after 3 years should be sufficient to account for any future changes.

9.12 ComReg notes Eircom's comments in relation to the Capex incentive mechanisms and agrees that there would be a number of practical difficulties in applying different estimates of WACC.

9.13 ComReg notes Vodafone's comments in relation to the use of WACC as instrument for incentivising investments. ComReg acknowledges Vodafone's agreement with ComReg's approach in developing the central estimate of the WACC and the application of the aiming up principle.

9.5 ComReg's position

9.14 Having taken into consideration the views expressed by respondents, ComReg is of the view that the introduction of trigger or capex incentive mechanisms are not appropriate at this time.

9.6 Other issues raised by respondents

Regulatory Impact Assessment

9.15 Eircom stated its belief that the omission of Regulatory Impact Assessment (RIA) in the Consultation Document was *"very serious in that there is no indication that ComReg considered any or all the available alternative options, or what criteria they adopted in choosing their preferred options. This makes it difficult for respondees to address all of the issues raised in the consultation paper."*

9.16 ComReg considers that the inclusion of RIA in the Consultation Document was not necessary as there is no new regulatory obligation imposed in the decision but rather a figure that feeds through to various pricing models. However ComReg does not agree with Eircom's view, that the regulatory impact of proposed costs of capital was not assessed properly. ComReg's decision to introduce the aiming up principle was directly related to the regulatory impact that the estimated WACC might have. Thus, ComReg considers that WACC values proposed in the Consultation Document reflected careful consideration of the potential regulatory impact that these values might have.

Allegation that the consultation was premature

9.17 H3GI referenced the fact that it was *"currently seeking European Commission merger approval for its acquisition of O2"* and stated its belief that it was *"premature (and disproportionate)"* for ComReg to consult on the cost of capital until the outcome of the Commission merger approval process was known.

9.18 ComReg disagrees with H3GI's view that the consultation in relation to the estimation of WACC in the mobile sector was premature. ComReg has estimated the cost of capital for mobile telecommunications on the basis of a hypothetical efficient mobile operator and this calculation is not affected by the number of mobile service providers, or mobile network operators. The outcome of the European Commission merger investigation in relation to the acquisition that H3GI references was not relevant to, and would not have had an impact on, estimation of the cost of capital for a hypothetical efficient mobile operator. Therefore postponing the consultation pending the outcome of that process would have caused unnecessary delay.

Review of cost of capital assumptions

9.19 Telefonica considered that "*Although we are coming out of a volatile period in terms* of *bond yields there are still spreads which reflect the speculative nature of the bond markets"* and therefore suggested that the cost of capital assumptions should be reviewed within the next two years to ensure they remain valid.

9.20 ComReg notes Telefonica's view. ComReg is of the opinion that mid-term reviews of the cost of capital would introduce regulatory uncertainty and should be applied only in instances where the economic environment has deteriorated to such an extent that the assumptions relied on when estimating the cost of capital at the start of the price control period are no longer valid. Europe Economics' advice is based on the assumption of the normalisation in Ireland's macroeconomic environment continuing to persist over the forthcoming price control period. ComReg remains of the view that such an assumption is reasonable[124]. Furthermore, as noted in Chapter 8 of the Consultation Document "*ComReg will, however, continue to monitor the competitive situation and the extent to which it is likely to impact on the systematic risk profiles".*

Proposal to replace the WLR retail minus price control

9.21 BT stated its view that *"in order to make this proposal more effective the WLR Retail Minus price control must be replaced with the modern regulatory practice of cost orientation"*. In BT's view this approach will establish the correct pricing signals to the market and remove market distortions which it believes currently exist.

9.22 ComReg believes this point to be outside the scope of this particular document and wishes to refer BT to the Consultation and Draft Decision entitled "Market Review on Wholesale Fixed Voice Call Origination and Transit Markets" published earlier this year[125]. ComReg notes that the Response to Consultation and Final Decision is impending.

[124] National accounts data for the second quarter of 2014 were published by the Central Statistics Office (CSO) on the 18th of September 2014. The data showed that: Real GDP (seasonally adjusted) increased by 1.5% over the quarter to Q2 and that in year-on-year terms real GDP increased by 7.7% in the second quarter.
http://www.finance.gov.ie/sites/default/files/Irish%20Monthly%20Economic%20Bulletin%20(MEB)%20-%20October%202014.pdf

[125] http://www.comreg.ie/_fileupload/publications/ComReg1426.pdf

Cost of unnecessary/inefficient capital expenditure

9.23 TV3 noted that no exclusion was made for the cost of unnecessary capital expenditure. TV3 considered that the cost of raising capital for, what TV3 considered to be, unnecessary expenditure should be disregarded by ComReg.

9.24 ComReg notes TV3's comments in relation to the unnecessary capital expenditure. As the estimation of an efficient level of capital expenditure was not part of the WACC Consultation Document, issues relating to the unnecessary level of capital expenditure were not addressed there. Nevertheless, ComReg notes that in any price control capital expenditure would be based on an efficient operator providing services in the competitive market[126]. Such an operator would not raise unnecessary capital and hence, would not incur unnecessary cost of capital. Operating costs would also be considered on the basis of efficiency.

[126] See ComReg Document No. 13/71 "Broadcasting Transmission Services in Ireland" Section 8.306

Annex: 1 Decision Instrument – Mobile Telecommunications

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[127] ("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[128]; 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[129]; and

(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

[127] European Commission Recommendation of 17 December 2007 on relevant product and services 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).
[128] Policy Directions made by Dermot Ahern TD, then Minister for Communications, Marine and Natural Resources, dated 21 February 2003 and 26 March 2004.
[129] 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).

(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 Regulations 13 and 14 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[130]; 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 "Cost of Capital – Response to Consultation", (Document No. 14/136), (ComReg Decision No. 15/14) 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;

[130] 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.

"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 Three Ireland (Hutchison) 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 and any other Undertakings which are found to have SMP in the market for voice call termination on individual mobile networks;

"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;

"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;

"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 the SMP Undertakings.

3.2. This Decision Instrument is binding upon the SMP Undertakings 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 8.63% will be used by ComReg as the 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 SMP 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.

6.3. For the avoidance of doubt, to the extent that there is any conflict between a ComReg decision instrument or ComReg document (or any other document) dated prior to the Effective Date of the Decision now set out herein, this Decision Instrument shall prevail unless otherwise indicated by ComReg.

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.

Kevin O'Brien

Commissioner

The Commission for Communications Regulation

THE 18TH DAY OF DECEMBER 2014

Annex: 2 Decision Instrument – Fixed Line Telecommunications

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 telecommunications 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[131]; 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[132]; and

(v) 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

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

[131] Policy Directions made by Dermot Ahern TD, then Minister for Communications, Marine and Natural Resources, dated 21 February 2003 and 26 March 2004.
[132] 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).

(vii) 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

(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 Regulations 13 and 14 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[133]; and

(ix) Having had regard to the reasoning and analysis set out in the papers containing and relating to ComReg Decision No. D12/14, 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

(x) 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 "Cost of Capital – Response to Consultation", (Document No. 14/136), (ComReg Decision No. 15/14) 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);

[133] 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. D07/61" means the decision contained in ComReg Document No. 07/61 entitled "Market Analysis –Retail Fixed Narrowband Access" dated 24 August 2007;

"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. D08/10" means ComReg Document No. 10/67 entitled *"Response to Consultation Document and Final Direction and Decision, Response to Consultation Document No. 09/75 and Final Direction and Decision: Accounting Separation and Cost Accounting Review of Eircom Limited"* dated 31 August 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;

"ComReg Decision No. D12/14" means the decision contained in ComReg Document No. 14/89 entitled *"Market Review: Retail Access to the Public Telephone Network at a Fixed Location for Residential and Non Residential Customers"* dated 28 August 2014;

"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 one of the Markets, other than Eircom. This currently 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 which relate to fixed line services in which an Undertaking has been found to have SMP. This currently comprises:

a. Retail Access to the Public Telephone Network at a Fixed Location for Residential and Non Residential Customers specifically Market 1a Standalone Lower Level Voice Access; Market 1b Bundled Lower Level Voice Access and Market 1c Higher Level Voice Access (contained in ComReg Decision No. D12/14);

b. 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);

c. 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);

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

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

f. 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 each of the Other SMP Fixed Service Providers.

3.2. This Decision Instrument is binding upon Eircom and each of the Other SMP Fixed Service Providers. Eircom and each of 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 8.18% 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 8.18% will be used by ComReg as the 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 Markets (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 8.18% 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 the Other Significant Market Power (SMP) Fixed Service Provider(s) and in force immediately prior to the Effective Date of this Decision Instrument, are continued in force by this Decision Instrument and Eircom and the Other Significant Market Power (SMP) Fixed Service Provider(s) 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.

6.3. For the avoidance of doubt, to the extent that there is any conflict between a ComReg decision instrument or ComReg document (or any other document) dated prior to the Effective Date of the Decision now set out herein, this Decision Instrument shall prevail unless otherwise indicated by ComReg.

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 the other Significant Market Power (SMP) Fixed Service Providers, and it shall remain in force until further notice by ComReg.

Kevin O'Brien

Commissioner

The Commission for Communications Regulation

THE 18TH DAY OF DECEMBER 2014

Annex: 3 Decision Instrument – Broadcasting (Market A)

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[134]; 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 (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 Regulations 13 and 14 of the

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

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[135]; 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 "Cost of Capital – Response to Consultation", (Document No. 14/136), (ComReg Decision No. 15/14) 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. D11/13" 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;

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

"Raidió Teilifís Éireann" means Raidió Teilifís Éireann and its subsidiaries, and any Undertaking which it owns or controls, and any Undertaking which owns or controls Raidió Teilifís Éireann and its successors and assigns.

[135] 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.

"RTÉ Transmission Network" 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;

"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, in Annex D, to ComReg Decision No. D11/13 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 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 8.11% will be used as the 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.

6.3. For the avoidance of doubt, to the extent that there is any conflict between a ComReg decision instrument or ComReg document (or any other document) dated prior to the Effective Date of the Decision now set out herein, this Decision Instrument shall prevail unless otherwise indicated by ComReg.

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.

Kevin O'Brien

Commissioner

The Commission for Communications Regulation

THE 18TH DAY OF DECEMBER 2014

Annex: 4 Decision Instrument – Broadcasting (Market B)

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 DTT Multiplexing 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[136]; 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 (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 Regulations 13

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

and 14 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[137]; 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 "Cost of Capital – Response to Consultation", (Document No. 14/136), (ComReg Decision No. 15/14) 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. D11/13" 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;

"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,

[137] 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.

and any Undertaking which owns or controls RTÉ and its successors, affiliates and assigns;

"RTÉ Transmission Network" 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;

"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, in Annex E, to ComReg Decision No. D11/13 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 8.11% will be used as the 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.

6.3. For the avoidance of doubt, to the extent that there is any conflict between a ComReg decision instrument or ComReg document (or any other document) dated prior to the Effective Date of the Decision now set out herein, this Decision Instrument shall prevail unless otherwise indicated by ComReg.

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.

Kevin O'Brien

Commissioner

The Commission for Communications Regulation

THE 18TH DAY OF DECEMBER 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[138] and the national regulatory authorities in other Member States at the same time, together with the reasoning on which the measure is based.

[138] 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 European Commission Response Letter

EUROPEAN COMMISSION

Brussels,
C(2014)

Commission for Communications (COMREG)

Block DEF - Abbey Court - Irish Life Centre, Lower Abbey St.
Dublin 1
Ireland

For the attention of:
Mr Kevin O'Brien
Chairperson of the Commission

Fax: +35318788193

Dear Mr O'Brien,

Subject: **Commission Decision concerning Case IE/2014/1649: Determination of the weighted average cost of capital (WACC) for the purpose of price control obligations in markets 2 to 7 and in the broadcasting transmission market in Ireland**

Comments pursuant to Article 7(3) of Directive 2002/21/EC

I. PROCEDURE

On 11 September 2014, the Commission registered a notification from the Irish national regulatory authority, *Commission for Communications Regulation* (ComReg)[1], concerning the determination of the weighted average cost of capital (WACC) to be applied in the Irish markets 2 to 7[2] and the markets related to broadcasting transmission (Broadcasting Market A - Wholesale access to national terrestrial broadcast transmission services, and Broadcasting Market B - Wholesale access to DTT multiplexing services).[3]

[1] Under Article 7 of 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), OJ L 108, 24.4.2002, p. 33, as amended by Directive 2009/140/EC, OJ L 337, 18.12.2009, p. 37, and Regulation (EC) No 544/2009, OJ L 167, 29.6.2009, p. 12.

[2] Listed in Commission Recommendation 2007/879/EC 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 (Recommendation on Relevant Markets), OJ L 344, 28.12.2007, p. 65.

[3] Corresponding to market 18 in the previous Commission Recommendation 2003/311/EC of 11 February 2003 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 114, 8.5.2003, p. 45.

The national consultation[4] ran from 11 April 2014 to 16 May 2014.

On 23 September 2014, a request for information[5] was sent to ComReg and a response was received on 26 September 2014. A follow-up technical discussion with ComReg was held on 6 October 2014.

Pursuant to Article 7(3) of the Framework Directive, national regulatory authorities (NRAs), the Body of European Regulators for Electronic Communications (BEREC) and the Commission may make comments on notified draft measures to the NRA concerned.

II. DESCRIPTION OF THE DRAFT MEASURE

With the notified draft measures, ComReg is consulting for the first time on the estimation of WACC values for the above mentioned markets.

ComReg proposes that the estimated costs of capital will be used as inputs to price controls in place in markets 2 to 7 of the Recommendation on Relevant Markets as well as two markets for broadcasting, i.e., Broadcasting Market A - wholesale access to national terrestrial broadcast transmission services, and Broadcasting Market B - wholesale access to DTT multiplexing services.

Following the designation of significant market power on undertakings in their respective markets[6], ComReg imposed remedies of price control through cost orientation on the SMP undertakings. The cost of capital is a component of a "cost oriented" price control.[7]

ComReg is proposing nominal pre-tax[8] WACC values of 8.48% for markets 2 to 6, and 8.66% for market 7 of the Recommendation on relevant markets. Broadcasting markets A and B will be subject to a WACC value of 8.68%[9]:

ComReg has estimated the costs of capital based on the WACC-CAPM (Capital Asset Pricing Model) methodology. ComReg considers that this is the most appropriate method of estimating the cost of capital and notes, in particular, 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.

---

4 In accordance with Article 6 of the Framework Directive.

5 In accordance with Article 5(2) of the Framework Directive.

6 According to the notified draft measures, with respect to mobile telecommunications the proposed decision will apply to H3GI, Lycamobile, Meteor, Telefónica, Tesco Mobile and Vodafone. With respect to fixed line telecommunications, the measures will apply to Eircom and other SMP Fixed Service Providers (BT Communications, Colt Technology Services, Magnet Networks, Smart Telecom, UPC Communications and Verizon Ireland). With respect to broadcasting transmissions, the measures will apply to 2rn (for Market A) and RTÉ (for Market B).

7 In the reply to the request for information, ComReg indicated that the nominal pre-tax WACC value of 10.21% is currently used in the cost models in markets 2 to 6. In market 7, the tariff is required as an input to the Bottom-Up Long Run Incremental Cost model (BU-LRIC), which is currently being developed. The estimated WACC values for the broadcasting markets are going to be applied retroactively to tariffs from 1 April 2014. As per ComReg Document No. 13/71 a WACC as reported by 2rn/RTÉ's was applied on an interim basis.

8 ComReg defines *nominal pre-tax WACC* as "the Weighted Average Cost of Capital before taxation".

9 Comreg's analysis is based *inter alia* on the results of the national consultation as well as on an expert technical report carried out by external consultants (*Europe Economics*).

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 based on the consideration that the negative consequences of setting the WACC too low are potentially greater that the negative consequences of setting it too high for investments, innovation and ultimately for consumers in the long term.[10] ComReg reiterates that in this respect it balances short term consumer welfare against consumers' longer term interests.

In order to justify the proposed approach, making reference to the technical report submitted by the external consultant, ComReg indicated in the reply to the request for information that the principle that there is an asymmetry of consequences between those of setting the cost of capital too low and those of setting it too high has been well-established by regulators over the past decade[11]. In the follow-up technical discussion ComReg pointed out that many regulators aim up WACC parameters implicitly rather than explicitly, which in the present case is done by way of adding one standard deviation systematically to certain WACC parameters (risk-free rate, asset beta and debt premium).

III. COMMENTS

The Commission has examined the notification and the additional information provided by ComReg and has the following comments:[12]

Need to provide further justifications in the final measures on the appropriateness of aiming up the WACC estimated values

The Commission notes that ComReg deemed it necessary to "aim up" some parameters (i.e. risk free rates, asset beta, debt premium) of the WACC estimate to reflect the asymmetry of consequences between setting the cost of capital too low and setting it too high.

The Commission takes note of ComReg's assertion that setting too high a cost of capital means that consumers would today pay a little more than would occur in a competitive market, while without fostering innovation and investment consumers tomorrow would miss out on the benefits of investment and innovation that do not occur. ComReg indicates that the latter costs are generally recognised as significantly exceeding the former.

---

10 As ComReg states in point 2.26 of the *Review of Cost of Capital* submitted to public consultation, "the process of aiming up involves estimating the variance of key parameters and aiming up the point estimates of these parameters to confidence intervals that reflect one standard deviation above the mean". The initial pre-tax nominal WACC values were respectively: 8.17% for mobile telecommunications markets, 8% for fixed line telecommunication markets and 8.11% for the broadcasting markets. In the reply to the request for information ComReg stated that they believe it is appropriate to aim-up the WACC values for the broadcasting sector, in a similar manner to the other sectors (even though service providers operating on broadcasting transmission services markets in Ireland are public service corporations), as the asymmetry of consequences of estimating too low a WACC remains relevant due to it being estimated on the basis of an efficient operator operating in a competitive market.

11 ComReg refers, for example, to Ofcom's approach of estimating the cost of capital, and in particular paragraphs 4.23-4.28 of the relevant consultation document, as published under the following link: (http://stakeholders.ofcom.org.uk/binaries/consultations/cost_capital/summary/cost_capital.pdf).

12 In accordance with Article 7(3) of the Framework Directive.

In view of these considerations, ComReg proposes that the regulatory cost of capital should be set above the central estimate of the market cost of capital, in line, according to ComReg, with common – but often merely implicit - regulatory practices. This would lead to an increase of 6% of the nominal pre-tax WACC point estimate for fixed and mobile markets (resulting in a pre-tax WACC of respectively 8.48% and 8.66%) and of 7% for the broadcasting markets (resulting in a pre-tax WACC of 8.68%).

Since the cost of capital is a component of a cost-oriented price control already imposed on SMP operators in the market at stake, NRAs are bound, pursuant to Article 8 of the Framework Directive and as well Articles 13(1) and (2) of the Access Directive, to impose a cost control obligation that meets the objectives of encouraging investments, including in next generation networks, promoting efficiency and sustainable competition and maximising consumer benefits in terms of choice, price, and quality.

The Commission recognizes that consumers benefit from both lower prices, on the one hand, and innovation and investment, on the other, and that risks with regard to these respective parameters may not be uniform. However, this consideration is not unique to the Irish regulated markets, and the regulatory principles defined in the Framework Directive as well as the provisions of the regulatory framework regarding cost controls and cost recovery should lead to common and predictable outcomes based on shared methodological approaches to common problems. In that regard, while the Commission does not take issue with greater transparency regarding the methodology employed, ComReg's explicit aiming up of its WACC estimate may not be conducive to avoiding discrepancies between NRAs and being consistent with an internal market objective.

The Commission would, therefore, like to invite ComReg to fully substantiate its proposals in the final measures and to provide a detailed reasoning on how both short term and long term consumer benefits as well as the internal market objective are affected by the methodological choice for setting the WACC parameters.

Against this background, the Commission would further like to invite ComReg to cooperate with the relevant BEREC working group and the Commission in order to ensure overall transparency and consistent practice in setting WACC parameters**.**

Pursuant to Article 7(7) of the Framework Directive, ComReg shall take the utmost account of the comments of other NRAs, BEREC and the Commission and may adopt the resulting draft measure; where it does so, shall communicate it to the Commission.

The Commission's position on this particular notification is without prejudice to any position it may take *vis-à-vis* other notified draft measures.

Pursuant to Point 15 of Recommendation 2008/850/EC[13] the Commission will publish this document on its website. The Commission does not consider the information contained herein to be confidential. You are invited to inform the Commission[14] within three working days following receipt whether you consider that, in accordance with EU and national rules on business confidentiality, this document contains confidential information which you wish to have deleted prior to such publication.[15] You should give reasons for any such request.

Yours sincerely,
For the Commission,
Robert Madelin
Director-General

[13] Commission Recommendation 2008/850/EC of 15 October 2008 on notifications, time limits and consultations provided for in Article 7 of 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 301, 12.11.2008, p. 23.

[14] Your request should be sent either by email: CNECT-ARTICLE7@ec.europa.eu or by fax: +32 2 298 87 82.

[15] The Commission may inform the public of the result of its assessment before the end of this three-day period.

Annex: 7 Summary of ComReg's consideration of the comments raised by the European Commission

A 7.1 In the Consultation Document ComReg proposed 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. This was on the basis that the negative consequences of setting the WACC too low are potentially greater than the negative consequences of setting it too high. The process of aiming up involves estimating the variance of key parameters[139] and aiming up the point estimates of these parameters to confidence intervals that reflect one standard deviation above the mean[140]. Similar aiming up methodologies have been used in regulatory decisions in Ireland and other jurisdictions[141].

A 7.2 In September 2014 ComReg made the draft measures accessible to the European Commission (the "Commission")[142] pursuant to Article 7 of the Framework Directive[143] as transposed by Regulation 13 of the Framework Regulations[144]. On 13 October 2014 ComReg received a letter from the Commission which commented that ComReg *"Need to provide further justifications in the final measures on the appropriateness of aiming up the WACC estimated values*" The full text of the letter from the Commission is set out in Annex 2 of this Response to Consultation. In accordance with Regulation 14(2) of the Framework Regulations, ComReg has taken the utmost account of the comments made by the Commission. The further justifications which ComReg provides are outlined below.

---

[139] 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.

[140] 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 was aimed up by precisely one standard deviation above the mean. Rather, Europe Economics has confirmed that the aiming up methodology that was applied results in an uplift of the WACC by more than one standard deviation i.e. above the 66th percentile. The precise confidence interval at which it lies in each sector has since been estimated.

[141] 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

[142] Registered by the European Commission as Case Number IE20141649.

[143] 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 (the "Framework Directive").

[144] The European Communities (Electronic Communications Networks and Services) (Framework) Regulations 2011 (S.I. No. 333 of 2011) (the "Framework Regulations").

A 7.3 ComReg's consultants' Europe Economics advised ComReg that choosing a value for the WACC that is above the regulator's expected value for the WACC has been standard practice for regulators for many years, across many regulated sectors and in particular in the communications sector, both in Europe and the rest of the world.

A 7.4 The justification for such conservatism was set out by the UK regulator Ofcom in its 2005 methodological paper[145] where Ofcom stated ''*Traditionally, Ofcom has considered that the downside risk associated with taking too low a value for the ERP (discouraging discretionary investment) is more detrimental to the interests of consumers than taking too high a value (leading to higher prices to customers) and has tended to the higher end of the possible range. Having reviewed its approach in this area, Ofcom remains of this view…*"[146]. This methodological position was confirmed in Ofcom's Final Statement of August 2005[147].

A 7.5 The asymmetry in welfare loss associated with arising from over- versus under-estimation of the WACC has also been highlighted in the academic literature. For example, Wright et al [2003][148] examine a simple 'one period' model in which the regulator makes an estimate of the WACC, imposes a price cap based on this, and the firm then uses the 'true WACC' (viewed as a random variable) in deciding on whether and how much to invest in capacity. There is a tendency in this type of model for the firm to choose not to invest at all if the realised WACC is greater than that set by the regulator. Thus, there tends to be a large welfare loss from setting a regulatory WACC that is too low, whilst the welfare losses arising from setting a regulatory WACC too high tends to be much smaller. Dobbs [2007][149] noted that markets like telecoms are likely to feature greater welfare loss asymmetries than in more mature/static industries such as water supply due to the fact in emergent/innovative markets, investment may have positive intertemporal spillover effects – in that investment now may promote greater innovation in future service provision, new product development, and in future technical innovation reducing future production costs.

[145] "Ofcom's approach to risk in the assessment of the cost of capital" published on 26 January 2005. The report is available at http://stakeholders.ofcom.org.uk/binaries/consultations/cost_capital/summary/cost_capital.pdf
[146] Page 4 of Ofcom's report.
[147] — See paragraph 4.73 of http://stakeholders.ofcom.org.uk/binaries/consultations/cost_capital2/statement/final.pdf
[148] Wright S., Mason R., Miles D., 2003, A study of certain aspects of the cost of capital for regulated utilities in the U.K., 13/2/2003. The Smithers &Co. report commissioned by the UK regulators and the office of Fair Trading. Available at: www.ofcom.org.uk/static/archive/oftel/publications/pricing/2003/capt0203.pdf
[149] Dobbs I.M., 2007 Setting the regulatory WACC using Simulation and Loss Functions – The case for standardising procedures.

A 7.6 The process by which regulators choose to overestimate the WACC is often implicit – via the choice of a "conservative" estimate of a particular parameter such as the beta or the equity risk premium. In other situations, it is done by choosing, as a point estimate, a value above the mid-point of quoted range for the WACC as a whole or some key building block thereof.

A 7.7 Wholly implicit conservatism is not straightforward to evidence, but the practice of choosing a point estimate above the mid-point can be seen in a number of determinations. This practice was explored in more detail by the consultancy "Economic Insights" in a recent report for the New Zealand Commerce Commission[150]. Of 53 decisions reviewed in that document, 35 involved choices of the point determination of the WACC at above the mid-point of the quoted range. The authors remarked that, for those cases where the point estimate used of the WACC is not explicitly above the mid-point of the range, "*This often reflects adopting a conservative view of the market risk premium and equity beta that are used in the Capital Asset Pricing Model (CAPM) for determining the return on equity, where 'conservative' means erring on the high side.*"[151]

A 7.8 Europe Economics has advised ComReg that, since most of the regulators apply aiming up principle (although in an implicit way), it would be better to do so via an explicit procedure that ensured that the degree of aiming up was transparent and that the regulator did not aim up by more than is required to meet its regulatory objectives. The aiming up proposed by Europe Economics to ComReg was not intended to result in a WACC that was higher than ComReg would have chosen absent aiming up. In Europe Economics' view, by making the aiming up procedure systematic the objective is to reduce the degree of aiming up needed by ensuring that no more upward adjustments are made than is required to meet the relevant regulatory objectives.

A 7.9 Section 12 (1) of the Communications Regulation Act, 2002 details ComReg's objectives in exercising its functions. Section 12 (1) (a) (i) of the Communications Regulation Act, 2002 lists, in relation to the provision of electronic communications, networks, electronic communications services and associated facilities the promotion of competition as being one of these objectives. The reasonable measure which ComReg can take in achieving this objective is further detailed in section 12(2)(a) to include:

> *"(i) ensuring that users, including disabled users, derive maximum benefit in terms of choice, price and quality;*

[150] ''Regulatory Precedents for Setting the WACC within a Range'' published on 16 June 2014. The report is available at http://www.comcom.govt.nz/dmsdocument/11974
[151] Page 3 of Economic Insights report.

(ii) ensuring that there is no distortion or restriction of competition in the electronic communications sector;

(iii) encouraging efficient investment in infrastructure and promoting innovation […]"

A 7.10 Therefore when estimating the costs of capital ComReg is mindful to ensure that it adheres to these objectives. ComReg considers that the principle of aiming-up is consistent with these objectives.

A 7.11 If the estimates for the costs of capital were set too low it is likely, that in the short term, consumers could pay lower prices for services and therefore derive a short term benefit. While this may address one aspect of ComReg's objectives in relation to the promotion of competition it is more than likely to have negative impacts in the longer term on the other objectives.

A 7.12 A cost of capital, which is too low, is unlikely to encourage efficient investment in infrastructure or the promotion of innovation as regulated entities are unlikely to invest if they consider that the regulated returns are insufficient to address their funding requirements. As a consequence, consumers, while paying lower prices, will not derive maximum choice or quality in the longer term.

A 7.13 A cost of capital, which is set too high, is likely to encourage greater levels of investment and innovation by regulated entities. While this may lead to greater choice and quality for consumers it may also lead to higher prices.

A 7.14 Therefore, ComReg, in applying the principle of aiming-up, considers that in order to address its objectives it is more appropriate to err on the side of setting the costs of capital too high rather than too low.

A 7.15 A further objective of ComReg's is to co-operate:

"[…] with electronic communications national regulatory authorities in other Member States of the Community and with the Commission of the Community in a transparent manner to ensure the development of consistent regulatory practice and the consistent application of Community law in this field"

A 7.16 In relation to ensuring that the application of the principle of aiming-up ensures the development of consistent regulatory practice ComReg considers that it adheres to this objective through various means. These include:

- The publication of the Consultation Document and the Response to Consultation on its publically available website;
- Notifying to the European Commission of its draft measures;
- Co-operating with other national regulatory authorities through the participation in various working groups, attendance at meetings and the completion of questionnaires.

Annex: 8 Europe Economics Analysis of Responses to ComReg WACC Consultation – June 2014

Europe Economics

Europe Economics Analysis of Responses to ComReg WACC Consultation

June 2014

Europe Economics
Chancery House
53-64 Chancery Lane
London WC2A 1QU

Tel: (+44) (0) 20 7831 4717
Fax: (+44) (0) 20 7831 4515

www.europe-economics.com

Contents

1 Response to Responses to Consultation

1.1 Introduction

This document summarises the submissions to the consultation on ComReg's draft proposals for the Weighted Average Cost of Capital (WACC) to apply in the fixed-line, mobile, and broadcasting services determinations and Europe Economics' recommendations in the light of those submissions.

The consultation opened on 11 April 2014 and closed at 16 May 2014. Europe Economics has considered submissions from nine parties:

- Eircom.
- ALTO.
- TV3.
- Vodafone.
- Telefónica.
- 2rn / RTÉ.
- BT.
- Sky.
- 3.

In this document we describe each of these submissions. In the case of submissions that consist of considering each building block of the WACC, we consider in turn each building block and comment upon the substantive points raised. Building blocks are considered only to the extent that submissions offered a view upon them. In the case of other submissions (e.g. TV3) the responses on individual building blocks are all informed by the same over-arching general concern(s), and our discussion focuses upon those.

Then at the end we draw our conclusions, including consideration of whether our advice should be changed in any respect in light of these submissions or further research to be pursued.

It should be noted that this document does not attempt to repeat verbatim the consultation responses, but instead to organise their substantive elements into an analytically productive form for our purposes here. There are thus inevitably minor points that are mentioned in the submissions that are not restated here.

1.2 Eircom

1.2.1 Use of CAPM methodology

Eircom agrees in general with the use of CAPM, but proposes that a "liquidity premium" should be included. We note that there is no liquidity premium in the CAPM model, and thus that the use of a liquidity premium would constitute a departure from CAPM. Eircom offers no specific methodology for altering the CAPM to include a liquidity premium, nor any evidence that a "CAPM-plus-liquidity-premium" model would be superior either as a model of assets in general or of regulated assets in the communications sector in particular.

1.2.2 Tax rate

Eircom contends that the effective tax rate paid in Ireland is higher than the corporation tax rate used in Europe Economics' approach and that the higher effective rate is more relevant. It identifies a number of "*non-deductible costs*". However, Eircom does not offer any evidence that such tax effects change the tax rate at the margin in a systematic way (i.e. changing the tax rate at the margin, averaged over time). ✂.

1.2.3 Real risk-free rate

Eircom argues against the use of a Eurozone-wide risk-free rate and contends that as the average risk-free rate in regulatory determinations since 2000 was 2.5 per cent, the risk-free rate Europe Economics proposed (i.e. 2.3 per cent) is "*obviously low*". ✂.

1.2.4 Inflation

Eircom proposes that "the inflation rate should be set by reference to the ECB target of 2% per annum."

We observe that Eircom is in error: the ECB target is not, in fact, 2 per cent. It is "below, but close to, 2%".[1]

1.2.5 Nominal risk-free rate

✂.

1.2.6 Equity risk premium

Eircom contends that the use of 100+ year averages to estimate the equity risk premium is inappropriate in the context of recent economic volatility in Ireland, "current market expectations", and the setting of a price control for a 3-7 year period. Instead, Eircom proposes a rate of 6.7 per cent provided using the "Damadoran methodology". ✂.

✂.

Evidence on long-run equity returns from Dimson, Marsh, and Staunton have a well-established place in regulatory WACC analysis. The data source, its uses elsewhere, its strengths, and its shortcomings have been highlighted in our initial report. For the reasons above, we do not believe the ERP should be as high as 6.7 per cent and continue to recommend 5 per cent.

1.2.7 Mobile sector gearing

Eircom disputes the contention that gearing ratios for mobile operators should be expected to be lower than those for fixed-line operators. They suggest that the comparator sample provided is overly fixed upon large incumbent operators. Furthermore, they dispute the view that mobile operators may be asset-light relative to fixed-line operators.

Consider the following table of wireless and fixed-line gearings. In the case of fixed-lines, the most relevant comparators will be the national fixed-line incumbents, since ComReg is regulating the fixed-line incumbent. The mobile companies are somewhat smaller, as one might expect from pure-play mobile. We have supplemented our previous analysis with a number of North American companies to broaden the sample slightly. Their gearing levels are consistent with European operators. This offers some perspective on the differences in gearing.

[1] https://www.ecb.europa.eu/mopo/strategy/pricestab/html/index.en.html.

Table 1.1: Gearing for mobile and fixed-line operators

Company	Country of Listing	End 2013	2012-2013 Average
Drillisch	Germany	0%	21%
Freenet	Germany	14%	21%
Mobistar	Belgium	36%	25%
Tele2B	Sweden	20%	21%
Vodafone	UK	17%	23%
Rogers	Canada	31%	32%
US Cellular	United States	16%	10%
Verizon	United States	22%	26%
Average mobile		20%	22%
Belgacom	Belgium	20%	19%
BT	UK	22%	31%
Deutsche Telekom	Germany	43%	50%
KPN	Netherlands	49%	59%
Orange	France	56%	56%
Swisscom	Switzerland	26%	29%
Telefonica	Spain	48%	53%
Telecom Italia	Italy	70%	72%
Telekom Austria	Austria	58%	55%
Telekom Slovenije	Slovenia	31%	39%
Average fixed-line incumbent		42%	46%

Source: Europe Economics analysis.
Notes: Drillisch gearing is zero because cash balances exceed total debt, making net debt negative, which we recode to 0 for our analysis.

Mobile operators in general had lower gearing than fixed-line incumbent operators. The average mobile gearing was around 20 per cent at the end of 2013 and around 22 per cent between 2012 and 2013. This compares with average gearing levels of around 42 per cent and 46 per cent in those two time periods, respectively, for fixed-line. Therefore, although it is not *necessarily* the case that mobile gearing should be lower than fixed-line gearing, we have found in our assessment of the empirical evidence that it has been.

Also on gearing, Eircom argues that Irish telecommunication companies' investments in 4G capacity and related infrastructure "will have necessitated increased gearing and this should be reflected by ComReg in the target gearing levels".

We note that our gearing figure of 30 per cent is already marginally above the averages presented in Table 1.1 and the evidence from purer-play mobile operators in our consultancy report. Our argument for setting gearing above the observed level for, say, Vodafone is that the evidence suggested that a hypothetical efficient mobile operator would probably be able to be slightly more highly geared and maintain an investment grade credit rating.[2]

It is not clear, however, that investment in 4G "will have necessitated increased gearing" levels. This is only true if companies choose to finance investment in 4G with a higher ratio of debt to total capital than

[2] Although the average gearing for various European purer-play mobile operators is almost 10 per cent below our notional gearing figure of 20 per cent, we do not believe that a 20 per cent gearing figure is required for an investment grade credit rating. This is the line of argument we pursued with reference to Vodafone, which has a credit rating well within investment grade. None of the three main credit rating agencies currently have ratings on the debt of European operators Drillisch, Freenet, Mobistar, or Tele2B, so a similar analysis cannot be performed on their credit ratings.

currently reflected in their existing capital structure. We see no reason *a priori* to assume that companies will choose debt financing of 4G investment over equity financing. What is more, our recommendation on gearing is for new, marginal investment; that is, we contend that a hypothetical efficient mobile operator will on average finance any new investment at a ratio of 30 per cent debt to total capital.[3] For these reasons, we do not believe investment in 4G is a sufficient argument on its own to adjust our gearing recommendation.

1.2.8 Mobile sector asset beta

Eircom contends that "*the asset beta for Mobile operators may be more materially higher than that of purely Fixed-line operators*". We are unclear of the basis for this claim. See the analysis done in response to Vodafone in Section 1.5.4 for our view on mobile asset betas and fixed-line asset betas.

Eircom also contends that "it appears that excessive reference has been made by ComReg to [the] 2011 Ofcom determination… with little regard taken to the 2011 and 2010 determinations made in France, as described in the Europe Economics report".

We cited the evidence of asset betas of 1 in France for MTR determination, but did not feel that the French precedent alone was sufficiently strong to justify a higher asset beta. Evidence from the survey of BEREC members and our analysis of market data was used to formulate our overall view on the asset beta, and we do not feel it is appropriate to modify our view on the basis of the French regulatory precedent alone.

1.2.9 Mobile sector debt premium

Eircom believes the Europe Economics debt premium analysis does not take into account market conditions for private companies raising debt in the telecommunications sector nor the challenges of raising debt in other Eurozone periphery countries. Our debt premium analysis is based on debt premia for European countries, primarily those operating in the Eurozone. Thus, the analysis captures the dynamics of European telecommunication companies raising debt in public capital markets. It is not clear why a private company as such would require an additional debt premium, and we do not agree that this would be the case in general. Furthermore, we have made an allowance for the possibility of higher borrowing costs for "peripheral" Eurozone countries in our "Irish operator premium" of 25 bps.

1.2.10 Fixed-line sector gearing

Eircom states that it considers the gearing estimate from Europe Economics "*reasonable*" but that it should be expected to increase with additional investment in fibre access. We note that a gearing recommendation is for investment at the margin, and hence our recommendation would be applicable to new investment. We are unclear why Eircom believes additional investment must imply a rise in gearing — implicitly it appears to be assuming that new investment will be wholly or overwhelmingly debt-financed, whereas our analysis assumes that an efficient operator would fund new investment with 40 per cent debt, 60 per cent equity.

✂.

1.2.11 Fixed-line sector asset beta

✂. Eircom states that it does not consider the sample from which Europe Economics derived its estimate as "*representative*".

[3] This implies a debt-to-equity ratio of approximately 43 per cent.

We analysed 13 fixed-line incumbents from across Europe. We believe that the sample is broadly representative of European fixed-line incumbents. ✂

1.2.12 Fixed-line sector debt premium

Eircom repeats its general remarks about the debt premium. ✂. We have outlined why we disagree with Eircom on the debt premium above in Section 1.2.9.

1.2.13 Irish debt issuance premium

"[Eircom] consider[s] that the analysis of the Irish Debt Issuance Premium, which only refers to Irish State controlled companies ESB and Bord Gais, does not reflect market sentiment toward Irish telecommunication companies generally, given the levels of market saturation, as evidenced by the elevated prices incurred for recent bond issuances by eircom".

We do not agree with Eircom's assessment of the analysis of the Irish debt issuance premium. The purpose of the analysis of the premium is to identify any premium on the cost of debt incurred by Irish firms compared with other European firms in like-for-like industries. The aim is to isolate the country risk premium in the cost of debt, rather than any industry-specific risk premia, which is why we analyse like-for-like industries. Therefore, the appropriate unit of analysis is not Irish telecommunication companies, as Eircom suggests, but Irish companies more generally.

As discussed in our report, it is difficult to read an issuance premium off of pure-play Irish telecommunications operators as the Ireland-only fixed-line operator Eircom has a distorted capital structure. We therefore analyse network utilities as they are similar to the network operations / natural monopolies being regulated in the ComReg price control. In this way, we attempt to isolate the country risk element in any additional debt premia independent of any industry risk.

We are suspicious of Eircom's claim that recent "elevated prices" on the company's debt issuance are evidence that Irish telecommunication companies face higher borrowing costs. We believe it is likely that Eircom's borrowing costs are influenced by it having recently gone through Examinership and its distorted capital structure. Therefore, we do not believe that Eircom's debt premia would be representative of that faced by a hypothetical efficient Irish operator.

We are not convinced that ESB and Bord Gáis are not appropriate comparators with other European utility companies. We do not believe that state ownership as such would have an impact on the cost of debt. State-owned firms might be considered to be at higher risk when the sovereign itself is believed to be at material risk of default, as the Irish State was during the recent financial crisis. Without any convincing arguments that the state-owned stated of ESB and Bord Gáis necessarily have different debt premia from privately-owned comparators, we do not believe it is appropriate to alter our analysis of the Irish debt issuance premium.

1.2.14 Irish market WACC.

Eircom contends that use of German government bonds in an analysis of the risk-free rate for an Irish WACC determination is not appropriate since "the WACC must be consistent with national circumstances".

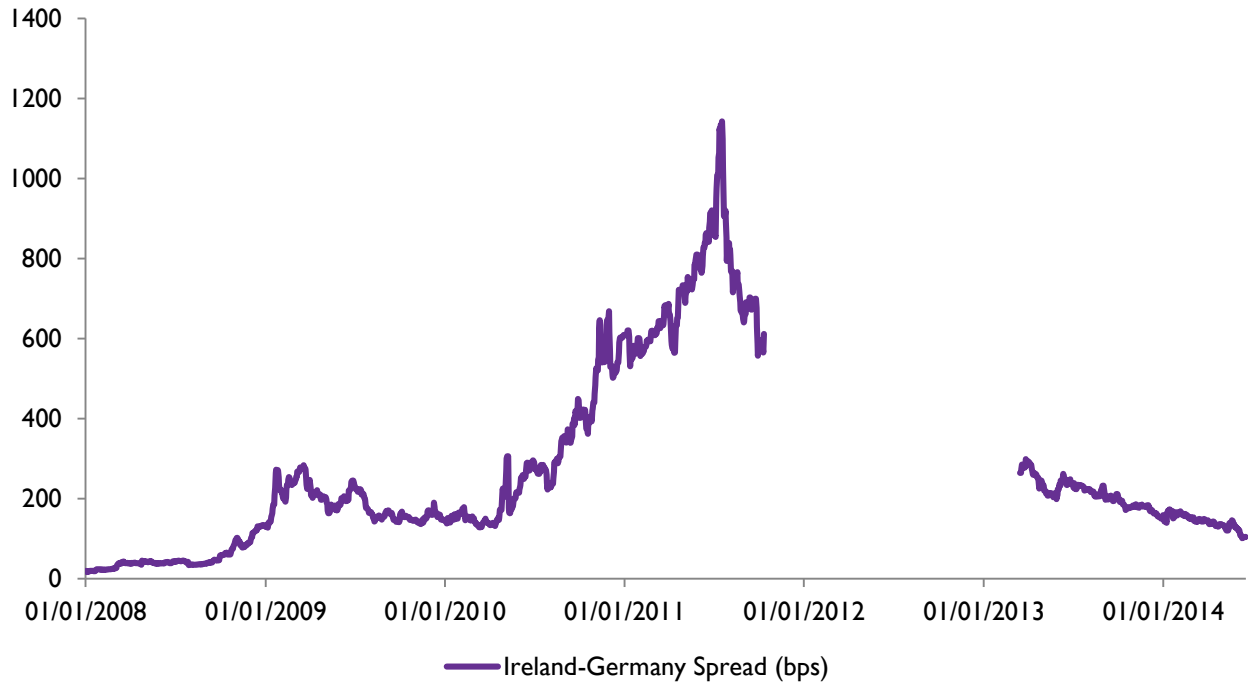
We argue that the Eurozone is a single capital market and that German government bonds are an appropriate empirical proxy for a Eurozone risk-free asset, though we do not mechanistically read our risk-

free rate recommendation from German government bond yields.[4] Given this, we believe our recommendations on the risk-free rate are consistent with Irish national circumstances.

In the same section of its response to consultation, Eircom comments that "the financial crisis is clearly not finished yet as reflected in Irish government bond yields, so there should be some form of upward adjustment in the WACC to take account of this reality".

We do not agree that "the financial crisis is clearly not finished yet". Irish government bond yields have come down markedly since their highs during the financial crisis and the spread between Irish 10 year government bond yields and German 10 year government bond yields are back to levels last seen in 2008. Additionally, the trend on has been downward since at least early 2013, as shown in Figure 1.1. To the extent that investors still demand some premium to hold Irish operators' debt over debts of other operators', we feel our Irish debt issuance premium would account for this.

Figure 1.1: Spread of Irish 10 year government bond yields over Germany 10 year government bond yields



Note: Data on Irish 10 year government bond yields not available between October 12, 2011 and March 14, 2013, causing a break in the spread time series.
Source: Bloomberg; Europe Economics analysis.

Furthermore, the Irish economy is forecasted to grow 2 per cent in 2014 and 3.2 per cent in 2015 according to recent forecasts from the Central Bank of Ireland.[5] Although one cannot definitively say that financial instability and its associated effects on the real economy will not occur again during the price control, we view the evidence as suggesting that the Irish economy is improving and base our forward-looking estimate of the WACC on that view.

1.2.15 Eircom's status as a privately held company

Eircom comments that it is "important to consider the implications of eircom's status as a privately held company both in terms of the liquidity premium and in terms of the cost of capital".

[4] See Section 1.6.1 for an extended discussion of using other sovereign bonds in an analysis of the risk-free rate.
[5] Central Bank of Ireland (2014) "Q2 Central Bank quarterly bulletin", p. 6. Available at: http://www.centralbank.ie/publications/Documents/Quarterly%20Bulletin%20QB%202.pdf

We have estimated the WACC on the basis of a hypothetical efficient operator in each of the markets analysed. We do not agree, then, that liquidity premia for a company's equity should be introduced, since we do not explicitly take a position on the liquidity or illiquidity of the hypothetical efficient operator.

We do not believe that additional factors, such as liquidity premia, are consistent with the single factor CAPM for the reasons outlined in our report and Section 1.2.1.

1.2.16 Use of historical data for forward-looking risks

Eircom argues that "the Europe Economics analysis relies exclusively upon historical data for its empirical support. This, by definition, means that the calculation does not take into account specific risks going forward associated with current or future investments".

We disagree with this claim for two reasons. First, for historical data to be a poor guide for forward-looking risks, the risk profile of new investments would have to be materially different from the risk profile of previous investments prior to undertaking those investments. Eircom has not provided any evidence that this is the case, and we have no strong reason to believe it would be. Second, the WACC remunerates investors for systematic risk, rather than specific risk. If a particular investment project has different exposure to systematic risk than Eircom's existing portfolio of projects, this would in principle call for use of a different beta.[6] Specific risks as such are irrelevant for the WACC.

1.3 ALTO

1.3.1 Use of CAPM methodology

ALTO agrees with the use of CAPM.

1.3.2 Tax rate, real risk-free rate, inflation, nominal risk-free rate, equity risk premium

ALTO had no comment on any of these generic parameters.

1.3.3 Fixed-line gearing, asset beta, debt premium

ALTO "generally supports ComReg's preliminary conclusions relating to ComReg's Review of Cost of Capital in the Fixed-line Telecommunications market" and "observes that ComReg's findings appear to be in line with WACC methodologies deployed in markets where international ALTO members have given input to this consultation."

[6] We note that in principle all WACCs should be done on a project-by-project basis, but this is generally not practical for a regulatory price control. In the regulatory context, the regulatory WACC is usually set at a firm-wide, or at most a business-line-wide, WACC. If ComReg were to consider a different beta and / or WACC for a particular Eircom project, we contend that the onus would be on Eircom to demonstrate that the project is sufficiently different from its existing or portfolio of projects — or perhaps even a portfolio of projects of a hypothetical efficient fixed-line operator — to justify differential treatment. A project-by-project consideration of betas or WACCs in this context is not, however, the same as a beta disaggregation exercise in the context of the price control raised by Sky (see Section 1.9.2).

1.4 TV3

1.4.1 Use of CAPM methodology, risk-free rate, equity risk premium

TV3 disputes vigorously the applicability of the CAPM methodology or the thought experiment of the cost of capital that would prevail in a competitive market. As a consequence it denies that there is any relevance of the equity risk premium to RTÉ.

TV3 considers that the use of a WACC including a cost of equity "gives rise to the unfair result that RTÉ is, in TV3's estimation, allowed on the one hand to take into account the inefficiencies it faces as a state-owned monopoly infrastructure provider for purposes of calculating its cost orientation obligation, while on the other hand enjoying the benefit of taking account of costs it does not actually face for purpose of the WACC review."

In our view, TV3's fire is slightly misdirected here. Insofar as there is a potential issue it is not, per se, that RTÉ is state-owned. The real question is whether, in a notionally competitive environment, the relevant thought experiment applicable to RTÉ is that of a company limited by shares (the thought experiment implicit in Europe Economics' approach) or a company limited by guarantee (which is arguably closer to RTÉ's actual structure and practice).[7]

A company limited by guarantee will have no equity and, although its cost of debt will typically be higher than debt of an equivalent credit rating in a company limited by shares, it will typically have a lower overall cost of capital — at least as usually assessed.[8] But it will not, in a competitive environment, have lower overall costs (except insofar as specific features of the competitive environment mean that companies limited by guarantee are intrinsically more efficient). Instead, some of the functions provided by equity in a company limited by shares will be provided in other ways in a company limited by guarantee.

The correct approach is consistency across the price control. If the cost of capital is based upon a thought experiment of a company limited by shares, then analysis of other elements of the price control (most clearly, Opex, but also Capex) must likewise be based upon the thought experiment of a company limited by shares (e.g. Opex benchmarking analysis and analysis of scope for efficiency improvements might be based upon comparators that are companies limited by shares).[9] Alternatively, if Opex is determined on the basis of the costs of a company limited by guarantee, then so should be the cost of capital — otherwise, if it were based upon the cost of capital of a company limited by shares, aggregate costs would be excessive.

In this context, we understand TV3's objection not to be, per se, to any of our analysis, but, rather, regarding how RTÉ's Opex is determined — a matter upon which we cannot comment. However, we would note that for there to be effective rivalry in a competitive market (the thought experiment upon which we have conducted our WACC analysis) there must be at least some players that operate with

---

7 This, as we understand, is that a company guaranteed by the state is simply one subset of the broader universe of companies limited by guarantee. Therefore, our general discussion of a company limited by guarantee and a company limited by shares is relevant for an analysis of 2rn and RTÉ.

8 It is possible to argue that companies limited by guarantee must always carry some form of shadow equity, either in the form of residual claims upon the assets in the event of wind-up, reputational gains or losses to the guarantor as the company does well or badly, or even the opportunity cost of cash buffers. Furthermore, some companies limited by guarantee distribute dividends to "members" (i.e. the guarantors) and the guarantors/members are exposed to non-trivial risk of liability in the event the company fails, in which case there is clear implication for the guarantor/member's own balance sheet – i.e. there will be an impact upon the guarantor's own equity values.

9 We are not asserting that ComReg must conduct a full efficiency benchmarking analysis. We have not considered the appropriateness or otherwise of the manner in which ComReg regulates public service DTT broadcasting outside of setting the WACC.

explicit or implicit equity (i.e. some players operating with a WACC of the form Europe Economics assessed).[10]

Additionally, we note that price cap regulation is introduced when there is significant market power. The presence of significant market power means that the business that has such dominance is not constrained in its pricing decisions by the actual or threatened prices charged by other firms. The purpose of price regulation is to introduce precisely those constraints on pricing the absence of which is the rationale for that price regulation — i.e. to impose as a price cap the price that would prevail, in equilibrium, in a competitive or contestable market.

The equilibrium price that would prevail in a competitive or contestable market is the price that would be charged by an efficient profit-maximising firm making (only) normal profit. In some competitive markets, profit-maximising firms compete with charities or government-backed firms. If a charity or a state-guaranteed entity is able to compete on price and quality in a competitive market, it does so by charging the same prices as an efficient profit-maximising firm making (only) normal profit. There is no assumption, in regulatory theory, that a charity or government-backed firm will, in equilibrium, be able to charge systematically lower prices than a profit-maximising firm for providing the same quality of goods or services. Indeed, the general thrust of regulation in the Single Market is based upon the opposite idea —- namely that, at least across a range of sectors including energy, communications, water, transport and others, state backing does not improve consumer welfare by resulting in sustainably lower equilibrium prices for the same quality of goods. In fact, if state backing were to entail the systematic charging of lower prices for the same quality of goods in a competitive market, that would be highly undesirable as it would mean efficient competing firms being driven out of the market (or potential new-entrants being deterred).

1.4.2 Precedents and comparators used

TV3 criticises our use of various precedent and comparator analysis, arguing that the companies and precedents considered are not appropriate comparators for 2rn and RTÉ. They point toward various regulatory determinations in the UK, which show that regulatory WACCs have been on average falling.

First, as correctly noted by TV3, RTÉ's accounting data did not provide a robust basis on which to assess its WACC and this is likely due to its status as a not-for-profit state owned entity. We note this in Section 8.4.1 of our original consultancy report. Given this, we do not believe an assessment of the WACC using RTÉ's accounting data would give a robust estimate of an appropriate WACC for a hypothetical efficient Irish broadcaster. We relied on relatively scant regulatory precedent in the sector and comparisons with industries that we believed were analogous to the sort of activities being regulated in this price control to arrive at the WACC for a hypothetical efficient Irish broadcaster.

As discussed in our consultancy report, to our knowledge there are no publicly quoted pure-play DTT broadcasting operators. We have used international benchmarking to estimate various WACC parameters, relying primarily on data from towers and mast companies and cross-checking that data with information from integrated telecommunications companies. Benchmarking of this sort is standard practice when estimating the cost of capital for a non-listed entity, is very similar to the sort of analysis done in Sweden to estimate the appropriate broadcasting WACC, and we would argue that we have not erred in our approach to benchmarking to inform our estimate of the broadcasting WACC. Indeed, we would assert that we have used the most relevant data available to us, in the absence of relevant data on 2rn / RTÉ, more regulatory precedent to inform our view, or any pure-play listed comparators.

Regulation, when done properly, should create incentives for firms to be efficient and not reward inefficient costs. Additionally by comparing multiple strands of evidence, such as regulatory precedent and market

[10] Public interest companies can operate at competitive prices if competing with for-profit companies, but cannot achieve a competitive price and internal technical efficiency simply by competing with each other.

data, we reduce the risk that the specific circumstances of any one operator (which may potentially be diversifiable and thus should not affect the WACC) distort our assessment of the appropriate broadcasting WACC. Therefore, in analysing regulated entities and in comparing multiple strands of evidence, we aim to reduce the risk that our assessment allows for inefficiently-incurred costs or that the idiosyncratic / diversifiable features of any one comparator biases our analysis.

On the points raised by TV3 regarding trends in UK WACCs, we agree that the regulatory WACC in the UK has exhibited a downward trend in recent years. However, without any information on a regulatory broadcasting WACC in Ireland, one cannot say where our WACC recommendation lies relative to some overall trend.

We do not believe that it is appropriate to read what an appropriate WACC would be from the comparators cited by TV3. First, these WACCs are in the UK, which may have different generic parameters and this would have an influence on the WACC. Second, these citations are from some of the most asset-heavy, low risk network operations in the UK. Therefore, it is unlikely that their generic parameters are appropriate for a broadcasting WACC. We did not believe that it was appropriate to appeal to precedent or market data on network utilities in our analysis of the broadcasting WACC, as we do not believe these industries would provide information on the broadcasting WACC superior to existing precedent or the companies whose market data we analysed.[11]

Finally, for comparison, the WACCs cited by TV3 are real vanilla WACCs.[12] By comparison, we have estimated a pre-tax nominal broadcasting WACC for ComReg. The non-aimed-up real vanilla broadcasting WACC implied by our recommendations to ComReg is 5.5 per cent, which is within the range of WACCs cited by TV3.

1.5 Vodafone

1.5.1 Use of CAPM methodology

Vodafone supports the use of the CAPM methodology, though it suggests that Europe Economics has not been standard in all respects in that it implies a WACC that rises with gearing, in violation of the Modigliani-Miller Capital Structure Irrelevance theorem. Vodafone suggests that this may be relatively harmless since the Modigliani-Miller Theorem "has largely been replaced by alternative theories".

We dispute both this characterisation of what Europe Economics has done and the contention that the Modigliani-Miller Theorem has been replaced — a point that was tested before the Competition Commission in the 2012 BT Appeal, wherein the Competition Commission rejected an argument made by BT that Dr Andrew Lilico of Europe Economics contended "was contradictory to the Modigliani-Miller theorem".[13]

Vodafone constructs a diagram of how, in their view, our recommendations imply the WACC rising with rising gearing. But their diagram would be relevant only to a case in which the same entity had a different WACC at, say, three different gearing levels. In the case of our analysis the three different gearing levels

[11] To the extent that our analysis is influenced by an analysis of network utilities, this is via the Swedish determination, which considered evidence from network utilities alongside evidence from towers and masts operators and integration telecommunications companies. Despite this, the Swedish regulator placed most weight on the towers and masts evidence, and our approach is consistent with this.

[12] CAA (2013) "Estimating the cost of capital: a technical appendix to the CAA's final proposals for economic regulation of Heathrow and Gatwick airport after April 2014", p. 91-92. Available here: http://www.caa.co.uk/docs/33/CAP1115.pdf.

[13] Competition Commission (2012) "British Telecommunications plc v Office of Communications supported by British Sky Broadcasting Limited TalkTalk Telecom Group plc", Case 1187/3/3/11, paragraph 3.83.

are for three different notional companies, in three different industries, with three different exposures to systematic risk, and hence three different WACCs.

1.5.2 Real risk-free rate, ERP, Tax Rate, Inflation

Vodafone supports ComReg's approach and does not dispute its figures.

1.5.3 Mobile vs fixed-line gearing

Vodafone believes a 10 per cent differential between mobile and fixed-line gearing is an error. It contends that the market evidence for integrated operators with a fixed-line business should have been adjusted to take account of the lower gearing of their mobile operations. It believes insufficient consideration has been given to the fact that some mobile operators are integrated businesses that include fixed-line business lines.

We analysed the gearing between fixed-line operators and mobile operators in Table 1.1. On the basis of this analysis, a gearing differential of between 20 per cent and 25 per cent could be supported. However, we note that in our original analysis we observed that Vodafone had a gearing of around 20 per cent and a strong single A credit rating. We set our notional gearing figure to a level that we thought would be consistent with an investment grade credit rating (BBB- under S&P and Fitch or Baa3 under Moody's). We argued that an efficient hypothetical mobile operator could support a higher level of gearing and remain investment grade. On that basis, we opted for a mobile gearing of 30 per cent.

The 10 per cent wedge between gearing in fixed-line and mobile was not targeted. It is a residual value that arises from two different sets of analysis. As mentioned, we arrived at our mobile gearing by aiming to set the gearing at a level consistent with an investment grade credit rating. We conducted a similar exercise for fixed-line, though our evidence base was different. On the basis of historical precedent and recent evidence on market comparators, we judged that 40 per cent was an appropriate level of fixed-line gearing.

We note that a wedge of 10 per cent is not out of line with recent regulatory opinions. For instance, in the UK Ofcom recently used a gearing figure of 27 per cent, which is equal to Vodafone's actual gearing figure over the past two years.[14] Again, we argue that a hypothetical efficient entity would be likely to finance itself at a somewhat higher level of gearing and remain within investment grade, and have set our notional mobile gearing figure to 30 per cent on that basis.

In fixed-line, Ofcom's May 2014 draft determination for LLU and WLR used a gearing figure of 32 per cent, this time based on BT Group's two year average gearing.[15] We believe that BT's very recent gearing may be relatively low by comparator standards (see Table 1.1), and that comparator evidence in conjunction with evidence from BT supported a fixed-line gearing of 40 per cent.

Using Ofcom's gearing figures of 32 per cent for fixed-line and 27 per cent for mobile, the gearing wedge in UK regulatory precedent is 5 per cent. Our wedge of 10 per cent is higher than this, and we believe that it is reflective of the data. Therefore, we do not agree with Vodafone that the gearing differential between fixed-line and mobile should be moved from its current level.

1.5.4 Mobile vs fixed fine asset beta

Vodafone contends that the asset beta of pure mobile operators should have been 0.2 greater than that of pure fixed-line operators, not the 0.05 differential Europe Economics found. It suggests that Europe Economics has inadvertently compared integrated fixed-mobile operators with purer fixed-line operators,

[14] Ofcom (2014) "Mobile call termination market review 2015-18: Annexes 11-17", p. 82-83.
[15] Ofcom (2014) "Fixed access market reviews: wholesale local access, wholesale fixed analogue exchange lines, ISDN2 and ISDN30 – Annexes", p. 178-182.

excluding the purest mobile-only operator as an outlier, when in fact the correct comparison should have been between the purest mobile-only operator and the purest fixed-line operators.

We are sympathetic with the logic behind Vodafone's general contention that the asset beta for a pure-play mobile operator might be higher than that of a pure-play fixed-line operator. Indeed, this is reflected in our wedge between the mobile asset beta and the fixed-line asset beta of 0.05. We emphasise that we did not target a particular wedge as such; this is simply the wedge that arose from our assessment of the evidence.

Vodafone contends that the appropriate wedge between a mobile asset beta and a an integrated mobile/fixed-line operator asset beta is 0.20, in addition to a further wedged between integrated operators and more pure play fixed-line operators.

Vodafone's position here may be overly dependent upon Vodafone's own idiosyncratic business features and risk, without placing adequate weight upon market evidence of other businesses that do have a large mobile component. Nonetheless, the "raw" evidence on betas does imply a non-trivial differential between mobile and fixed-line asset betas. One way to see this can be illustrated by the table below.

Table 1.2: Asset betas versus mobile revenue, selected companies

	Asset beta	Mobile Revenue %
Vodafone	0.56	89%
Mobistar	0.48	87%
Telenor	0.56	78%
KPN	0.32	75%
Tele2	0.59	72%
Telefonica	0.49	67%
Sonaecom	0.42	64%
Orange	0.43	52%
Deutsch Telekom	0.42	50%
Telecom Italia	0.39	24%
Belgacom	0.45	16%

Source: Ofcom & the Brattle Group, 2014.

In this table we compare asset betas with the percentage of revenues drawn from mobile. There are a number of important comments to note:

- The asset beta of a company that consisted of a blend of mobile and fixed-line activities should, as an implication of the Modigliani-Miller Theorem, be the weighted combination of the asset betas of fixed and of mobile activities, where the weights are the asset values. Mobile revenues are a relatively poor proxy for asset values. However, they are the only data we have available here.
- We only have data on the percentages of revenues drawn from mobile activities. We have no guarantee that non-mobile revenues are all fixed-line revenues (indeed, we regard the chances of that as low). However, for our purposes here we assume that all non-mobile revenues are fixed-line revenues.
- If we assume that all non-mobile revenues are fixed-line revenues and that revenue percentages are a good proxy for asset valuations, we can then consider what the data above imply for how asset betas change as the proportion of mobile activities changes. Specifically, we can regress asset betas upon mobile revenues. The result is a coefficient of 0.15, which means that if mobile revenues went from 0 to 100 per cent, the asset beta would be expected to be 0.15 higher.
- Even setting aside the heroic assumptions about non-mobile revenues and the value of revenues as a proxy for asset values, the correlation of our regression is low — just 0.43.

This 0.15 differential ("wedge") in the raw data is the same differential we identified in our advice. Our analysis indicated a 0.6 asset beta for our purest play mobile operator, Vodafone,[16] and a 0.45 mid-point average asset beta for fixed-line operators[17] — a 0.15 wedge. However, we have good reasons to shade down the 0.6 estimate for mobile and shade up the 0.45 for fixed-line — in both cases on the basis of 5 year betas. This takes our wedge down to 0.05. As we consider both the 2 year and 5 year rolling betas for fixed and mobile in similar fashions, we do not agree with Vodafone that the analysis "relies on 2 year beta values for the mobile beta and 5 year beta values for the fixed beta".

We observe, in passing, that the wedge is not an item of analysis in itself in our advice — it is simply the mathematical product of two separately-conducted analyses. However, our implicit wedge advice does, we believe, reflect the current standard (implicit or otherwise) conclusion on that wedge in regulatory WACC analysis.

For example, we refer to the June 2014 consultation on MTR pricing in the UK issued by Ofcom.[18] In this consultation, Ofcom uses an asset beta of 0.54 to calculate the WACC to be used in its MTR pricing model. This is very close to the asset beta of 0.55 that Europe Economics used in its calculation of the WACC for ComReg's MTR pricing model.

Ofcom's recent MTR pricing consultation also gives some indication of what the appropriate wedge between a mobile asset beta and a fixed-line asset beta might be. First, we note that Ofcom's May 2014 draft fixed-line determination gives an asset beta to BT Openreach, the domestic fixed-line incumbent provider of LLU and WLR services, of 0.50.[19] The difference between the proposed mobile asset beta (0.54) and the proposed fixed-line asset beta (0.50) is 0.04. The price control period for LLU and WLR corresponds to the price control period for the MTR price control, so the appropriate asset beta wedge using Ofcom's figures is 0.04.

Second, the Brattle Group advised Ofcom in the recent MTR price control.[20] The Brattle Group estimate UK mobile network operators have a two year asset beta of 0.49, while US wireless has two year asset beta of 0.53, and European wireless 0.51. In terms of wedge, there would be a wedge of -0.01 for UK fixed-line (assuming the Ofcom Openreach asset beta of 0.50), a wedge of 0.19 for the US, and a wedge of 0.10 for Europe. In no case is Vodafone's proposed wedge of 0.20 recommended, although the implied US wedge is very close. Our wedge of 0.05 lies between the -0.01 implied UK wedge based on the Brattle Group's analysis and Ofcom's Openreach asset beta and the implied 0.10 European beta wedge.

To reiterate: Europe Economics' advice has not been based upon wedge analysis. We had adequate data to asset the fixed-line and mobile betas separately, in their own right, without resorting to wedge analysis (which tends to be of most value in a context where directly observable data is not available). Nonetheless, the implicit wedge our recommendations imply is in line with other recent regulatory precedent.

1.5.5 The regulatory WACC and investment incentives

Vodafone "does not believe the WACC should be used to incentivise investment". We agree with Vodafone, subject to the caveat that if an operator can credibly demonstrate to ComReg that a particular project has an extraordinarily different risk profile than existing projects, then ComReg would not err in at least considering the possibility of using a different regulatory WACC for that project. Notwithstanding this caveat, the regulatory WACC should be sufficient to remunerate efficiently incurred investment.

[16] Europe Economics (2014) Section 6.2.2 p. 54
[17] Europe Economics (2014) Section 7.2.3 p. 67
[18] Ofcom (2014) "Mobile call termination market review 2015-18".
[19] Ofcom (2014) "Fixed access market reviews: wholesale local access, wholesale fixed analogue exchange lines, ISDN2 and ISDN30 – Annexes", p. 166.
[20] Brattle Group (2014) "Estimates of equity and asset betas for UK mobile owners".

1.6 Telefónica

1.6.1 Use of peripheral European sovereign bonds in risk-free rate analysis

Telefónica argues that "consideration should be given to using other larger [Eurozone] countries such as Spain or Portugal as a base for the risk free rate". This argument follows from the point made that German yields bonds, which Europe Economics used as part of its empirical assessment of the risk-free rate, are extraordinarily low due to flight to quality effects.

We do not agree with Telefónica's point for two reasons. First, it is important to clarify that real yields on government bonds are a proxy for the risk-free rate and not the risk-free rate itself. The risk-free rate is a conceptual, rather than empirical, quantity. Although we use German government bonds as an empirical proxy for the risk-free rate in a single Eurozone capital market[21], we do not base our recommended risk-free rate on a direct read-across from real yields on German government bonds. Indeed, we recognised the downward pressure that excess liquidity and flight to quality have exerted on German government bond yields, and considered various other strands of evidence in our analysis of the risk-free rate.

Second, to the extent that empirical evidence is used in an assessment of the risk-free rate, we do not believe it would be appropriate to use yields on other large peripheral Eurozone sovereign bonds as proxies for the risk-free rate. It is clear that large spikes in Spanish and Portuguese government bond yields was a reaction to the financial stresses and risk of default present at the height of the Eurozone crisis. That is to say, the bonds were not free from risk. This is precisely the reason that we do not use Irish government bonds in an assessment of the risk-free rate, and we do not believe it would be appropriate to use yields on other (particularly peripheral) sovereigns in our empirical analysis of the risk-free rate.

1.6.2 Mid-term price reviews

Telefónica states that it "*agrees that a CAPM-based WACC is the most appropriate basis for calculating cost of capital*" and "*agrees in general with ComReg's estimates and parameters*". Its key concern is summarised as follows:

> "Although we are coming out of a volatile period in terms of bond yields there are still spreads which reflect the speculative nature of the bond markets. There is an assumption that in coming years the German yields will increase and the Irish bond market will stabilise. Given that scenario it is a firm recommendation of Telefonica that the cost of capital assumptions are reviewed again within the next two years to ensure all assumptions remain valid."

We note that the CER had a mid-term review (conducted in 2013-14) of its 2010 WACC determination for ESBN and Eirgrid. Mid-term reviews have occasionally occurred in other sectors, also. However, we recommend against ComReg conducting such a review on this occasion. Part of the purpose of using a cycle of price reviews is that firms have the opportunity to manage risk so as to out-perform regulatory assumptions and keep the proceeds until the next review period. Mid-term reviews undermine such incentives, are administratively costly to conduct, and introduce an additional element of uncertainty in the form of regulatory risk.

Such considerations can be outweighed if market uncertainty is sufficiently high. In that case it might be better to conduct a mid-term review than to force companies or customers to cope, throughout the price control period, with markedly incorrect prices.

[21] We refer to the academic references cited in our original report for arguments for why German government bonds are an appropriate proxy for a risk-free asset in a single Eurozone capital market.

In the context of the great uncertainty regarding Ireland's macroeconomic outlook in late 2010, it was natural and appropriate that the CER should consider a mid-term review. In the case of its later BGN price control, the CER went further and introduced an automatic indexation mechanism to mitigate macroeconomic risk.

It might be argued that, in a sense, the current situation reverses a large element of the same risk and so might be seen as subject to equivalent uncertainty — Europe Economics' advice is based on an assumption that the considerable normalisation in Ireland's macroeconomic outlook since 2012 persists over the next few years and indeed is extended into further normalisation (e.g. via a rise in the risk-free rate). Such normalisation is uncertain, the rise in the risk-free rate Europe Economics proposes is disputable and disputed, and the implications for consumers of prices being mis-set owing to the assumed macroeconomic recovery not continuing are non-trivial.

There is, therefore, a case for a mid-term review or trigger for a mid-term review of some sort (e.g. if Irish and German government bond yields were still below 3 per cent in 2017 and inflation were close to 2 per cent, the rise Europe Economics' analysis predicts in the risk-free rate might come in to question, triggering a review). On the other hand, in the case of a very significant deterioration of circumstances, it would be open for the regulatory authorities to simply deem that the significant change in circumstances justified a new review – without the need for any automatic trigger.

We do not dispute that this is a closely balanced judgement call. Nonetheless, our judgement remains that the potential gains from introducing any automatic trigger of a mid-term review are unlikely to justify the cost, uncertainty, and lost incentives.

1.6.3 Gearing

Telefónica contends that "from a gearing perspective the corporate group is the correct source of gearing estimates and in that context for many Irish operators fixed and mobile are essentially the same".

We do not dispute that, from the perspective of an integrated telecommunications operators, gearing is a group-level consideration as debt and equity are not divided among the various business lines.

However, the WACCs were estimated with reference to a hypothetical efficient operator in both industries, rather than the actual entities themselves. We have identified differences in gearing levels between purer-play mobile operators and purer-play fixed-line operators. For regulatory purposes, then, we advise that it is appropriate to analyse gearing for mobile and gearing for fixed-line separately.

1.7 2rn/RTÉ

1.7.1 Points of agreement

2rn/RTÉ expressed agreement with the following points:

- Use of the CAPM / WACC approach to estimating the cost of capital.
- Estimating the nominal risk-free rate as the real risk-free rate and inflation expectation components estimated separately.
- The 2.3 per cent real risk-free rate.
- The 1.75 per cent forward-looking inflation rate.
- The use of long-run data for the ERP.
- The 5 per cent ERP.
- The 12.5 per cent statutory tax rate.
- The use of a notional gearing approach.

- Use of market comparators for unlisted companies in general.
- Use of a zero debt beta.
- A 1.5 per cent debt premium.
- A 0.25 per cent Irish debt issuance premium.
- The principle of aiming up.

We discuss what 2rn/RTÉ disagrees with and our response to those disagreements below.

1.7.2 Small company premium

2rn/RTÉ argues for a small company premium adjustment.

We continue to object to a small company premium, which is a departure from CAPM, for the reasons set out in our previous advice.

1.7.3 Irish equity risk premium

2rn/RTÉ argues for an addition to the Irish cost of equity reflecting Ireland-specific equity risk. It argues that it is inconsistent to accept an Irish debt premium whilst denying the existence of an additional Irish equity premium.

In our approach, differential Irish versus other country equity risk would be reflected in a different Irish ERP. But the standard DMS data does not support an Irish ERP elevated above European levels (this is a change in recent years compared with before the mid-2000s, perhaps reflecting increased capital market integration in the Eurozone.

We note that the Competition Commission, in the 2014 NIE judgement, rejected the concept of a Northern Ireland-specific equity risk premium even though a Northern Ireland-specific debt premium was not rejected (as we do not reject an Ireland-specific debt premium in our advice).[22]

1.7.4 DTT services depreciation

2rn/RTÉ contend that the concept of reducing the depreciation allowance would not allow it to earn a return on already written-down assets.

In our view, the task of regulation is not to *guarantee* regulated entities any return on assets as such. The WACC is above the risk-free rate precisely because companies take the risk, at the time of investment, that returns will above or below the risk-free rate. The compensation for bearing this variability in returns is the expected additional return over the risk-free rate. Furthermore, the WACC is meant to remunerate, via an expected return at the time of investment, efficient investment at the margin. It is not meant to compensate for investments that did not turn out as planned *ex-post*.

1.7.5 Gearing

2rn/RTÉ contend that a gearing of 25 per cent is too low, preferring a gearing of 30 per cent, reflecting the mid-point of Europe Economics' evidential range. They note that Europe Economics' preference for the lower end of its evidential range is that the lower-geared companies in the comparator sample tended to have investment grade credit ratings, whilst those comparators more highly geared sometimes did not have investment grade ratings. 2rn/RTÉ question the basis for this preference.

[22] Competition Commission (2014) "Northern Ireland Electricity Limited price determination", p. 13-7 – 13-20.

Although there are a number of other factors involved, the simplest and most direct way to understand the basis for the 25 per cent preference is that the debt premia Europe Economics uses in its cost of debt analysis is based upon investment grade companies. Therefore the gearing chosen should be consistent with that.

1.7.6 Asset beta

2rn/RTÉ challenge the asset beta conclusions, noting that pre-crisis betas were in the 0.6-0.8 range and some regulatory precedent lies above the 0.55 Europe Economics recommends.

We note that at the time of our advice to ComReg, we had good market data on tower and mast companies, with 2 year asset betas that had been fairly stable over the previous two years and more. The mid-point of our 0.4-0.6 range was 0.5. Nonetheless, we placed some weight upon the fact that pre-crisis betas had been higher and regulatory precedent tended to be higher than the market data of the previous few years, and therefore raised our 0.5 mid-point to 0.55 — i.e. we believe that our advice already incorporates the points 2rn/RTÉ make.

1.7.7 Aiming up

2rn/RTÉ note that other regulators have aimed up by more than approximately one standard deviation / the 66th percentile in the past and argue that ComReg and Europe Economics should assess the consequences of not aiming up higher.

First, in our initial advice to ComReg and in our consultancy report, we highlighted that other regulators had aimed up more in the past but that we do not agree with aiming up to, say, the 95th percentile or approximately two standard deviations. Our reasons for objecting to aiming up this high are given in that report.

Second, as discussed in the next chapter, it is likely that we have aimed up higher than one standard deviation above the mean on our end WACC. Our aimed up WACCs are slightly higher than one simulated standard deviation above a simulated mean but less than two simulated standard deviations above that mean. Our estimate of what two standard deviations above the mean imply the aimed-up WACCs ComReg would use if it sought to aim up at approximately the 95th percentile, but this is not something we would recommend.

1.8 BT Ireland

We have no comment on BT's response to consultation.

1.9 Sky Ireland

1.9.1 Hypothetical efficient operator points

Sky argues "that ComReg needs to establish with [Europe Economics]" whether the asset betas considered in our analysis of regulatory precedent were determined on the basis of a hypothetical efficient operator or not. Additionally, Sky contends that ["it is not clear what analysis has been conducted by [Europe Economics] to establish to what extent [the incumbents considered] are a good proxy for a [hypothetical efficient operator]".

We disagree with Sky that regulatory precedent considered in our analysis must have been established with reference to a hypothetical efficient operator. Furthermore, we disagree with Sky that the comparators we

consider must be analysed to determine whether or not they are good proxies for a hypothetical efficient operator. This is for a number of reasons.

First, in European telecommunications price controls, the evidence marshalled to determine a variety of specific parameters is very often with reference to comparator data. Therefore we believe it is of little relevance whether the comparator is with reference to a hypothetical efficient operator or an actual operator; the evidence bases used in the determinations are similar and thus it is unlikely that our analysis of previous precedent would be unduly influenced by any one actual operator.

Second, Sky asserts that determinations that were not made on the basis of a hypothetical efficient operator are likely to be biased upwards. We disagree, both on the basis of the argument in the previous paragraph and on the basis of the fact that an actual entity in a different country might have a lower asset beta than an *Irish* hypothetical efficient operator, due to the lower risk profile of operations in that country. Therefore, there is no reason *a priori* to assume that relying on determinations not made on the basis of a hypothetical efficient operator would bias our asset beta estimate upwards.

Third, we use a number of regulatory precedents and market comparators to arrive at our final estimate for the asset beta for a hypothetical efficient operator. In doing so, we aim to minimise distortions associated with relying on any one precedent or operator in estimating the appropriate asset beta for an Irish hypothetical efficient operator. Where precedent or market data were outliers among peer comparisons, we have noted this and adjusted our analysis accordingly.

Fourth, it is not clear what analysis should be done to ensure that companies are "good proxies" for an Irish hypothetical efficient operator. Such an analysis would presumably include cost benchmarking, which is precisely the analysis we are conducting in our estimate of the WACC. Since the only domestic Irish fixed-line incumbent is Eircom, we necessarily have to rely on comparator evidence to benchmark Eircom's financing costs. This is further reinforced by the fact that Eircom's capital structure and associated financial data is far from what we would consider to be efficient. Other types of top-down cost benchmarking, such as estimates of efficient levels of Opex and Capex, would also rely on international comparators.

Fifth, using international comparators in WACC benchmarking is a well-established practice in regulatory finance. For the reasons above, we are satisfied that the analysis we have conducted gives, according to our professional judgement, our best estimate for the asset beta of an Irish hypothetical efficient fixed-line operator.

1.9.2 Beta disaggregation

Sky proposes additional beta disaggregation — i.e. the assigning of different WACCs to different business lines within regulated entities.

We note that Sky's point here is in line with regulatory practice in a number of sectors. For example, in the 2008 London Airports determination, the Civil Aviation Authority switched away from assigning a single BAA cost of capital to assigning separate costs of capital for Heathrow and Gatwick.

Furthermore, it is well-established in corporate finance theory that companies are, conceptually, bundles of investment projects each with its own in-principle WACC.

In regulatory determination, there must be a judgement call about what level of disaggregation it is proportionate to entertain. It will rarely, if ever, be appropriate to disaggregate to the level of every individual project.[23]

[23] This issue is separate from the consideration of project-specific betas discussed in our response to Eircom in Section 1.2.16. Project-by-project consideration of betas can be appropriate in particular circumstances, such as those discussed in Section 1.2.16. We did not disaggregate betas in our assessment of the WACC due to the

For the current determination, bearing in mind the availability of data for the regulated entities involved, the challenge of determining the correct asset base and other data for multiple comparators across multiple business lines (increasing exponentially the cost and challenge of comparator analysis), and the relatively low WACC differentials found across the sector, our judgement has been that it has not been proportionate in this determination to assign different WACCs to different business lines of regulated entities. However, we do not believe that there is any strong in-principle reason not to do this, and would recommend that in future price determinations the question of disaggregation is considered again.

1.10 Hutchinson 3G Ireland

Hutchingson 3G ("Three") writes that "Three believes that it is premature (and disproportionate) for ComReg to consult in respect of [the cost of capital] until the outcome of [Three's proposed merger with O2 in Ireland] is known".

We have no comment on this point, other than to say that we have not advised ComReg on this matter.

challenges involved and the relatively small amount of additional information that we believe would be gained from such an exercise.

2 Additional Detail on Aiming Up

2.1 On aiming up

Choosing a value for the WACC that is above the regulator's expected value for the WACC has been standard practice for regulators for many years, across many regulated sectors and in particular in the communications sector, both in Europe and outside. The process by which this is done has often been implicit – via the choice of a "conservative" estimate of a particular parameter such as the beta or the equity risk premium. In other situations it is done by choosing, as a point estimate, a value above the mid-point of quoted range for the WACC as a whole or some key building block thereof.

Wholly implicit conservativeness is not straightforward to evidence, but the practice of choosing a point estimate above the mid-point can be seen in a number of determinations. How regulators choose a point estimate from within a range was explored by the consultancy "Economic Insights" in a recent (June 2014) report for the New Zealand Commerce Commission.[24] Of 53 decisions reviewed in that document, 35 involved choices of the point determination of the WACC at above the mid-point of the quoted range. The authors remarked that, for those cases where the point estimate used of the WACC is not explicitly above the mid-point of the range, "This often reflects adopting a conservative view of the market risk premium and equity beta that are used in the Capital Asset Pricing Model (CAPM) for determining the return on equity, where 'conservative' means erring on the high side."[25]

This standard international practice has also been used by ComReg in previous determinations. For example, in 2008 ComReg set Eircom's WACC at 10.21 per cent whereas the mid-point of the WACC range estimated by ComReg's cost of capital advisors Oxera was 9.43 per cent.

The justification for such conservativeness was set out by the UK regulator Ofcom in a 2005 methodological paper.[26] Ofcom stated:

> "Traditionally, Ofcom has considered that the downside risk associated with taking too low a value for the ERP (discouraging discretionary investment) is more detrimental to the interests of consumers than taking too high a value (leading to higher prices to customers) and has tended to the higher end of the possible range. Having reviewed its approach in this area, Ofcom remains of this view".

This methodological position was confirmed in its Final Statement of August 2005.[27]

We note that Ofcom's justification here — with which we agree — is framed in terms of balancing the long-term interests of consumers (in obtaining high quality and innovative products supported by investment) with their shorter-term objectives (in paying the lowest current price) rather than in terms of a trade-off between the interests of consumers and those of investors.

---

[24] Economic Insights (2014) "Regulatory precedents for setting the WACC within a range".

[25] Economic Insights (2014) "Regulatory precedents for setting the WACC within a range", p. iii.

[26] Ofcom (2005) "Ofcom's approach to risk in the assessment of the cost of capital". See paragraphs 1.13, 4.28, and 4.33 of http://stakeholders.ofcom.org.uk/binaries/consultations/cost_capital/summary/cost_capital.pdf.

[27] Ofcom (2005) "Ofcom's approach to risk in the assessment of the cost of capital". See paragraph 4.73 of http://stakeholders.ofcom.org.uk/binaries/consultations/cost_capital2/statement/final.pdf. Note also that at paragraph 4.33 Ofcom again confirms that it picks points above the mid-point of its ranges: "By proposing values that are towards the upper end of a reasonable range…".

Europe Economics has argued that, since all regulators aim up, it would be better to do so via some explicit procedure that ensured that the degree of aiming up was transparent and that the regulator did not aim up by more than is required to meet its regulatory objectives. The aiming up procedure Europe Economics proposed to ComReg was not intended to result in ComReg making a final determination figure that was higher than ComReg would have chosen absent aiming up. If anything, by making the aiming up procedure systematic the objective is to reduce the degree of aiming up needed by ensuring that no more is done than is required to meet the relevant regulatory objectives.

2.2 Cross-check of aiming up using Monte Carlo simulation

ComReg has requested that Europe Economics estimate with more precision the degree to which our proposed WACCs are aimed up. This stems from the fact that Europe Economics took the 66th percentile, or approximately one standard deviation above the mean, as the proper degree of aiming up.

The logic behind aiming up our best estimate of the WACC and the methodology for doing so was been laid out in our original report.[28] We acknowledged that our methodology was likely to aim up higher than the 66th percentile and that our estimate was merely an approximation not to be taken as at the 66th percentile with a great degree of precision. We also noted that, in principle, one could conduct a more sophisticated analysis to arrive at an estimate of the degree of our aiming up.

We have done a Monte Carlo simulation to understand better where our aimed-up WACCs sit within a range of plausible values. This analysis is a cross-check on the aiming up exercise in the main consultancy report and is not intended to replace that original work. The Monte Carlo analysis was done as follows:

- For parameters that were not derived from calculations using other parameters in the WACC (e.g. real risk-free rate, ERP, etc.), we assumed that the parameter was taken from a normal distribution with a mean and a standard deviation. This is done to obtain a range of values for these parameters that can feed into the calculations that produce a range of values for the WACC, which we then use to calculate the degree of aiming up. For the mean, we used our pre-aiming up point estimate for the component. For the standard deviation, we assumed that one standard deviation is equal to the difference between the values that we give in the "low" and "high" scenarios for the WACC divided by four.[29] For example, if the low end value was one and the high end value was five, then the difference between the two values would be four. Dividing this figure by four would give a standard deviation of one. The following parameters were calculated in this manner:
  - Real risk-free rate.
  - Inflation.
  - ERP.
  - Asset beta.
  - Debt premium.
- For parameters that were derived from calculations using other parameters in the WACC (e.g. the nominal risk-free rate, the cost of equity, etc.), we simply calculated those parameters from the simulated values of their respective component parameters. For example, the nominal risk-free rate is composed of the real-risk free rate and inflation. The real risk-free rate and inflation were simulated

[28] Europe Economics (2014) "Cost of capital for mobile, fixed-line and broadcasting price controls: Report for ComReg".

[29] We adopted this approach because some of the parameters (e.g. the real risk-free rate) are not directly observable and were analysed in the context of multiple strands of evidence. For some parameters standard deviations were available, but we used the method described above for all parameters in the interest of methodological consistency.

using the process described above. The nominal risk-free rate is then calculated using those simulated values. The following parameters were calculated in this manner:

- Nominal risk-free rate.
- Equity beta at notional gearing.
- Cost of equity.
- Cost of debt.
- WACC.

Gearing was held constant throughout as it is a notional figure. The tax rate of 12.5 per cent was held constant throughout.

This simulation exercise was run 1,000 times, giving 1,000 observations for each of the parameters in the WACC as well as the WACC itself. We then calculated the means and standard deviations for the simulated WACCs in each regulated industry. The mean simulated WACC was equal to our best estimate for the WACC to one decimal place in each case. We then add the standard deviation of the simulated WACC to our mean WACC estimate to arrive at an estimate of what "one standard deviation above our best estimate" would be.

In every case, one standard deviation above the central estimate was less than our proposed aimed-up WACCs, meaning it is likely that we aimed up the end WACCs by more than one standard deviation. This is not surprising, as we had argued as such in our initial report. All of the WACCs are below two standard deviations above our central estimate, which means we did not aim up to approximately the 95th percentile. Thus, we can say that our aimed up WACCs are slightly above one but less than two standard deviations above our best estimate. The results of our simulation exercise are presented in Table 2.1 below.

Table 2.1: Results of Monte Carlo simulation for WACC aiming up

	Mobile	Fixed-line	Broadcasting
Europe Economics' pre-aiming-up best estimate WACC	8.2	8.0	8.1
Simulated mean	8.2	8.0	8.1
Simulated standard deviation	0.4	0.4	0.4
Simulated WACC with one standard deviation above mean	8.6	8.4	8.5
Simulated WACC with two standard deviations above mean	9.0	8.8	8.9
Europe Economics' recommendation on aimed-up WACC	8.7	8.5	8.7

Source: Europe Economics analysis of data cited in: Europe Economics (2014) "Cost of capital for mobile, fixed-line and broadcasting price controls: Report for ComReg".

For mobile, our simulated WACC mean is 8.2 per cent and our simulated standard deviation is 0.4. One standard deviation above the mean, then, is 8.6 per cent. We recommended to ComReg an aimed-up mobile WACC of 8.7 per cent, which is close to one standard deviation above the mean and two standard deviations above the mean, which is 9.0.

Similarly, one standard deviation above our fixed-line mean is 8.4 per cent. Our recommended aimed-up WACC of 8.5 per cent is slightly above this figure, but lower than the 8.8 per cent WACC that results from aiming up by two standard deviations.

For broadcasting, the simulated WACC aimed up one standard deviation is 8.5 per cent, while we recommended an aimed up WACC of 8.7 per cent. Two standard deviations above our simulated broadcasting WACC is 8.9 per cent, so our proposed aimed up WACC of 8.7 per cent is below that. We are conscious that the degree of aiming up in our proposed broadcasting WACC is around 0.2 per cent higher than the simulated aimed-up WACC, while the proposed WACC is only 0.1 per cent higher for mobile and fixed-line. We feel this reflects some general, less quantifiable uncertainty we have surrounding

the broadcasting figures. This uncertainty arises from the fact that we do not have market data on the regulated entity or comparators and that there is very little regulatory precedent in the area.

In our original advice to ComReg, we said that our intention to aim up by one standard deviation on the overall WACC corresponded to approximately the 66th percentile, assuming a normal distribution for the WACC. Insofar as references to "percentiles" are meaningful and correct, our 66th percentile reference refers the percentage probability that a WACC value will lie no farther from the mean than the value we recommend. At one standard deviation, that is the 68th percentile. We might term this the "two-tailed test percentile".

Another concept of "percentile" would be how much of the probability distribution should be expected to be below the chosen value, after aiming up. We might term this the "one-tailed test percentile". Arguably this is a more intuitive and common use of the term "percentile" and sometimes our discussions may have conflated the two concepts. Since at one standard deviation 68 per cent of a normal distribution will be no further from the mean than the chosen value, 16 per cent will be more than one standard deviation below, and 16 per cent more than one standard deviation above the mean. So a one standard deviation aiming up, if done precisely, should correspond to the 84th percentile on this one-tailed test concept.

What we have been attempting to do was to aim up by approximately one standard deviation, not seeking any specific percentile; any inconsistency in terminology is not reflected in any inconsistency of method or quantitative result. So we should expect there to be around 80 per cent, or perhaps a little more, of the probability distribution below the chosen value. We note that there is no strong reason for the correct value to be 84 per cent as opposed to 80 per cent or 75 per cent. We observe that the CAA's recent Heathrow judgement involved aiming up at the 78th percentile, according to the one-tailed test concept.[30]

ComReg has analysed the simulation performed by Europe Economics to determine with more precision the degree of aiming up implied by Europe Economics recommendations. This has involved calculating a t-statistic based on the recommended best estimate of the WACCs, the aimed-up WACCs, and the simulated standard deviations[31] for the WACCs in each of the three sectors.[32] Using the t-statistic, ComReg has calculated the approximate percentile implied by Europe Economics' aiming up and simulation.

Table 2.2: ComReg analysis of Europe Economics aiming up and simulation

	Mobile	Fixed-line	Broadcasting
Exact EE pre aiming-up best estimate WACC	8.17	8.00	8.11
Exact EE recommendation on aimed-up WACC	8.66	8.48	8.68
Difference	0.49	0.48	0.57
Implied t-statistic using simulated standard deviations	1.22	1.19	1.42
Percentile aiming up (one-tailed test)	85th	85th	90th

Source: ComReg based on Europe Economics analysis

Given the discussion of one-tailed and two-tailed concepts of the percentile of aiming up, ComReg's findings that on a one-tailed test model the aimed up value corresponds to the 85th percentile for mobile and fixed-line indicate that the aimed up value is nearly precisely the one standard deviation aiming up we were attempting to approximate. For broadcasting we indicated that a slightly higher degree of aiming up

[30] Recall that the one standard deviation aiming up principle arose originally in Europe Economics' advice to Ofwat in 2009 as a way of unpacking our contention that the Competition Commission had aimed up too far in the 2008 Stansted judgement when it proposed aiming up at the 95th percentile. It merely reflects the concept of aiming up "a bit" as opposed to "aiming up so far that one is certain the determined number is not below the actual market WACC".

[31] Note that the standard deviations are rounded to tenth decimal place.

[32] The t-statistics is calculated by dividing the difference pre-aiming up best estimate WACC and the aimed-up WACC by the simulated standard deviation.

was appropriate, and it is therefore unsurprising (and the implicit intention) that our value corresponds to the 90th percentile.

Annex: 9 Europe Economics WACC Parameter Review - December 2014

Europe Economics

WACC Parameter Review

December 2014

Europe Economics
Chancery House
53-64 Chancery Lane
London WC2A 1QU

Tel: (+44) (0) 20 7831 4717
Fax: (+44) (0) 20 7831 4515

www.europe-economics.com

Contents

1 Introduction

This note analyses updated market data on the risk-free rate, inflation, asset betas and debt premiums of various communication sector operators up to the end of October 2014. The Irish Commission for Communications Regulation (ComReg) commissioned this note to assess and, where relevant, update parameters used in the determination of the weighted average cost of capital (WACC) for three communications sectors in Ireland. This note builds on and refers to previous Europe Economics analysis for ComReg. Specifically, these are Europe Economics' original consultancy report to ComReg on these WACCs[1] and Europe Economics' analysis of responses to ComReg's consultation[2].

1.1 Unrevised parameters

We do not adjudge there to be new data justifying a re-assessment of taxation, gearing, or the use of a non-zero debt beta.

- We are not aware of any changes or planned changes to the headline rate of corporation tax in Ireland.
- The gearing assessments in our advice in the original consultancy report were not heavily influenced by up-to-the-minute data and we are not aware of any new data that might potentially justify a reassessment of our previous gearing advice.[3]
- The use of a zero debt beta in our previous advice was only ever a calculation device – i.e. we are not asserting that the debt beta is, in fact, zero – reflecting the low materiality of debt beta in the relevant calculations in this price control.[4] That has not changed.

1.2 Structure of this note

The remainder of the note is structured as follows:

- Section 2 looks at the evolution of generic parameters.
- Section 3 analyses parameters for the mobile sector.
- Section 4 considers parameters for the fixed-line sector.
- Section 5 evaluates parameters for the broadcasting sector.
- Section 6 presents the WACCs and aiming up.

[1] Europe Economics (2014) "Cost of capital for mobile, fixed line and broadcasting price controls: report for ComReg".
[2] Europe Economics (2014) "Europe Economics analysis of responses to ComReg WACC consultation".
[3] Europe Economics (2014) "Cost of capital for mobile, fixed line and broadcasting price controls: report for ComReg", p33-36.
[4] Europe Economics (2014) "Cost of capital for mobile, fixed line and broadcasting price controls: report for ComReg", p37.

2 Generic Parameters

2.1 Real risk-free rate

2.1.1 Previous advice

- Point estimate of 2.3 per cent for the real risk-free rate within a range of 1.75 per cent to 2.5 per cent.[5]

2.1.2 Key previous evidence

- Regulatory precedent suggested a recent (post-2008) real risk-free rate range of 1.5 to 2.5.[6]
- Average real yield on German government bonds of 1.87 from 2000-2013 (2.58 from 2000-2007).[7]
- Irish growth forecast of around 2 per cent out to 2015.[8]

2.1.3 New evidence

- Average real yield on German government bonds of 1.78 per cent from 2000 to October 2014 (2.58 from 2000-2007).
- Irish growth forecast of around 2.55 per cent out to 2015.
- Eurozone growth risks moving primarily to the downside, especially with deflation risk now seen as significant.

Historical German bond yields

Table 2.1 shows the average nominal and real yields German bonds since 2000. The average implied German real yield from 2000 to October 2014 is 1.78 per cent.

[5] Europe Economics (2014) "Cost of capital for mobile, fixed line and broadcasting price controls: report for ComReg", p26.
[6] Europe Economics (2014) "Cost of capital for mobile, fixed line and broadcasting price controls: report for ComReg", Table 4.1, p16.
[7] Europe Economics (2014) "Cost of capital for mobile, fixed line and broadcasting price controls: report for ComReg", Table 4.3, p25.
[8] Europe Economics (2014) "Cost of capital for mobile, fixed line and broadcasting price controls: report for ComReg", Figure 4.6, p26.

Table 2.1: Nominal and real yields on Germany 10 year bonds, 2000-2014

	Average nominal yield	Average inflation	Average real yield
2000	5.26	1.40	3.81
2001	4.82	1.90	2.86
2002	4.79	1.38	3.37
2003	4.10	1.02	3.05
2004	4.07	1.80	2.23
2005	3.38	1.89	1.46
2006	3.78	1.78	1.96
2007	4.23	2.29	1.90
2008	4.00	2.76	1.21
2009	3.27	0.23	3.03
2010	2.78	1.15	1.61
2011	2.65	2.50	0.15
2012	1.56	2.14	-0.57
2013	1.63	1.60	0.03
2014 (until October)	1.34	0.90	0.43
Average 2000-2014 (until October)	3.47	1.66	1.78
Average 2000-2007	4.30	1.68	2.58

Source: Bloomberg; Eurostat; Europe Economics analysis

As can be seen from Figure 2.1, the year on year GDP growth rate for Ireland is expected to be 3.5 percent in 2014, 2.55 per cent in 2015 and 3.55 per cent in 2016 which translates into an average expected increase of 3.2 per cent for 2014-2016. Growth prospects for other Eurozone counties and the Eurozone as a whole, however, are lower than forecasted at the beginning of the year.

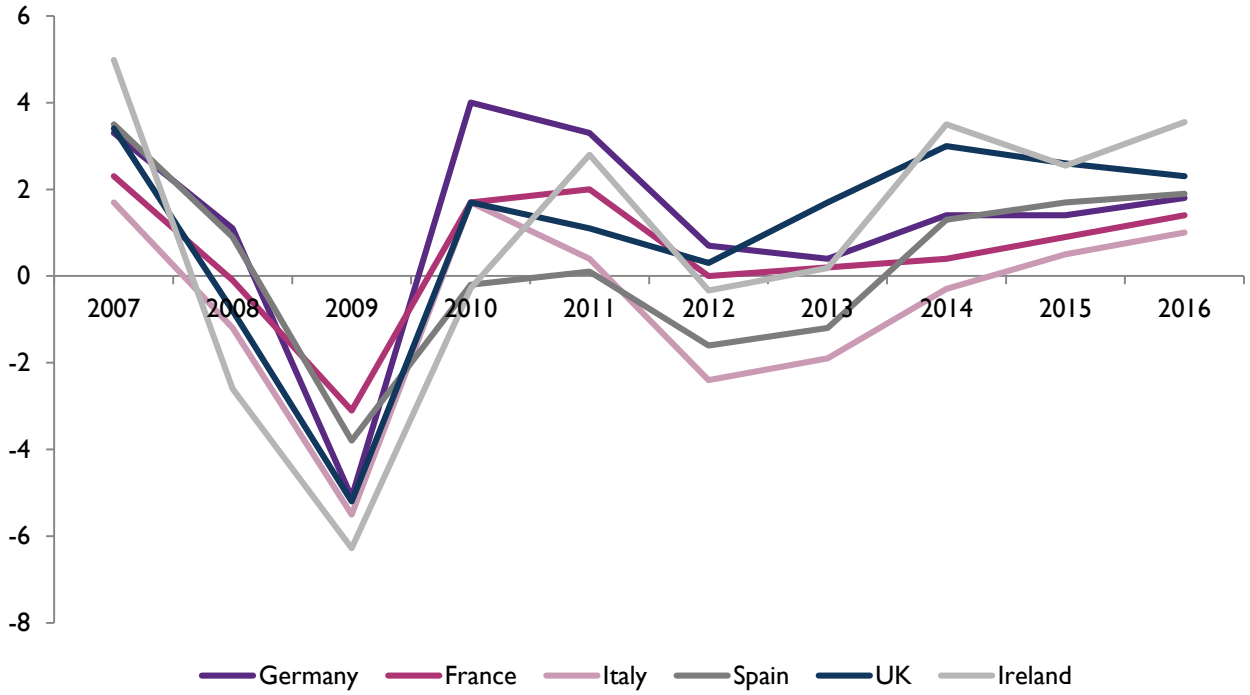
Growth prospects have similarly declined. Average Eurozone growth from 2014 to 2015, which was projected to be 1.7 per cent in the European Commission's Spring 2014 Economic Forecast[9] had declined to 1.1 per cent by the time of the European Commission's Winter 2014 Economic Forecast.[10] However, medium-term growth prospects have not similarly declined. Eurozone growth from 2014 to 2018 which was projected to be 1.45 per cent in the IMF's World Economic Outlook (WEO) for April 2014 was still 1.45 per cent in the October 2014 WEO forecast. Our original 2.3 per cent recommendation was based upon a projection of marked normalisation during the period of the price control and we note that in our advice to the CER in the mid-term WACC Review of 2013 the risk-free rate we recommended for 2014/15 was 1.75-2 per cent. Thus the 2.3 per cent recommendation of our previous Comreg advice was based upon further normalisation even from the 2013 situation and there was always some uncertainty over precisely how much normalisation would be achieved.

Whilst we continue to believe that there will be further normalisation, movements in bond yields, including both the levels of German yields and the spreads of peripheral Eurozone over German bond yields, which had been consistent with our view of marked normalisation from mid-2012 until late 2013, have since suggested that full normalisation might be further away than previously thought.

[9] See p132, http://ec.europa.eu/economy_finance/eu/forecasts/2014_spring/statistical_en.pdf.
[10] See p144, http://ec.europa.eu/economy_finance/eu/forecasts/2014_autumn/statistical_en.pdf.

German 10-year sovereign bond yields, which had risen by 88 bps from May to September 2013 (consistent with the normalisation story), by contrast fell 62 bps between April 2014 and October 2014. Spreads of Italian government bonds over German bonds, which had fallen from 551 bps in November 2011 to 122 bps in April 2014, had risen to 151 bps by October 2014.

Figure 2.1: GDP growth (year-on-year per cent) and forecasts for European countries, 2007-2016



Note: 2014-2016 figures are forecasts for all countries.
Source: Bloomberg.

Declines of 0.6 per cent in German bond yields and 2014/15 growth prospects do not, in our view, justify unit-for-unit reductions in the risk-free rate as some component of the growth reductions is likely to be cyclical, not structural (as per the unchanged WEO medium-term forecasts), and some of the German bond yield fall is likely to be speculative funds-driven rather than business investment outlook-driven. Nonetheless, we do believe that this constitutes a sufficiently material shift in sentiment as to justify some updating of our normalisation projection. We continue to believe that an assumption of further normalisation for the Eurozone capital market in general and Ireland in particular is justified, raising the risk-free above the 1.75-2.0 per cent range for 2014/15 we advised in the CER mid-term WACC review. That takes us to 2.1 per cent. However, in our view the data no longer justify assuming further normalisation than that.

2.1.4 New advice

- Point estimate of 2.1 per cent for the real risk-free rate.[11]

2.2 Inflation

Converting the risk-free rate from real to nominal requires an estimate of the rate of inflation over the price control period.

[11] We note that, since our ERP in unchanged, the implication of our updated advice is our revised view on forward-looking Irish total market returns is now lower. That is consistent with the poorer medium-term growth outlook for the Eurozone as a whole, with additional risks to the downside.

2.2.1 Previous advice

- Point estimate for inflation rate of 1.75 per cent within a range of 1.5 per cent to 2 per cent.[12]

2.2.2 Key previous evidence

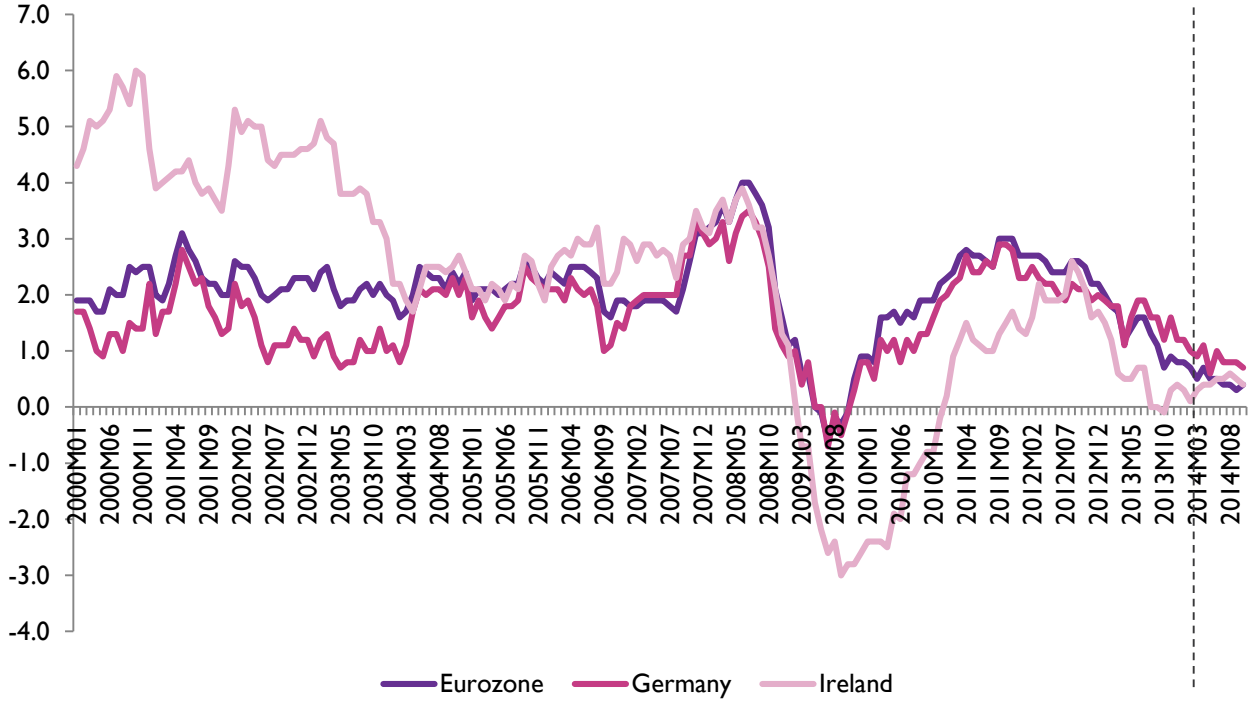
- Irish inflation forecast of around 1.5 per cent out to 2015.[13]
- ECB inflation target is for inflation close to but below 2 per cent.[14]

2.2.3 New evidence

- Irish inflation forecast of around 1.1 per cent out to 2015

In Figure 2.2 we plot the year-over-year inflation in Eurostat's harmonised index of consumer prices for Ireland, Germany, and the Eurozone and Figure 2.3 gives the Bloomberg consensus for the year on year inflation forecasts for some core and peripheral European countries.

Figure 2.2: Year-on-year HICP inflation in Ireland, Germany, and the Eurozone



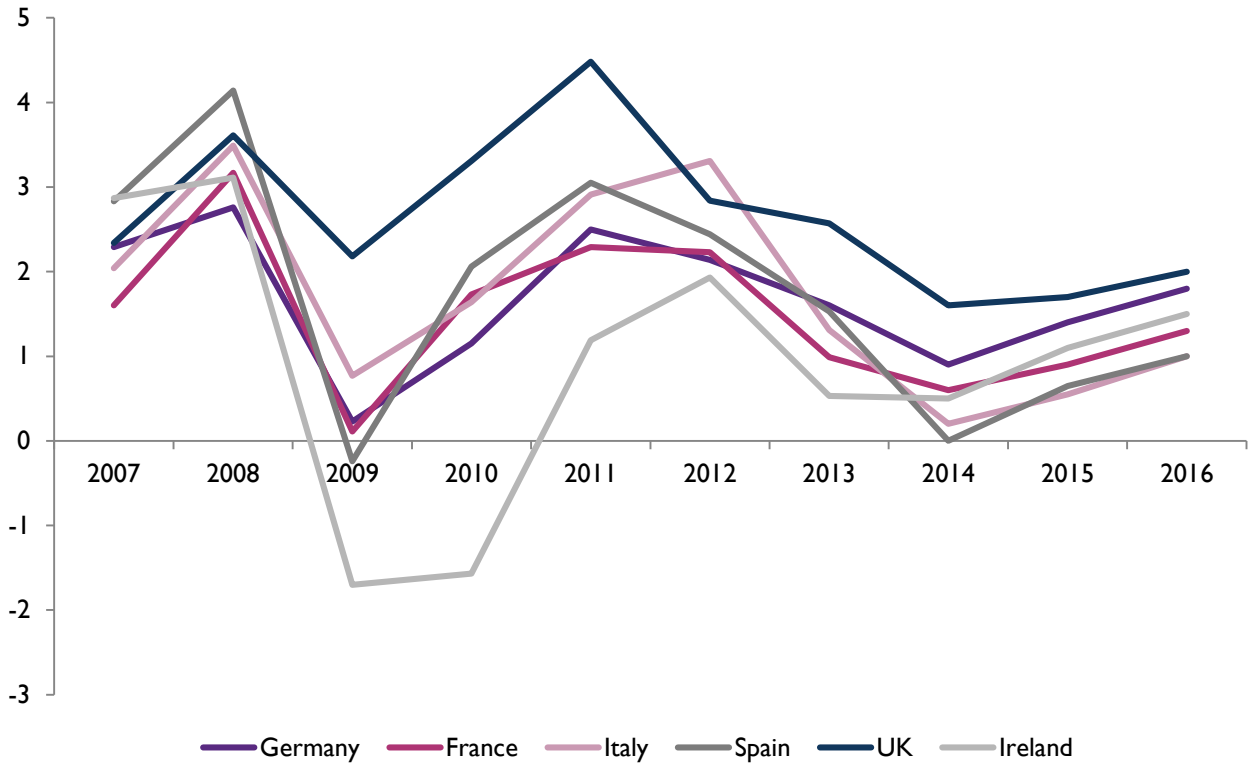
Source: Eurostat.

[12] Europe Economics (2014) "Cost of capital for mobile, fixed line and broadcasting price controls: report for ComReg", p27-28.

[13] Europe Economics (2014) "Cost of capital for mobile, fixed line and broadcasting price controls: report for ComReg", Figure 4.8, p28.

[14] Europe Economics (2014) "Cost of capital for mobile, fixed line and broadcasting price controls: report for ComReg", p28.

Figure 2.3: Annual year-over-year inflation rates and consensus forecasts



Note: 2014-2016 figures are forecasts.
Source: Bloomberg.

Both these graphs are consistent with our previous analysis showing an increasing inflationary trend for Ireland, although inflation in 2014 has not picked up markedly. However, in our previous analysis, we took the lower bound for Irish inflation to be 1.5 per cent, the then Bloomberg consensus forecast for 2015.[15] The recent data shows the expected inflation for 2015 to be 1.1 per cent. This slightly decreases our lower bound leading to an initial point estimate of inflation of 1.5 per cent instead of 1.75 per cent.

2.2.4 New advice

- Point estimate for inflation rate of 1.5 per cent.

2.3 Nominal risk-free rate

2.3.1 Previous advice

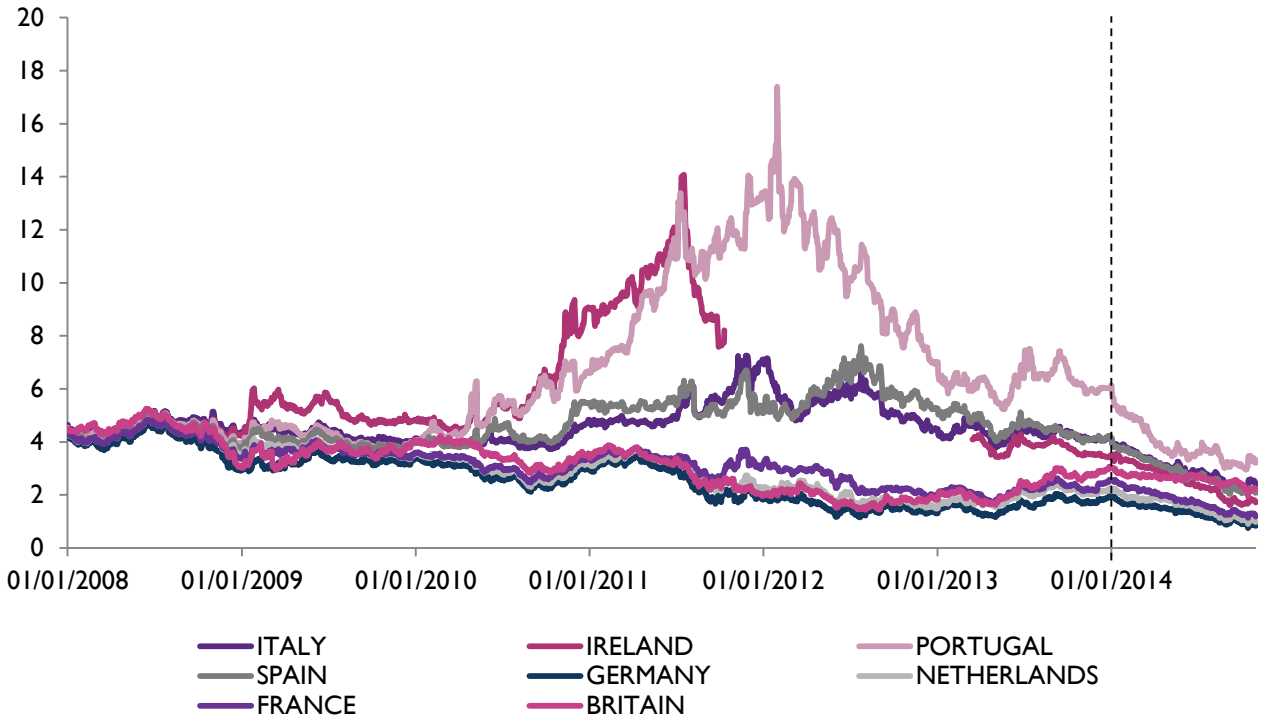
- Point estimate for nominal risk-free rate of 4.09 per cent within a range of 3.28 per cent to 4.55 per cent.[16]

[15] Europe Economics (2014) "Cost of capital for mobile, fixed line and broadcasting price controls: report for ComReg", p28.
[16] Europe Economics (2014) "Cost of capital for mobile, fixed line and broadcasting price controls: report for ComReg", p2-5, 17-32.

2.3.2 New evidence

The Figure 2.4 below shows nominal yields on a sample of European sovereign10 year bonds. As can be seen, there remains a premium for bonds from peripheral as opposed to core countries. In the case of Ireland, this premium has fallen significantly relative to its peak in 2011, though it remains in excess of the yield for core Eurozone countries. Similar to our previous analysis, which showed the data till the end of 2013, we observe that the yields on Irish bonds continue their downward trends in 2014.

Figure 2.4: Nominal yields on European sovereign 10 year bonds



Source: Bloomberg.

2.3.3 New advice

- Point estimate for nominal risk-free rate of 3.63 per cent. This is a calculation that stems from our point estimates for the real risk-free rate and inflation.[17]

2.4 Equity risk premium

2.4.1 Previous advice

- Point estimate for the equity risk premium (ERP) of 5.0 per cent within a range of 4.6 per cent to 5.25 per cent.[18]

[17] For more information on the calculation, see: Europe Economics (2014) "Cost of capital for mobile, fixed line and broadcasting price controls: report for ComReg", p17.

[18] Europe Economics (2014) "Cost of capital for mobile, fixed line and broadcasting price controls: report for ComReg", p31.

2.4.2 Key previous evidence

- ERPs in Irish regulatory precedent ranging from between 5.0 per cent to 6.0 per cent.[19]
- An arithmetic average ERP from Dimson, Marsh, and Staunton (DMS) of 4.6 per cent for Ireland over the period 1900-2012.[20]

2.4.3 New evidence

We present updated DMS figures[21] in Table 2.2 below.

Table 2.2: Worldwide equity risk premia over bonds, 1900-2013

Country	Geometric mean %	Arithmetic Mean %	Standard error %	Standard dev. %	Minimum return%	Min year	Maximum return %	Max year
Australia	5.7	7.6	1.9	20.0	-53.4	2008	66.3	1980
Austria	2.9	22.0	14.6	154.1	-81.1	1924	1571.8	1945
Belgium	2.4	4.5	2.0	21.1	-53.8	2008	80.1	1940
Canada	3.5	5.2	1.7	18.3	-40.7	2008	48.6	1950
Denmark	2.1	3.6	1.7	17.9	-54.3	2008	74.9	1972
Finland	5.3	8.9	2.8	30.2	-55.4	2008	173.1	1999
France	3.2	5.5	2.1	22.8	-49.2	2008	84.3	1946
Germany	5.3	8.7	2.7	28.6	-51.5	2008	116.6	1949
Ireland	2.6	4.6	1.8	19.7	-66.9	2008	83.2	1972
Italy	3.4	6.8	2.8	29.5	-48.1	2008	152.2	1946
Japan	5.1	9.2	3.1	32.7	-45.2	2008	193.0	1948
The Netherlands	3.4	5.7	2.1	22.3	-56.4	2008	107.6	1940
New Zealand	3.9	5.5	1.7	18.0	-59.7	1987	72.7	1983
Norway	2.4	5.4	2.6	27.8	-57.8	2008	192.1	1979
Portugal	3.0	7.7	3.1	33.1	-71.9	1978	142.9	1980
South Africa	5.4	7.2	1.8	19.6	-36.1	2008	70.9	1979
Spain	2.2	4.2	1.9	20.8	-43.7	2008	69.1	1986
Sweden	3.1	5.4	2.0	21.5	-49.5	2008	84.3	1999
Switzerland	2.1	3.7	1.6	17.6	-41.3	2008	51.9	1985
United Kingdom	3.9	5.2	1.6	17.2	-38.4	2008	80.8	1975
United States	4.5	6.6	1.9	20.8	-50.1	2008	57.2	1933
Europe	3.3	4.6	1.5	16.1	-48.0	2008	53.6	1923
World ex-USA	2.9	4.0	1.4	14.7	-48.0	2008	35.8	1999
World	3.3	4.6	1.5	15.5	-48.2	2008	37.5	1958

Source: Dimson, Marsh, and Staunton (2014)

[19] Europe Economics (2014) "Cost of capital for mobile, fixed line and broadcasting price controls: report for ComReg", Figure 4.8, p29.

[20] Europe Economics (2014) "Cost of capital for mobile, fixed line and broadcasting price controls: report for ComReg", p29-31. Note that this is the ERP over bonds, not bills.

[21] Dimson, Elroy, Marsh, Paul, and Staunton, Mike (2014) *Credit Suisse Global Investment Returns Sourcebook 2014*, p28.

The arithmetic[22] average Irish ERP over bonds from 1900-2013 is 4.6 per cent, which is the same as the figure quoted in our original consultancy report. As the relevant data have not materially changed, we do not change our recommendation for a point estimate ERP of 5.0 per cent.

2.4.4 New advice

- We recommend continuing to use a point estimate ERP for 5.0 per cent.

2.5 Irish operator debt premium

2.5.1 Previous advice

- Irish operator debt premium of up to 75 bps with a forward-looking assessment of a range of 0 bps to 55 bps.
- We applied 55 bps to the WACC by adding 25 bps to the debt premium and using 30 bps in the aiming up calculation.

2.5.2 Previous evidence

- Analysis of spreads on European regulated utility companies suggested an Irish operator debt premium existed. This had been as high as around 147 bps in 2013 but declined to between 55 bps and 75 bps in later 2013.[23]

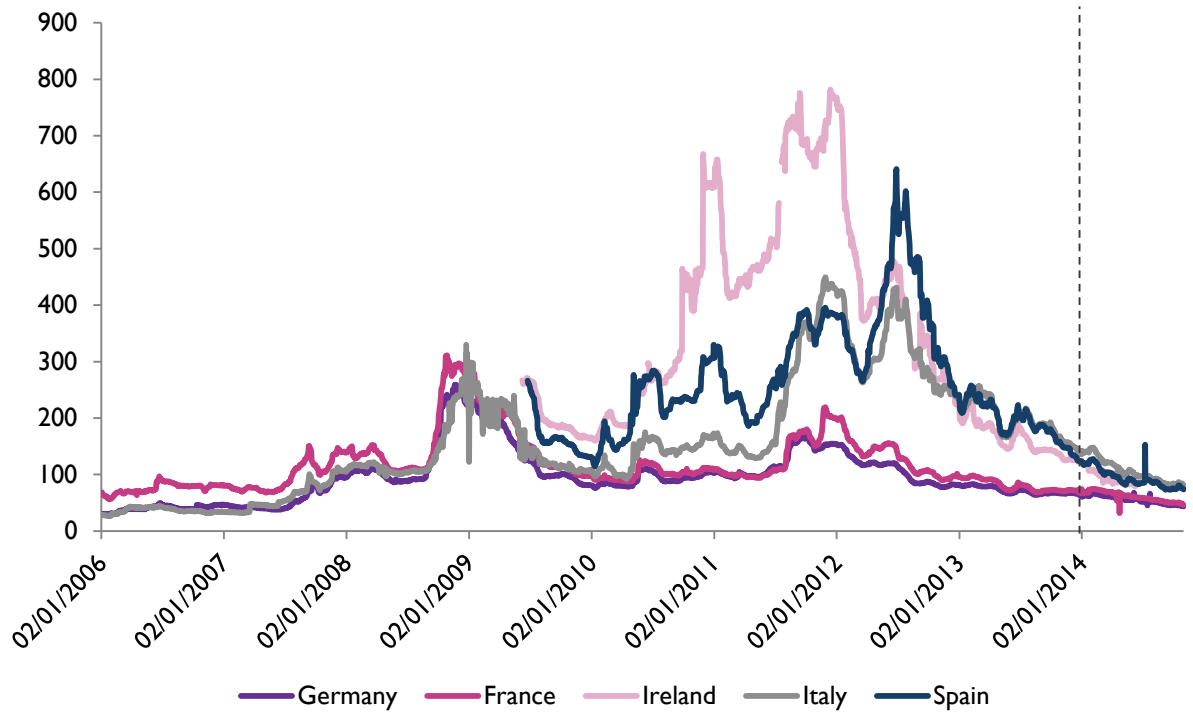
2.5.3 New evidence

The previous Irish country premium spot observation was 55 bps. This has declined to around 30 bps for the most recent spot observation, as shown in Figure 2.5.

[22] For a discussion on different averaging methods in calculating the ERP, see: Europe Economics (2014) "Cost of capital for mobile, fixed line and broadcasting price controls: report for ComReg", Figure 4.8, p30-31.

[23] For more information on the justification for and calculation of this premium, see: Europe Economics (2014) "Cost of capital for mobile, fixed line and broadcasting price controls: report for ComReg", p39-41.

Figure 2.5: Spreads of average European utility bonds over benchmark government bonds



Source: Bloomberg; Europe Economics analysis.

Although the Irish company premium has trended downward from January to October 2014, such a trend was already assumed in our previous advice and we therefore do not believe that recent movements justify altering our recommended range or point estimates.

2.5.4 New advice

- Continue to use 25 bps as the best-estimate in the cost of debt and continue to incorporate an additional 30 bps into the aiming up exercise.

3 Mobile Parameters

3.1 Asset beta

3.1.1 Previous advice

- An asset beta range of 0.4 to 0.6, with a point estimate of 0.55 based on notional gearing of 30 per cent.[24]

3.1.2 Previous evidence

- Regulatory precedent suggested a range between 0.56 and 1.35.[25]
- Empirical observation of mobile providers' betas suggested a range of around 0.4 to 0.6.[26]
- Survey of BEREC members suggested ranges provided by the above were reasonable.[27]

3.1.3 New evidence

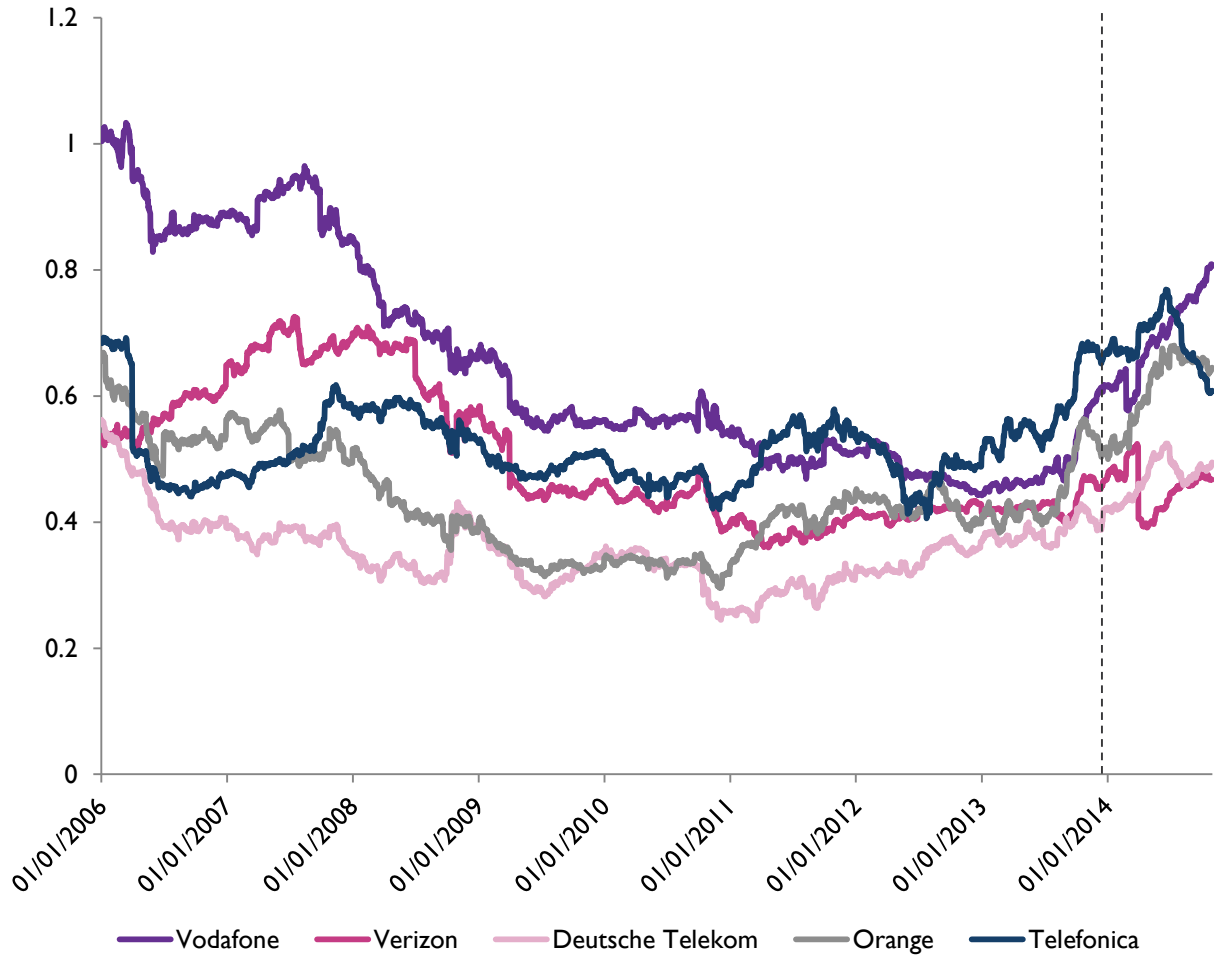
- Recent market data evidence on mobile providers' betas suggests that betas have increased in 2014.

Two year rolling betas

Two year rolling asset betas for various mobile operators have changed since the end of 2013. Notably, Vodafone's beta has risen from around 0.61 at the end of 2013 to around 0.80 at the end of October 2014. Deutsche Telekom, Orange, and Telefonica have seen asset beta changes of +0.07, +0.14, and -0.06, respectively. The average between the four operators for October 2014 was around 0.64, compared with an average of roughly 0.55 in December 2013.

[24] Europe Economics (2014) "Cost of capital for mobile, fixed line and broadcasting price controls: report for ComReg", p53-54.
[25] Europe Economics (2014) "Cost of capital for mobile, fixed line and broadcasting price controls: report for ComReg", Table 6.7, p50.
[26] Europe Economics (2014) "Cost of capital for mobile, fixed line and broadcasting price controls: report for ComReg", p52.
[27] Europe Economics (2014) "Cost of capital for mobile, fixed line and broadcasting price controls: report for ComReg", p51.

Figure 3.1: Two year rolling average asset betas for mobile operators



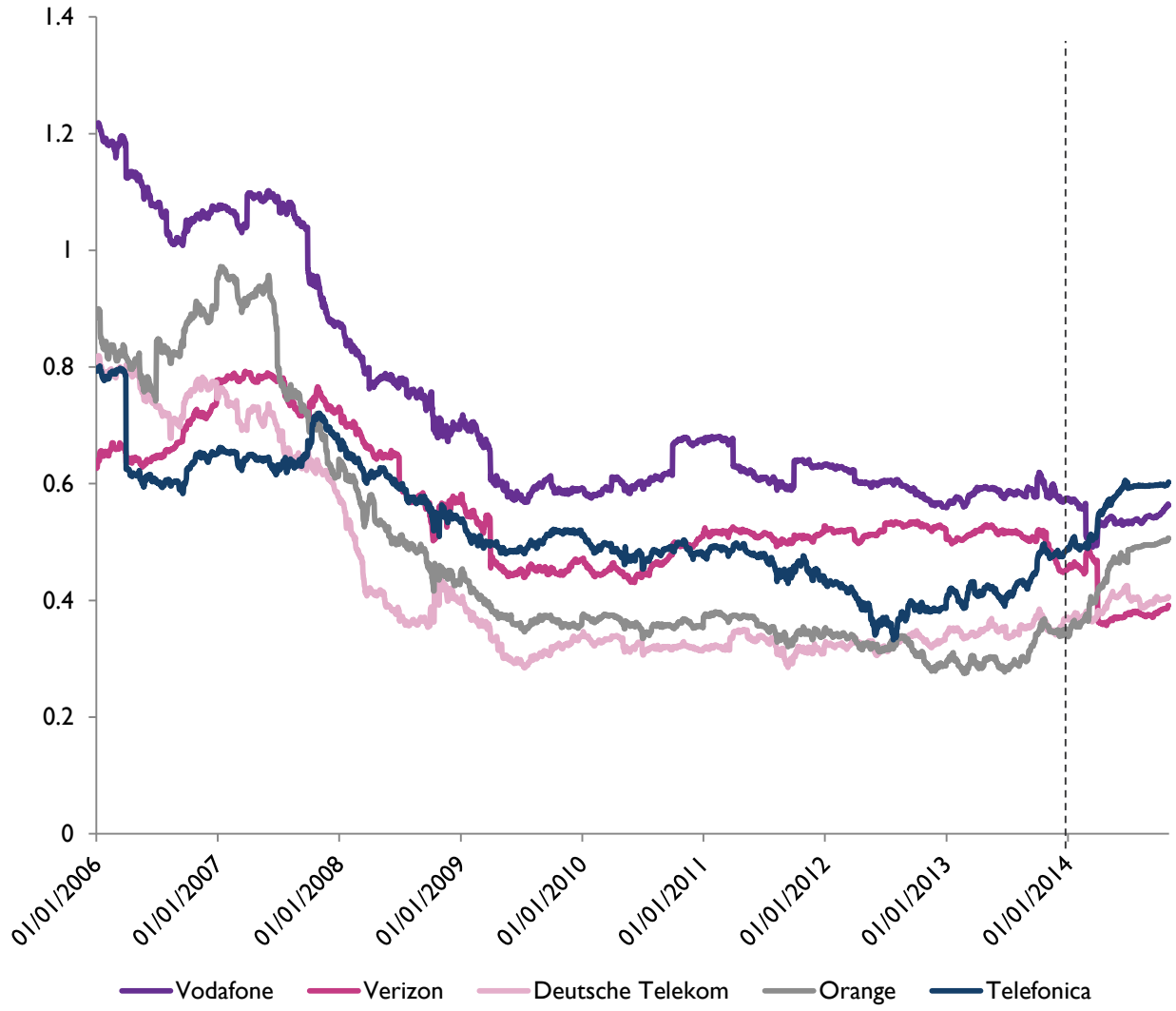
Source: Bloomberg.

We have also included, for comparison, the beta of Verizon using the return on the S&P 500 as the relevant equity market. Verizon's beta has risen steadily after falling at the start of 2014.

Five year rolling betas

Five year rolling betas have changed little since the previous report. The exceptions to this observation are Orange and Telefonica, which have increased by 0.16 and 0.11, respectively.

Figure 3.2: Five year rolling average asset betas for mobile operators



Source: Bloomberg.

3.1.4 New advice

- We recommend using an asset beta of 0.65, taking into account recent upward movements in the observed asset beta of mobile operators.

3.2 Debt premium

3.2.1 Previous advice

- A debt premium of 1.75 per cent, composed of 1.5 per cent for the mobile sector debt premium and 0.25 per cent for an Irish operator premium. The range for the sector debt premium was 1.5 per cent to 2.25 per cent.[28]

[28] Europe Economics (2014) "Cost of capital for mobile, fixed line and broadcasting price controls: report for ComReg", p57.

3.2.2 Previous evidence

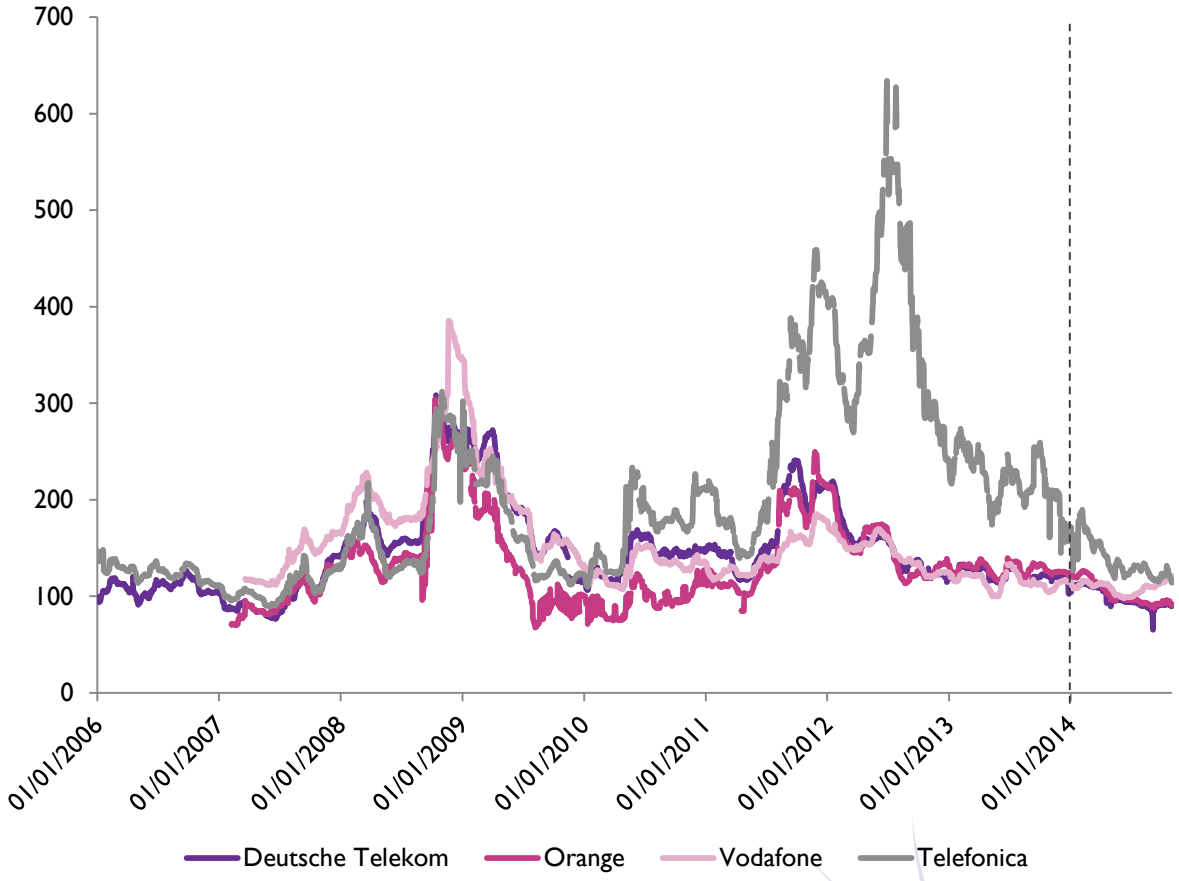
- Regulatory precedent gave a range between 100 bps and 400 bps.[29]
- Empirical observation of the debt premium range suggested a range between 100 bps and 200 bps.[30]

3.2.3 New evidence

- Debt premiums have declined in 2014, with a more recent range being 100 to 130.

As can be seen in Figure 3.3 below, the debt premiums for the telecommunication companies have broadly fallen over the years 2012-2014. For the year 2014, the debt premium has continued to descend for all the companies with the exception of Vodafone whose premium over the risk free rate rises starting July 2014, albeit only slightly.

Figure 3.3: Average debt premiums over the risk-free rate for European telecommunications companies (bps)



Source: Bloomberg; Europe Economics' calculations.

As the premia for the companies are on average falling in 2014, for the purpose of our analysis, we advise that the average debt premium for a generic mobile operator at our target credit rating should be around 1.2 per cent. This coupled with the premium for an Irish operator (around 25 bps) gives us a point estimate of 1.45 percent.

[29] Europe Economics (2014) "Cost of capital for mobile, fixed line and broadcasting price controls: report for ComReg", Table 6.10, p54.

[30] Europe Economics (2014) "Cost of capital for mobile, fixed line and broadcasting price controls: report for ComReg", p56.

3.2.4 New advice

- Debt premia have declined in 2014, with a more recent range being 100 to 130. We use 1.2 per cent for our central debt premium estimate and continue to add the 25 bps Irish operator premium.

4 Fixed-Line Parameters

4.1 Asset beta

4.1.1 Previous advice

- An asset beta range of 0.4 to 0.6, with a central estimate of 0.5.[31]

4.1.2 Previous evidence

- Regulatory precedent suggested a range between 0.42 and 0.6.[32]
- Previous analysis of Eircom's beta in 2008 suggested a beta of 0.42 to 0.68.[33]
- Empirical observation of European fixed-line incumbents' betas suggested a range of around 0.3 to 0.6[34]

4.1.3 New evidence

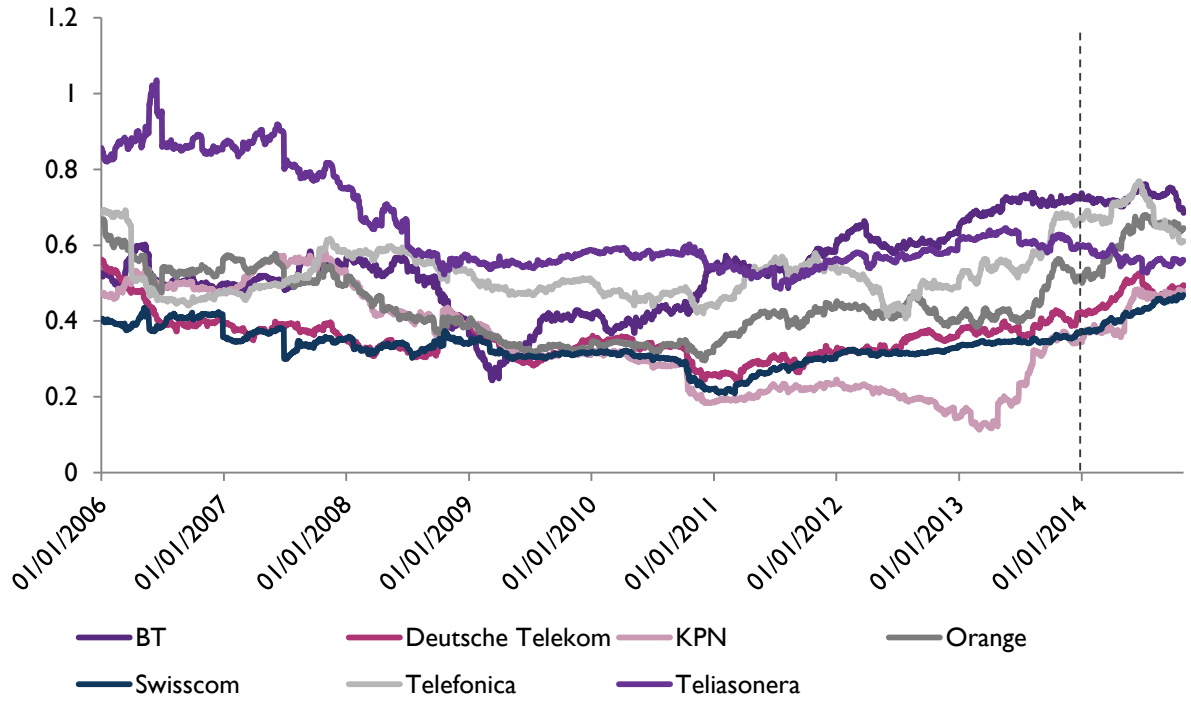
- Recent market data evidence on fixed-line providers' betas suggests that betas have increased slightly in 2014.

Two year rolling betas

Two year rolling betas for fixed-line operators have risen since the end of 2013 to the end of October 2014 as can be seen from Figure 4.1. The two year rolling betas have increased by 0.13 and 0.14 for KPN and Orange respectively. For other fixed-line operators, the betas have remained relatively stable. However, the average beta for all the operators for January to October 2014 is 0.56, or 0.08 higher than the 2013 average of 0.48. We are not aware of a good reason in the data or in terms of analysis of fundamentals to assume that this movement will reverse in the short term.

[31] Europe Economics (2014) "Cost of capital for mobile, fixed line and broadcasting price controls: report for ComReg", Section 7.2.5, p68.
[32] Europe Economics (2014) "Cost of capital for mobile, fixed line and broadcasting price controls: report for ComReg", table 7.5, p65.
[33] Europe Economics (2014) "Cost of capital for mobile, fixed line and broadcasting price controls: report for ComReg", Table 7.4, p64.
[34] Europe Economics (2014) "Cost of capital for mobile, fixed line and broadcasting price controls: report for ComReg", p66-67.

Figure 4.1: Two year rolling average asset betas for fixed-line operators

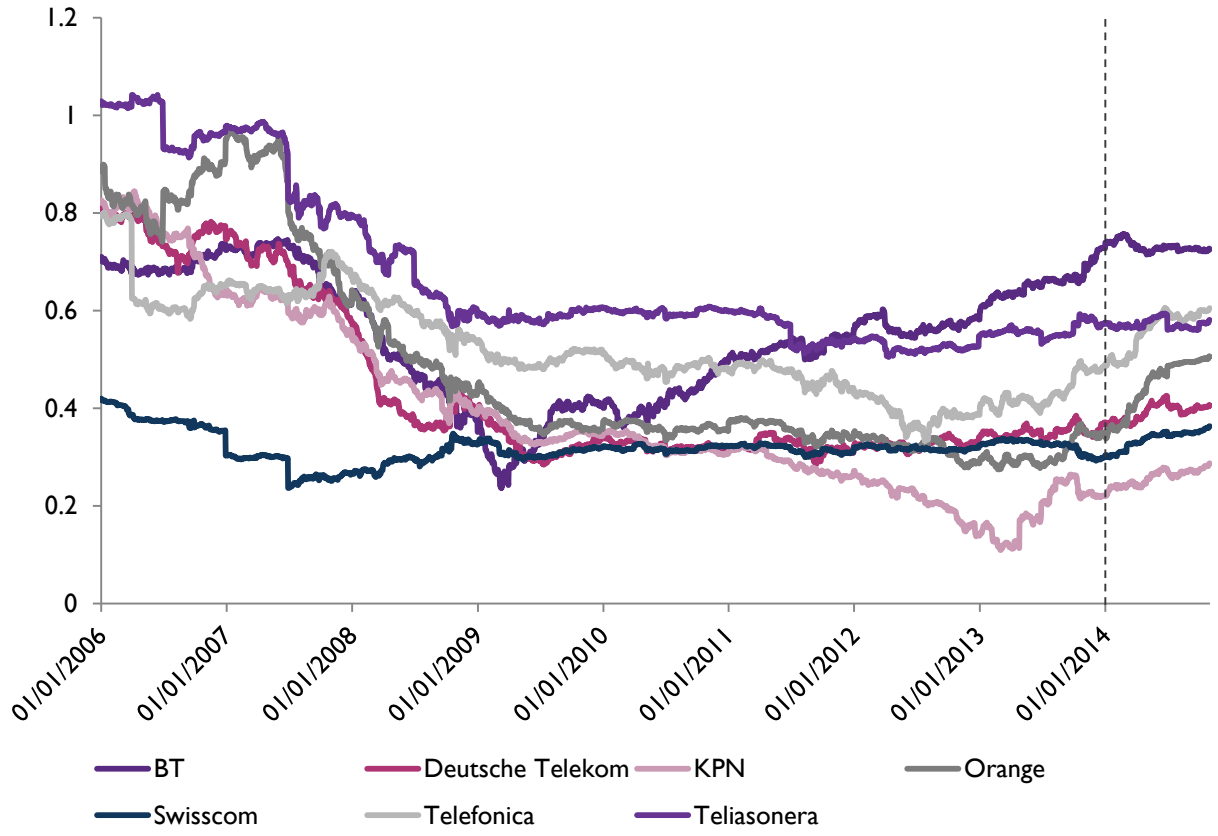


Source: Bloomberg.

Five year rolling betas

Five year rolling betas have, on the whole, moved slightly upwards since our previous report.

Figure 4.2: Five year rolling average asset betas for fixed-line operators



Source: Bloomberg.

4.1.4 New advice

- We recommend using an asset beta of 0.55, taking into account recent upward movements in the observed asset beta of fixed-line incumbents.

4.2 Debt premium

4.2.1 Previous advice

- A debt premium of 1.75 per cent, composed of 1.5 per cent for the fixed-line sector debt premium and 0.25 per cent for an Irish operator premium. The range for the sector debt premium was 1.5 per cent to 2.25 per cent.[35]

4.2.2 Previous evidence

- Regulatory precedent gave a range between 100 bps and 279 bps.[36]
- Empirical observation of the debt premium range suggested a range between 100 bps and 200 bps.[37]

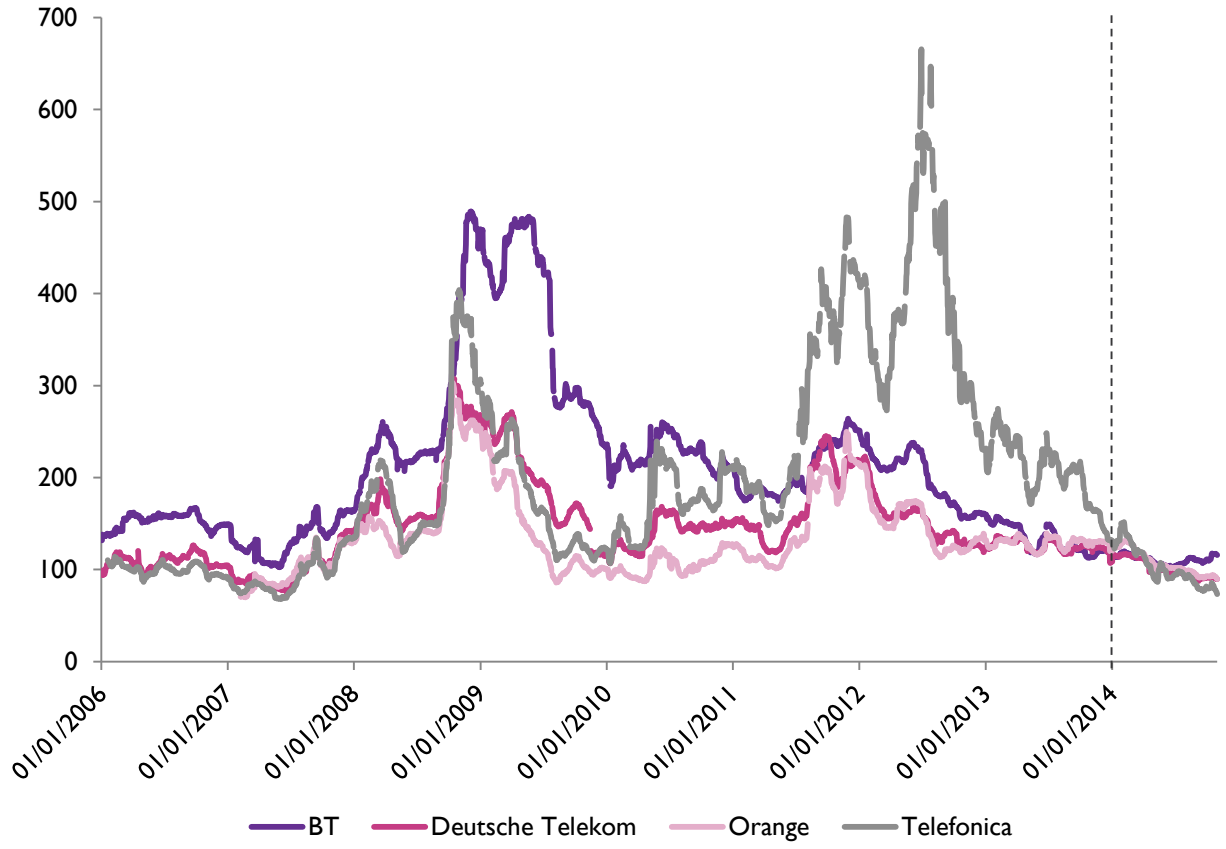
[35] Europe Economics (2014) "Cost of capital for mobile, fixed line and broadcasting price controls: report for ComReg", Section 7.3.4, p71-72.

[36] Europe Economics (2014) "Cost of capital for mobile, fixed line and broadcasting price controls: report for ComReg", Table 7.8, p70.

4.2.3 New evidence

- Debt premiums have declined in 2014, with a more recent range being 100 to 130.

Figure 4.3: Debt premiums for fixed-line operators



Source: Bloomberg; Europe Economics calculations.

Similar to the telecommunication companies, the debt premium of fixed-line European incumbents has also declined in 2014 with mostly ranging from 100 to 130 bps. However, considering the fluctuations in the past couple of years and the clustering of most of the companies between 75 to 225 bps since 2013, our point estimate is 120 basis points.

With the addition of 25 basis points for the "Irish operator" premium estimated, this suggests a debt premium of 1.45 per cent.

4.2.4 New advice

- We use 1.2 per cent for our central debt premium estimate and continue to add the 25 bps Irish operator premium.

[37] Europe Economics (2014) "Cost of capital for mobile, fixed line and broadcasting price controls: report for ComReg", p71.

5 Broadcasting Parameters

5.1 Asset beta

5.1.1 Previous advice

- An asset beta range of 0.4 to 0.6, with a central estimate of 0.55.[38]

5.1.2 Previous evidence

- Regulatory precedent suggested a range between 0.49 and 0.65.[39]
- Empirical observation of tower and mast companies' betas suggested a range of around 0.4 to 0.6.[40]

5.1.3 New evidence

- With the exception of EI Tower, recent market data evidence on tower and mast companies' betas suggests that betas have remained broadly similar in 2014. We believe the broad pattern in the data is of unchanged industry performance. We do not recommend moving the determined value on the basis of movements solely in EI Tower which seem likely to reflect company-specific circumstances.

Two year rolling betas

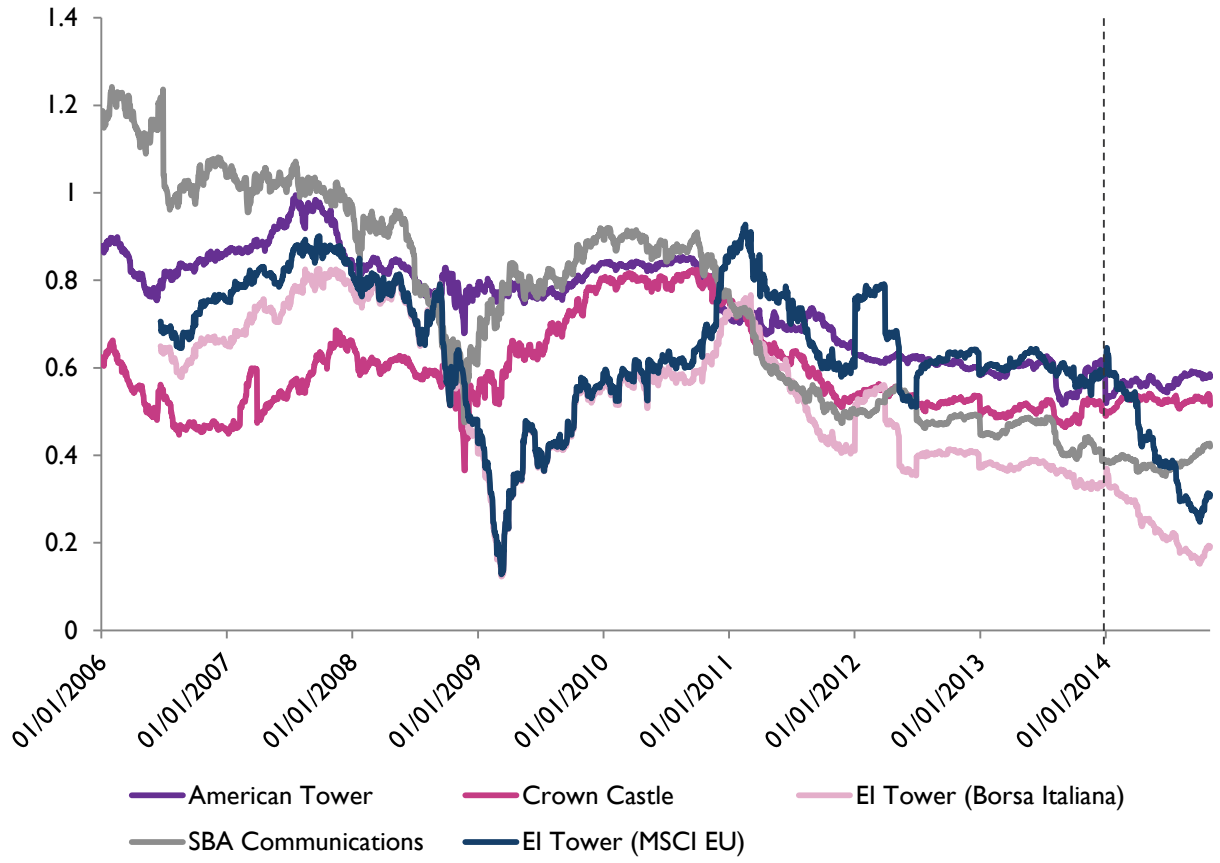
Amongst tower and mast companies, two year rolling betas are largely unchanged. Betas for EI Tower have come down.

[38] Europe Economics (2014) "Cost of capital for mobile, fixed line and broadcasting price controls: report for ComReg", Section 8.6.4, p84.

[39] Europe Economics (2014) "Cost of capital for mobile, fixed line and broadcasting price controls: report for ComReg", Table 8.6, p81.

[40] Europe Economics (2014) "Cost of capital for mobile, fixed line and broadcasting price controls: report for ComReg", p82-83.

Figure 5.1: Two year rolling average asset betas for tower and mast operators



Source: Bloomberg.

Five year rolling betas

Five year rolling betas have come down slightly, settling within a range of 0.4 to 0.6, with the exception of EI Tower.

Figure 5.2: Five year rolling average asset betas for tower and mast operators

Source: Bloomberg.

5.1.4 New advice

- We continue recommend using an asset beta of 0.55.

5.2 Debt premium

5.2.1 Previous advice

- A debt premium of 1.75 per cent, composed of 1.5 per cent for the towers and masts sector debt premium and 0.25 per cent for an Irish operator premium. The range for the debt premium was 1.5 per cent to 2.25 per cent.[41]

5.2.2 Previous evidence

- Regulatory precedent gave a range between 70 bps and 175 bps.[42]

41 Europe Economics (2014) "Cost of capital for mobile, fixed line and broadcasting price controls: report for ComReg", Section 8.5.4, p80-81.
42 Europe Economics (2014) "Cost of capital for mobile, fixed line and broadcasting price controls: report for ComReg", Table 8.4, p79.

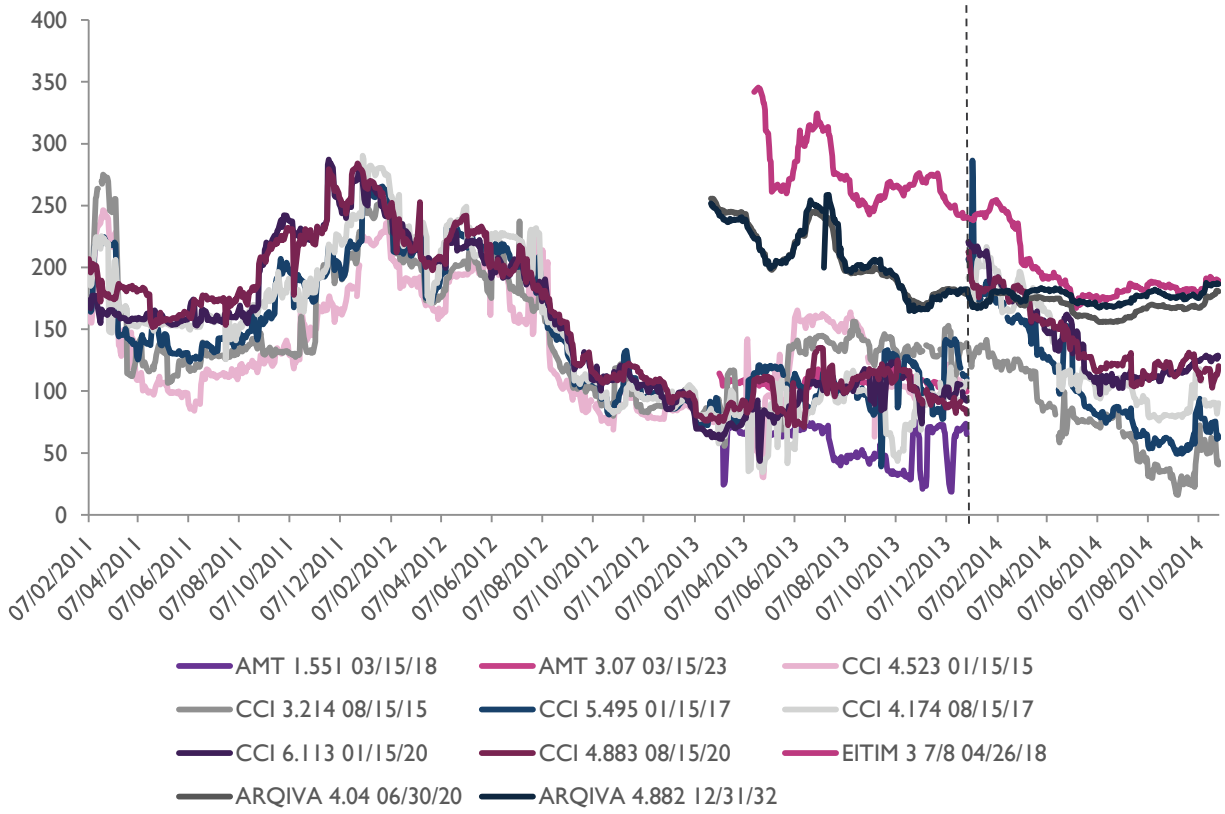
- Empirical observation of the debt premium range suggested a relatively wide range of around between 80 bps and 240 bps.[43]

5.2.3 New evidence

- Debt premiums have declined in 2014, with a more recent range being 70 to 200.

Debt premiums among towers and masts companies have varied over the past couple of years and this trend has continued in 2014 as can be seen in Figure 5.3. However, the premiums have decreased since the start of 2014 with majority of the bonds ranging from 70 to 200 bps.

Figure 5.3: Tower and Mast company debt premiums (bps)



Source: Bloomberg and Europe Economics calculations.

Given the recent changes in market data, we believe that the most suitable estimate of a broadcasting debt premium is around 1.2 per cent. Adding the Irish operator premium of 0.25 per cent gives us our point estimate of 1.45 per cent.

5.2.4 New advice

- We use 1.2 per cent for our central debt premium estimate and continue to add the 25 bps Irish operator premium.

[43] Europe Economics (2014) "Cost of capital for mobile, fixed line and broadcasting price controls: report for ComReg", Figure 8.1, p80.

6 Aiming Up and WACC Recommendations

6.1 Pre-aimed up WACCs

Table 6.1 contains the original and new parameters and pre-tax WACCs for the three sectors under consideration.

Table 6.1: Original and updated WACCs across sectors

	Mobile		Fixed-line		Broadcasting	
	Original	**New**	**Original**	**New**	**Original**	**New**
Real risk-free rate	2.3	2.1	2.3	2.1	2.3	2.1
Inflation	1.75	1.50	1.75	1.50	1.75	1.50
Nominal risk-free rate	4.09	3.63	4.09	3.63	4.09	3.63
Debt premium	1.75	1.45	1.75	1.45	1.75	1.45
Cost of debt	5.84	5.08	5.84	5.08	5.84	5.08
ERP	5	5	5	5	5	5
Asset beta	0.55	0.65	0.50	0.55	0.55	0.55
Equity beta at notional gearing	0.79	0.93	0.83	0.92	0.73	0.73
Cost of equity	8.02	8.27	8.26	8.21	7.76	7.30
Gearing	30%	30%	40%	40%	25%	25%
Vanilla WACC	7.37	7.32	7.29	6.96	7.28	6.74
Tax rate	12.5%	12.5%	12.5%	12.5%	12.5%	12.5%
Pre-tax cost of equity	9.16	9.46	9.44	9.39	8.87	8.34
Pre-tax WACC	8.17	8.14	8.00	7.67	8.11	7.53

Source: Europe Economics calculations based on various sources.

Among the generic parameters, we have revised our estimate of the real risk-free rate downwards from 2.3 per cent to 2.1 per cent, reflecting a less optimistic medium-term outlook for Eurozone GDP growth. We also revise our inflation estimate downwards, moving from 1.75 percent to 1.5 per cent, again reflecting lower recent data and inflation forecasts.

For mobile, we decrease our estimate of the debt premium from 1.75 per cent to 1.45 per cent based on recent decreases in observed debt premiums. We revise the asset beta upwards from 0.55 to 0.65, incorporating the impact of observed increases in the asset beta during 2014. The net effect of these changes is to slightly decrease the mobile WACC from an original estimate of 8.17 per cent to 8.14 per cent on a pre-tax nominal basis.

In the fixed-line sector, we also decrease the debt premium from 1.75 per cent to 1.45 per cent. Furthermore, we increase the asset beta from 0.50 to 0.55, as there has been some upward movement in fixed-line betas, but not as much as in the mobile betas. The net effect of the parameter changes is to lower the WACC from an original estimate of 8.00 per cent to 7.67 per cent on a pre-tax nominal basis.

With respect to broadcasting, we have revised downwards our view of the broadcasting debt premium from 1.75 per cent to 1.45 per cent. We do not interpret evidence as suggesting that towers and masts betas have changed significantly in 2014 and, guided by that, do not adjust our asset beta estimate for

broadcasting. The overall impact of the parameters changes lowers the broadcasting WACC from 8.11 per cent to 7.53 per cent.

6.2 Aiming up

Aiming up is, in our view, best done explicitly in respect of the overall WACC estimate rather than implicitly in respect of particular parameters. However, the appropriate degree of aiming up should reflect the degree of uncertainty in the WACC which, as a matter of calculation, will reflect uncertainties regarding individual parameters. The overall degree of aiming up can therefore be set out, in calculation terms, as if it were "aiming up" on individual parameters (even though our estimates for individual parameters are not, in fact, aimed up). In our original consultancy report[44], we aimed up the overall WACC via (calculation) aiming up[45] of three parameters:

- Nominal risk-free rate.
- Asset beta.
- Debt premium.

Impacts of recent data on the nominal risk-free rate have been minor and do not change our recommendation on (calculation) aiming up of 0.1 per cent for uncertainties in the risk-free rate.

Asset beta standard errors have not changed materially since the previous report, based on data from the end of October 2014 presented in Table 6.2. Based on this evidence, we continue to base the overall WACC aiming up on aiming up the mobile and fixed-line asset betas by 0.05 and the broadcasting asset beta by 0.07.

[44] Europe Economics (2014) "Cost of capital for mobile, fixed line and broadcasting price controls: report for ComReg"

[45] We use the term "(calculation) aiming up" to refer to aiming up of a parameter purely for calculation purposes as distinct from the practice of determining a value for a parameter that is higher than one's best-estimate for that parameter. This is a distinction that could be important, for example, in the use of regulatory precedent — regulatory precedent for an individual parameter should be based upon the regulator's best-estimate of that parameter.

Table 6.2: Asset beta standard errors, end October 2014

Mobile	2 year	5 year
Vodafone	0.064	0.035
Deutsche Telekom	0.058	0.035
Orange	0.067	0.033
Telefonica	0.053	0.039
Fixed-line		
BT	0.067	0.033
Deutsche Telekom	0.058	0.035
KPN	0.126	0.048
Orange	0.067	0.033
Swisscom	0.038	0.019
Telefonica	0.053	0.039
Teliasonera	0.045	0.028
Broadcasting		
Crown Castle	0.077	0.044
SBA Communications	0.059	0.035
American Tower	0.076	0.042
EI Tower	0.074	0.112

Source: Bloomberg; Europe Economics analysis.

We have not revised our view on the Irish operator premium. As this was our proxy for the degree of uncertainty over the debt premium in the previous report, we continue to calculation the overall WACC aim up on the basis of a (calculation) aim up on the debt premium of 0.3 per cent.

Thus, based on evidence reviewed here, we do not revise our view on the parameters originally used for aiming up.

6.3 Aimed up WACCs

We aim up the revised WACC estimates. Based on our updated analysis, the mobile WACC is aimed up to 8.63 per cent, compared with the previous aimed-up mobile WACC of 8.66 per cent. The aimed up fixed-line WACC is 8.18 per cent, slightly lower than the original aimed up WACC of 8.48 per cent. For broadcasting, the aimed-up WACC is now 8.11 per cent compared with the original aimed-up WACC of 8.68 per cent.

Table 6.3: Original and new aimed up WACCs across three sectors

	Mobile	Fixed-line	Broadcasting
Original	8.66	8.48	8.68
New	8.63	8.18	8.11

Source: Europe Economics analysis based on various sources.

6.4 Monte Carlo cross-check on aiming up

In our response to responses to consultation, we included a cross-check on our aiming up exercise by conducting a Monte Carlo simulation of aiming up. We do not repeat here the background on the aiming up exercise, which is presented in more detail in our response note.[46]

Table 6.4 contains an updated Monte Carlo simulation based on our new parameter estimates. This corresponds to Table 2.1 in our response note. Pre-aiming up best estimates for the pre-tax nominal WACCs for mobile, fixed-line, and broadcasting are 8.1 per cent, 7.7 per cent, and 7.6 per cent, respectively. The adding one standard deviation to the end WACCs gives 8.6 per cent, 8.1per cent, and 8.0 per cent for the three sectors respectively.

Table 6.4: Results of Monte Carlo simulation for WACC aiming up

	Mobile	Fixed-line	Broadcasting
Europe Economics' pre-aiming-up best estimate WACC	8.1	7.7	7.5
Simulated mean	8.1	7.7	7.6
Simulated standard deviation	0.5	0.5	0.5
Simulated WACC with one standard deviation above mean	8.6	8.1	8.0
Simulated WACC with two standard deviations above mean	9.1	8.6	8.5
Europe Economics' recommendation on aimed-up WACC	8.6	8.2	8.1

Source: Europe Economics analysis of data cited in: Europe Economics (2014) "Cost of capital for mobile, fixed-line and broadcasting price controls: report for ComReg".

Our aimed up WACCs correspond to, roughly, the 84th, 87th, and 89th percentile on a one-tailed test basis.[47] That means that our aimed-up WACCs lie between one and two standard deviations above our best estimate WACCs, in line with our original intention in aiming up. These percentiles are also very close to the percentile values from our note analysing responses to ComReg's consultation.[48]

[46] Europe Economics (2014) "Europe Economics analysis of responses to ComReg WACC consultation", p21-25.

[47] In our original advice to ComReg, as a means to attempt to convey the notion of one standard deviation intuitively, we said that our intention to aim up by one standard deviation on the overall WACC corresponded to approximately the 66th percentile, assuming a normal distribution for the WACC. Insofar as references to "percentiles" are meaningful and correct, our 66th percentile reference referred to the percentage probability that a WACC value will lie no farther from the mean than the value we recommend. At one standard deviation, that is the 68th percentile. We might term this the "two-tailed test percentile". Another concept of "percentile" would be how much of the probability distribution should be expected to be below the chosen value, after aiming up. We might term this the "one-tailed test percentile". Arguably this is a more intuitive and common use of the term "percentile" and sometimes our discussions may have conflated the two concepts. Since at one standard deviation 68 per cent of a normal distribution will be no further from the mean than the chosen value, 16 per cent will be more than one standard deviation below, and 16 per cent more than one standard deviation above the mean. So a one standard deviation aiming up, if done precisely, should correspond to the 84th percentile on this one-tailed test concept.

[48] Europe Economics (2014) "Europe Economics analysis of responses to ComReg WACC consultation", p24.

Table 6.5: ComReg analysis of Europe Economics aiming up and simulation

	Mobile	Fixed-line	Broadcasting
Exact EE pre aiming-up best estimate WACC	8.14	7.67	7.53
Exact EE recommendation on aimed-up WACC	8.63	8.18	8.11
Difference	0.49	0.51	0.58
Implied t-statistic using simulated standard deviations	1.00	1.11	1.24
Percentile aiming up (one-tailed test)	84th	87th	89th

Source: ComReg based on Europe Economics analysis.