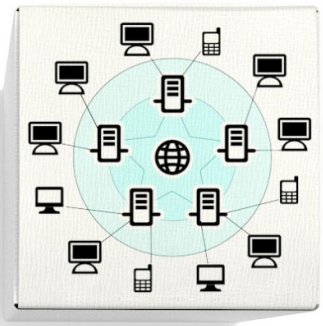
Cost of Capital estimation

ComReg

25 November 2025



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Contents

1. INTRODUCTION AND BACKGROUND

The cost of capital is a key input into ComReg's building-blocks model for the economic regulation of the Irish telecommunications sector, and in particular those telecommunications operators with Significant Market Power (SMP).

ComReg is undertaking a review of the process and methodology followed in calculating and implementing the Weighted Average Cost of Capital ('WACC') for regulatory pricing purposes in relation to fixed line, mobile, physical infrastructure access (PIA), and broadcasting services. This report sets out CEPA's independent view of the same.

1.1. ASSIGNMENT

CEPA is supporting ComReg on cost of capital issues. This independent report forms part of our consultancy support on that assignment.

In particular, we have been asked to undertake a review of ComReg's WACC methodology as outlined in the 2020 WACC Decision ('The 2020 ComReg Decision approach'), taking into account the European Commission's preferred approach ('The EC Notice Approach') as set out in a 2019 notice[1] and accompanying staff working document[2] (SWD), and implemented annually by the Body of European Regulators for Electronic Communications[3] (BEREC).

We have been asked to present WACC estimates for different telecommunications markets, including Fibre to the Home (FTTH), Fibre to the Cabinet (FTTC), Mobile Telecommunications, Physical Infrastructure Access (PIA), and Broadcasting.

This report sets out our view of these WACC estimates, detailed evidence underpinning our approach to the individual parameter estimates, and a comparison of our proposed approach with the '2020 ComReg Decision Approach' and the 'EC Notice Approach'.

1.2. INTERACTION WITH THE EC NOTICE APPROACH

Each year, BEREC publishes a report on the WACC parameter calculations that seeks to apply the EC Notice approach to updated market data. BEREC's stated goal is to produce a transparent and robust set of WACC estimates that can be adopted by National Regulatory Authorities (NRAs) when making pricing decisions for legacy infrastructure in the EU.

While these publications are intended to increase the methodological consistency with which NRAs make decisions on the cost of capital, the EC Notice (on which BEREC bases its publications) is non-binding, and NRAs "have some flexibility within this framework to take account of national specificities[4]."

At the same time, NRAs should have regard to the EC Notice approach when setting their cost of capital allowances, and NRA methodologies are subject to review by the EC, upon the EC's receipt of a WACC notification. We note that the EC Notice applies to Legacy Infrastructure only.

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[1] European Commission (2019), "Commission Notice on the calculation of the cost of capital for legacy infrastructure in the context of the commission's review of national notifications in the EU electronic communications sector", available here.

[2] European Commission (2019), available here.

[3] BEREC's most recent (2025) report on WACC parameter calculations following the EC Notice approach can be found online here.

[4] BEREC (2025), pp. 6, available here.

Since 2024, as part of its annual update reports, BEREC has published the EC determinations on NRA WACC notifications. We have reviewed these determinations, and found that, for the most part, NRAs have chosen to adopt the EC Notice approach as published by BEREC. The most consistent and material deviation by NRAs is on the risk-free rate, for which NRAs frequently make adjustments to the EC Notice approach to better reflect country-specific circumstances relating to their sovereign debt yields (given that it is non-binding).

In Appendix B, we present further details on the EC Notice approach, including the latest parameter estimates and a review of other NRA WACC notifications referenced in the 2024 and 2025 reports.

1.3. ComReg 2020 Decision approach

The ComReg 2020 Decision placed weight on two approaches[5]. One of these approaches closely corresponded to the EC Notice Approach.

ComReg's preferred "equilibrium approach" takes the view that the cost of capital - and particularly the risk-free rate (RFR) and Total Market Return (TMR) - is unobservable. As such, it must be inferred from structural macroeconomic fundamentals, rather than observed directly in data on bond yields and equity returns. This approach featured alignment with the EC Notice Approach in some places, but represented a material deviation in others.

At the time, there was concern that the prevailing macroeconomic policy environment (in the form of quantitative easing at the European Central Bank) and significant shock events, such as the COVID-19 pandemic and the fallout from the United Kingdom's exit from the European Union, may have led to distortion in the yields on traded government bonds, making them unsuitable for setting a regulatory risk-free rate.

In Appendix C, we present further details on the ComReg 2020 Decision Approach.

1.4. Regulated products and services

The following services are under consideration for our estimation of the cost of capital.

- Fixed Line services encompassing Fibre to the Home (FTTH), Fibre to the Cabinet (FTTC) and leased lines.
- Physical Infrastructure Access (PIA): Access to Eircom's physical infrastructure, such as ducts and poles.
- Mobile: Services provided over mobile network infrastructure that enable voice, text and data services over radio spectrum, without being tied to a fixed location.
- Broadcasting (Market A and Market B[6]): Wholesale access to national terrestrial broadcast transmission services and wholesale access to digital terrestrial television (DTT) multiplexing services.

We are also aware of the European Commission recommendation on the regulatory promotion of gigabit connectivity. We note that our framework would accommodate applying a risk premium for very high capacity networks (VHCNs) through use of an adjustment to the reference risk case based on relative risk and other

[5] See ComReg - Europe Economics (2020), *"The Cost of Capital for the Irish Communications Sector – Final Report"*, available here.

[6] We group markets A and B together for the purposes of estimating the cost of capital as there is no practical way of distinguishing between the operators in these markets, a large degree of cost incurred in Market B is derived from Market A, and there is no regulatory precedent for splitting these markets out. The definitions of broadcasting Markets A and B are provided in ComReg's previous market review.

empirical benchmarks. Discussion of this European Commission recommendation and whether a FTTH premium would be appropriate is discussed in Appendix D.

1.5. CEPA ASSUMPTIONS AND APPROACH

The assessment enclosed in this report is predicated on the following assumptions:

- We estimate a nominal, pre-tax cost of capital allowance.
- We estimate the cost of equity using the Sharpe-Lintner Capital Asset Pricing Model (CAPM) framework.
- We use a data cut-off of 31 July 2025 for our core estimates.
- We assume that investors have long-term investment horizons (e.g. at least ten years).
- We focus on the Eurozone as an integrated single market, and focus on Eurozone-wide evidence, adjusting for Irish evidence where appropriate. This reflects that:
    - from a theoretical perspective, in a monetary union such as the Eurozone, we might expect that key parameters will converge on a central view over a long enough time period;
    - from a practitioner's perspective, we suggest investors would typically view an investment in Irish telecoms as part of an asset class that includes European telecoms more generally; and
    - from a pragmatic perspective, Eurozone data provides a larger and richer information set than more limited Irish-only data, meaning our estimates are more likely to be more statistically robust.

As set out above, we have been asked to produce WACC estimates for specific telecommunications markets. This requires generating specific asset beta estimates and estimates for the cost of debt. We do not change notional gearing between markets in our report, although there could be reasons to differentiate if risk profiles were considered sufficiently distinct. Our choices reflects that a change in gearing changes the allowed cost of equity. This makes it more challenging to see how risk premia differ between technologies. Changing gearing does not make a material difference to the overall cost of capital.

We are transparent about the practical limitations imposed by the lack of robust equity pricing for specific activities within the listed comparator firms. Instead of a mechanistic quantitative approach, we propose to undertake qualitative relative risk analysis to triangulate our proposals within the body of available empirical evidence – we discuss these issues in detail within the main body of the report.

We assume that ComReg will continue to undertake annual updates of its WACC allowance to utilise updated empirical data. We consider this to be prudent, insofar as new data reflects 'signal' rather than 'noise', and isn't reliant on the exercise of significant amounts of judgement that would be inappropriate in the context of an annual update. For example, we consider that:

- The risk-free rate and cost of debt are well-suited to annual updates as they are mainly quantitative, and not subject to significant judgement.
- Beta and gearing are potentially less suited to annual updates, given the scope for shock events to influence empirical betas and the need for judgement when interpreting the results.

These assumptions and overarching methodological choices are in line with the approach we have taken elsewhere in the context of Irish economic regulation, including CEPA's ongoing work for the Commission for the Regulation of Utilities (CRU) on the Irish electricity network (PR6) price control covering 2026-2030.

1.6. STRUCTURE OF THE REPORT

The remaining structure of the report is as follows:

- **Section 2** sets out CEPA's independent view of the individual WACC parameters, including a comparison with the results of the EC Notice approach and the ComReg 2020 Decision approach.
- **Section 3** proposes specific adjustments to the empirical asset betas informed by our relative risk analysis, and corresponding WACC estimates.

2. PROPOSALS: COST OF CAPITAL PARAMETERS

This chapter presents CEPA's independent assessment of the cost of capital parameters for regulatory pricing purposes in relation to fixed line, mobile and broadcasting services.

2.1. PEER GROUP

Typically, the estimation of a regulatory cost of capital requires the collection of historical data for a sample of listed comparator companies with a similar risk profile to that of the regulated company. This "peer group" is generally used to inform the regulatory cost of capital decisions – most frequently with reference to beta and the cost of debt.

Perfect comparators for the risk profile of the regulated service seldom exist. It is therefore common practice to adopt a set of filtering criteria intended to produce a broader set of comparators which, in the aggregate, resemble the risk profile of the regulated service.

2.1.1. CEPA assessment

Comparators

Our comparator selection process (outlined below) results in the following proposed comparator sample, which consists of 11 European vertically-integrated suppliers of telecommunications services:

Table 2.1: CEPA's proposed comparator shortlist

Company	Bloomberg Ticker	Country of primary listing	S&P Credit Rating
Deutsche Telekom AG	DTE GY Equity	GERMANY	BBB+
Elisa Oyj	ELISA FH Equity	FINLAND	BBB+
Koninklijke KPN NV	KPN NA Equity	NETHERLANDS	BBB
Orange SA	ORA FP Equity	FRANCE	BBB+
Proximus SADP	PROX BB Equity	BELGIUM	BBB+
Telefonica SA	TEF SM Equity	SPAIN	BBB-
Telenor ASA	TEL NO Equity	NORWAY	A-
Telia Co AB	TELIA SS Equity	SWEDEN	BBB+
Telekom Austria AG	TKA AV Equity	AUSTRIA	A-
NOS SGPS SA	NOS PL Equity	PORTUGAL	BBB-
Tele2 AB	TEL2B SS Equity	SWEDEN	BBB

Source: CEPA analysis of Bloomberg data

To arrive at this shortlist of comparators, we have adopted a mechanistic approach to comparator selection, which we summarise in the following table. We consider these screening criteria to be consistent with those typically applied by regulators and other practitioners.

Table 2.2: CEPA comparator selection process summary

Comparator selection step	Description	Impact
Bloomberg Intelligence indices[7].	Initial longlist of 28 EU providers.	28
Remove de-listed and sanctioned companies.	De-listed and sanctioned comparators may not reflect updated market risk pricing to the same extent as currently-listed companies.	-3
Remove inter-sample ownership relationships.	Inclusion of both parents and subsidiaries risks double-counting the activities of the subsidiary.	-5
Liquidity testing based on: • Bid-ask spreads • Share of free float	Illiquid trading of shares may reduce the responsiveness of prices to new information, introducing downward bias.	-1
Remove companies that do not own telecoms infrastructure.	As our focus is on provision of network services, we remove companies that re-sell services.	-1
Remove companies with significant M&A activity.	Significant M&A activity can distort a company's beta estimates. We exercise judgement around whether M&A activity is significant enough to bias our estimates.	-1
Remove companies with low credit ratings.	Under our approach to the cost of debt, we have set an implicit target credit rating of BBB. Companies with lower credit ratings may react differently to systematic shocks than the notional company.	-3
Remove companies whose primary country of listing is outside the European Economic Area (EEA).	Our focus on European telecoms points to the removal of comparators listed outside the single market.	-3
Final sample	Sample after comparators removed from above process.	11

Source: CEPA analysis

We discuss each of the filtering criteria in turn:

- **De-listed and sanctioned companies:** Euskaltel SA has been delisted, two Russian telecoms providers (Mobile TeleSystems and Rostelecom) have been sanctioned.
- **Inter-sample ownership relationships:** We exercise judgement as to whether the parent or the subsidiary more closely resembles the regulated service at hand. We have identified that Orange Belgium and Orange Polska are owned by Orange SA (70% and 51%, respectively), Hellenic Telecommunications Organization is owned by Deutsche Telekom (54%), Telefonica Deutschland Holding AG is near-wholly owned by Telefonica SA, and 1&1 is owned by United Internet (78%). In each case, we consider it appropriate to exclude the subsidiary from our peer group, retaining only the parent companies, which we consider to be broadly reflective of the regulated services[8].

[7] These include the "BI Western European Incumbent Telecom Carriers Valuation Peers" (BIEUITVP), "BI Western European Challengers Telecom Carriers Competitive Peers" (BIEUCTCP) and "BI Eastern European Telecom Carriers Valuation Peers" (BIEUETVP) Indices. This is accessible from the Bloomberg Terminal.

[8] In the case of 1&1 and United Internet, we note that in principle, 1&1 is the superior comparator because United Internet provides all its network services through 1&1. However, United Internet's ongoing acquisition offer is set to increase its stake to 90%, making it unlikely that 1&1 will be a suitable comparator in the future. We later exclude United Internet itself due to its significant M&A activity.

- **Liquidity testing:** We consider a liquidity test based on bid-ask spreads[9] and a minimum threshold for the share of a company's free float for inclusion in our sample (10%). No companies fail our liquidity test based on bid-ask spreads. Tele Columbus AG currently has a very low share of free float (~5.2%), justifying its removal.
- **Remove non-network owners:** On the basis of our review of its annual accounts, Freenet AG appears to re-sell services, rather than owning its own network. We therefore exclude it from the sample.
- **Remove companies with significant M&A activity:** United Internet AG has had several significant M&A actions, which may have contributed to volatility in its beta estimates[10]. There are other examples of recent M&A within the sample, such as the recent Tele2 stake sale – we have not found a significant beta impact related to this event.
- **Remove companies with poor credit ratings:** Telecom Italia, DIGI and two Turkish providers (Turkcell and Turk Telekomunikasyon) have consistently maintained sub-IG credit ratings.
- **Remove companies listed outside the EEA:** BT and Vodafone are UK-listed, while Swisscom is listed in Switzerland. Whilst we consider these comparators may have similarities (with Vodafone having the majority of its revenue derived from EEA countries), we have removed for consistency with the EC Notice approach and preference for EEA listed comparators.

The eleven companies remaining after the application of these filters constitute a suitable sample of listed comparators whose activities can be expected to closely approximate those of a telecoms network provider in Ireland.

Risk profile of our comparator group

We have set out in Appendix A our qualitative assessment of risk across different technologies. We find that FTTH, FTTC and mobile should be considered equivalent risk profiles. We conclude that PIA is likely to be lower risk than these comparators, whilst broadcasting is likely to be higher risk.

Our review of the activities undertaken by these listed comparators suggest that the majority of activities are from the fixed line and mobile services.

We therefore position the quantitative empirical betas as reflecting risk of FTTH, FTTC and mobile services (our reference case). We discuss in Chapter 3 the adjustments we would propose to apply for PIA and broadcasting, against the betas derived from empirical beta analysis.

Other comparator groups

We have also derived data from other samples to help position our relative risk assessment, as presented in

Table 2.3. We use the 'Towers' sample to help us position our assessment of a broadcasting beta and the 'European energy networks' sample to set a suitable lower bound for a PIA beta (discussed in Chapter 3).

Table 2.3: Additional comparator samples for relative risk analysis (Bolded companies pass our comparator screening test, listed above)

Towers	European Energy Networks
Cellnex Telecom SA	**Elia Group SA/NV**

[9] Consistent with our previous approaches to liquidity testing, we remove companies where over 5% of sample dates feature average bid-ask spreads in excess of 2%, a commonly-applied benchmark for market liquidity among financial practitioners.

[10] These include the recent stake purchase in 1&1, a withdrawn 2021 offer for the entirety of United Internet AG by Management Group, the withdrawn 2022 sale of its consumer applications unit, the 2017 purchase of Drillisch, and the 2023 IPO of IONOS.

Towers	European Energy Networks
Infrastructure Wireless Italiane SpA	**Enagas SA**
RAI Way SpA	**Redeia Corp SA (Red Electrica)**
American Tower Corp	**REN – Redes Energeticas Nacionais SGPS SA**
Crown Castle Inc	**Snam SpA**
SBA Communications Corp	**Terna – Rete Elettrica Nazionale**

Source: CEPA analysis

We discuss each of these subsamples in turn:

Towers

We consider telecom tower companies to be relevant comparators for broadcasting services – these companies own communications network infrastructure and on-sell services provided over this infrastructure to telecommunications service providers and broadcasters. We note that only three of the tower providers listed above are EEA-listed (Cellnex, Inwit, and RAI Way) – the remainder of the comparators are US-listed.

On the basis of high-level desk research, we have found that, to varying degrees, each of these three companies face challenges to interpretation:

- Cellnex and Inwit both earn only a portion of their revenues from broadcasting service providers, with a share earned from providers of mobile telecommunications services.
- Cellnex's M&A activity since 2021 is a further challenge to interpreting its betas, but it has served as a key reference point for broadcasting in previous reviews[11].
- RAI Way appears to earn most of its revenues from broadcasting services provided by its parent company, but a relatively small percentage (~33%) of its shares are floated.

However, given the narrow set of available comparators, a sample consisting of all three companies will serve as the best available empirical reference point for a broadcasting beta.

European Energy Networks

We do not consider in general that the risk profile of European energy network companies should be thought of as comparable to that of European telecoms companies. The key distinguishing factor is that telecoms companies face higher demand risk than energy utilities.

The sample of European network utilities coincides with the "core" sample we proposed on behalf of the CRU for PR6, with the exception of National Grid (noting the focus on EEA-listed comparators here).

[11] We have not been able to determine why Inwit and RAI Way were not considered as part of previous price reviews for the Irish broadcasting market – to the best of our knowledge both companies were operating and listed at the time of the previous review. Europe Economics does not refer to either company in its reports for the previous review, and considers only Cellnex and the now de-listed EI Tower.

2.1.2. Comparison to EC Notice and ComReg 2020 Decision approaches

In Table 2.4, we present a comparison of our proposed peer group with BEREC's most recently-published version of its peer group[12] following the EC approach, as well as the peer group adopted by ComReg's for the 2020 Decision Approach[13].

Table 2.4: Peer Group Comparison

	CEPA Proposed Peer Group	BEREC Peer Group	ComReg 2020 Decision Peer Group
BT Group PLC	✗	✗	✓
Deutsche Telekom AG	✓	✓	✗
DIGI Communications NV	✗	✓	✗
Elisa Oyj	✓	✓	✓
Koninklijke KPN NV	✓	✓	✓
NOS SGPS SA	✓	✓	✓
Orange SA	✓	✓	✓
Proximus SADP	✓	✓	✓
Swisscom AG	✗	✗	✓
Tele2 AB	✓	✓	✓
Telecom Italia	✗	✓	✗
Telefonica SA	✓	✓	✓
Telekom Austria AG	✓	✓	✓
Telenor ASA	✓	✓	✗
Telia Co AB	✓	✓	✓
Vodafone Group PLC	✗	✓	✓

Source: CEPA analysis

[12] BEREC (2025), *"WACC parameters Report 2025"*, available here.

[13] Europe Economics (2020), *"The Cost of Capital for the Irish Communications Sector – Final Report"*, available here.

We observe that the three samples agree on the majority of the peers – nine companies are included by all three peer group approaches. There are, however, areas of disagreement:

- **BT Group**: We agree with BEREC that, following Brexit, BT Group may no longer be an appropriate comparator for a European FTTH operator.
- **Deutsche Telekom**: We agree with BEREC that, while Deutsche Telekom earns a substantial portion of its revenues in the United States (through a subsidiary), that its EU headquarters and substantial EU operations make it appropriate for inclusion in the sample.
- **DIGI Communications**: While BEREC includes DIGI Communications in its peer group, we consider that its consistent sub-investment-grade credit ratings[14] render it less suitable for inclusion as a comparator for a notionally-financed Irish provider of FTTH.
- **Swisscom**: we agree with BEREC that Switzerland's status outside of the EEA makes Switzerland less suitable as a comparator for companies operating within the single market.
- **Telecom Italia:** As with DIGI Communications, we consider that Telecom Italia's consistent sub-IG credit ratings[15] render it less suitable for inclusion in the peer group.
- **Telenor:** The ComReg 2020 Decision Approach excludes Telenor on the basis of its significant non-EU revenues. We agree with BEREC that Norway's status within the EEA makes it a suitable comparator.
- **Vodafone:** BEREC concludes that, on the basis of Vodafone's significant EEA revenues, it remains a suitable comparator for a European legacy services provider. We consider that its listing outside of the EEA presents challenges to interpretation insofar as its empirical betas are measured against a European stock market index, and do not propose to include Vodafone in the peer group.

In summary, our proposed peer group is a subset of BEREC's current peer group, excluding Telecom Italia and DIGI communications on the basis of their low credit rating, and Vodafone on the basis of its UK listing.

[14] DIGI Communications is currently rated BB- S&P, BB Fitch, WR Moody's.

[15] S&P and Moody's have rated Telecom Italia at BB+/Ba1 or lower since 2013. From 2022-May 2024, it was rated as low as B+/B1, with a slight recovery to its current rating of BB/Ba2.

2.2. Asset and Equity Beta

A stock's "equity beta" is a measure of its exposure to systematic risk. This refers to risk that cannot be diversified away by holding a broader portfolio of uncorrelated assets. The corresponding "asset beta" controls for the equity risk impact of the firm's capital structure – this makes it possible to compare systematic risk exposure across companies with differing levels of gearing. This section sets out CEPA's independent view of asset beta for our reference case (i.e. applicable to FTTH, FTTC and mobile).

2.2.1. CEPA assessment

Approach and Methodology

In general, CEPA's preferred approach to beta emphasises that empirical evidence on beta, as well as the underlying "true" value of asset beta, may fluctuate significantly over time and across comparator companies, and that mechanistically placing weight on any single period of time risks mistaking "noise" for "signal" by capturing the impact of one-off shocks or unrepresentative historical trends in the empirical evidence that may not be expected by investors on a forward-looking basis.

Furthermore, the equity beta is in theory specific to a project with a particular exposure to systematic risks. Any company with diverse interests may therefore incorporate various projects with various different betas. Asset betas can therefore be diverse even among companies operating in similar sectors.

This is particularly relevant in the context of telecommunications – the vertically-integrated network owners comprising our peer group span a wide variety of geographies within the EU and reflect a range of operational profiles.

Given that robust equity share pricing data is only available at the level of the listed firm, it is not possible to robustly estimate asset betas that are specific to a particular telecoms service line, offering or technology type (e.g., Mobile, FTTC, FTTH, PIA) using econometric methods. Pure-play comparators for a particular service may exist in some cases, but these are rare and unlikely to align exactly with the regulated service in all respects.

These points underpin the need to qualitatively consider relative systematic risk exposure when comparing the risk profile of different services within the same company, or across different companies, even when those companies are within the same broad comparator group. We discuss our relative risk analysis and how it informs our recommendations on different WACC estimates for specific telecommunications services in Chapter 3 below.

On the other hand, we note that in the context of European telecoms, the peer group of potential comparators is large and consistent relative to other contexts. This enables us to adopt a transparent, mechanistic approach to the asset beta. By implication, we may have to adopt a different approach in a different context where the sample is small or inconsistent.

We present a summary of our proposed approach to asset beta, as well as trade-offs involved in each methodological choice.

Table 2.5: Summary of CEPA's proposed asset beta methodology

Methodological decision	Preferred approach	Rationale and trade-off
Estimation Procedure	We use Ordinary Least Squares (OLS) to estimate equity betas based on data on stock and market index returns.	OLS is transparent and accessible to a wide variety of stakeholders, but is sensitive to shocks - outlying observations on stock and market returns. Other estimation approaches are available to mitigate this, though we consider this a well accepted approach.
Return interval (or frequency)	We focus on daily equity betas.	Higher-frequency returns increase the statistical robustness of the estimated equity betas and we consider that our liquidity tests overcome risks from

Methodological decision	Preferred approach	Rationale and trade-off
		daily betas being biased from thin trading. Weekly or monthly equity betas are often used by regulators.
Estimation window	We focus on a time series of 2-year long estimation windows.	We use 2-year estimation windows that balance statistical robustness and limit the impact of large temporary shock impacts, plus allow us to observe any changes in systematic risk exposure. We consider this over a time series to ensure that our estimates are not driven by cyclical factors / noise.
Relative index	We focus on the Stoxx Total Market Index (BKXP Index), a highly-diversified EU stock market index, for EU comparators. To the extent that we report non-EU equity beta estimates, these are estimated against a domestic index[16].	The use of local indices may better reflect empirically-observed "home bias." The use of more highly-diversified stock market indices may be preferred in economies where capital markets are highly-integrated, such as the Eurozone.
Gearing measure and approach to unlevering	We measure gearing with the book value of net debt and market value of equity. When unlevering equity betas into asset betas with the Harris-Pringle Formula, we use the average gearing over the 2-year estimation window.	The use of net debt reflects the de-risking effect of cash balances on outstanding liabilities. Gross debt may be more appropriate under the assumption that firms' cash holdings are not earmarked for paying down debt.
Debt beta	We apply a debt beta of 0.10	A positive debt beta assumption can have implications for the value of a relevered equity beta. We consider that a beta of 0.10 is consistent with the assumed gearing and credit rating of our reference case.
Additional adjustments	We do not apply additional adjustments, such as Blume or Vasicek adjustments.	Practitioners sometimes apply the Blume and Vasicek adjustments to correct for "low-beta bias". Additional modelling approaches, including the Black CAPM and factor models are available as extensions to the standard CAPM. However, we consider that these adjustments do not improve the accuracy of empirical beta estimates.
Relevant time period	We adopt a cutoff date of 31 July 2025. To smooth out short-run volatility and unrepresentatively low current asset beta estimates, we adopt a long-run view of the evidence that is based on interquartile ranges calculated over the last 5-10 years. This allows us to characterise the distribution of asset beta estimates across companies and over time.	In our view, over-reliance on current spot estimates of asset beta risks placing weight on "noise" rather than "signal," especially in this context, where investors may not expect future betas to remain ultra-low. Overly long time periods may consequently not reflect the risks currently faced.

Source: CEPA

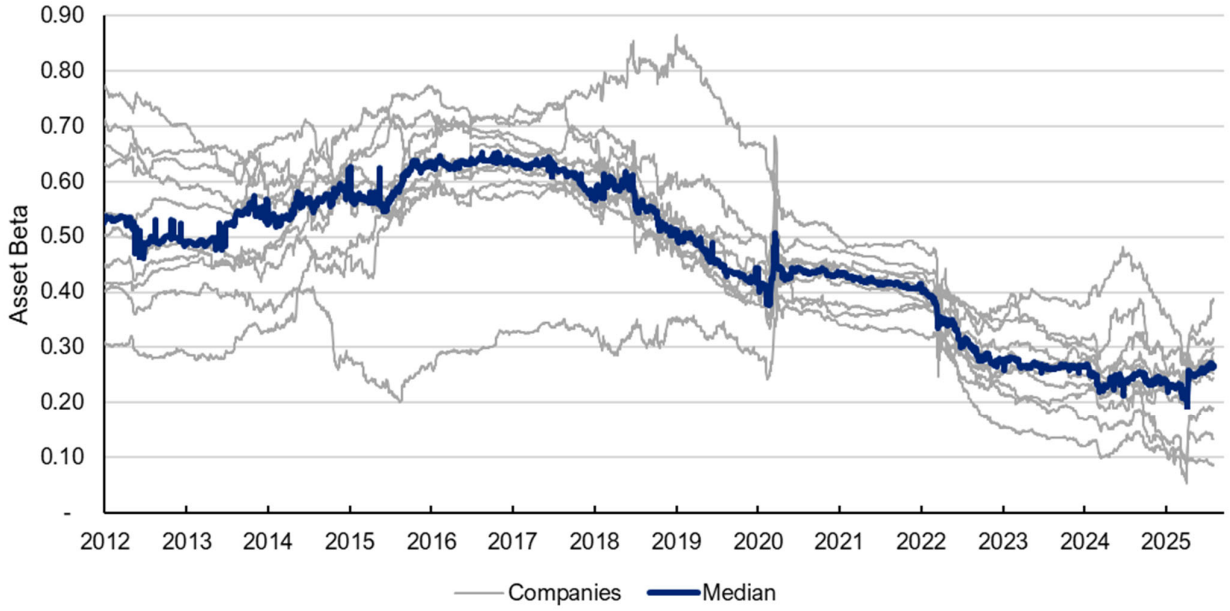
[16] Specifically, UK-listed companies are estimated against the ASX Index, Chorus Ltd is estimated against the NZSE Index, and NETLINK NBN TRUST is estimated against the STI Index.

The rest of this chapter presents empirical evidence on asset beta for the telecoms firms in our proposed peer group, as well as our final proposed point estimate.

Empirical Evidence on European Telecoms Asset Betas

Figure 2.1 presents the time series of 2-year daily asset beta estimates for the companies in our peer group. We observe a sustained and consistent downward trend both individually and for the median beta since 2017, only briefly interrupted by the two-year period following the COVID-19 pandemic, while outlying pandemic-related stock and market return observations remained within the OLS estimation window.

Figure 2.1: 2-year asset betas for European Telecoms comparators over time



Source: CEPA analysis of Bloomberg data

BEREC acknowledges this "slow decrease"[17] in the asset beta in its most recent update, and interprets it as a reduction in investor risk perceptions. They also note that, under their 5-year weekly specification, the April announcement of US trade policy changes may have led to a substantial decrease in the value of their empirical equity and asset betas. To ensure that their empirical estimates reflect investor expectations for future risk pricing dynamics, BEREC removes these weekly observations from the end of its estimation window[18].

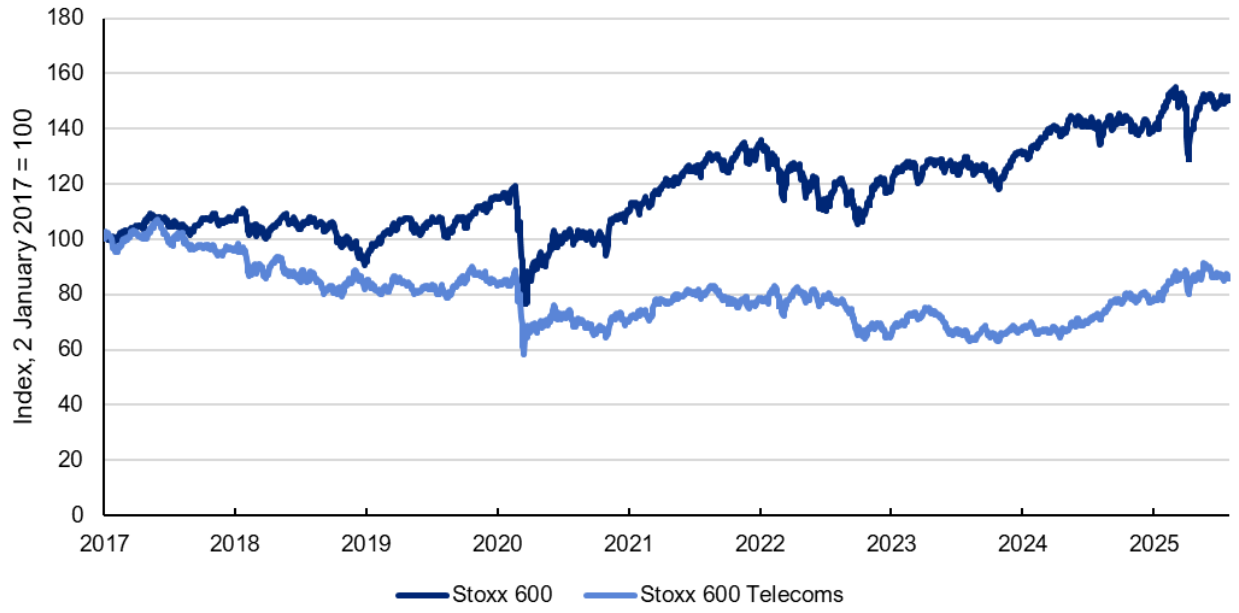
We agree with BEREC that asset betas should reflect forward-looking risk perceptions, but consider that interpreting the decade-long fall in asset betas as reducing investor risk perception may require further analysis. Falls in investor risk perceptions, hence a lower cost of capital, should lead to an improvement in the valuation of telecoms firms as given future positive cashflows are discounted by a lower cost of capital. However, this is opposite to the trend we observe – with telecom valuations falling in the period where asset beta fell.

A stagnation in telecom company share prices may have reduced the correlation of the comparators' equity returns with the broader market, which itself has exhibited a generally upwards trend excluding the Covid pandemic shock. This would lead to a downward pressure on empirical equity betas. We consider that this could be a temporary phenomenon, which would suggest that the lower observed betas reflect a transitory downwards bias rather than more accurately reflecting a 'signal' of lower perceived risk from investors.

[17] BEREC (2025), pp. 41

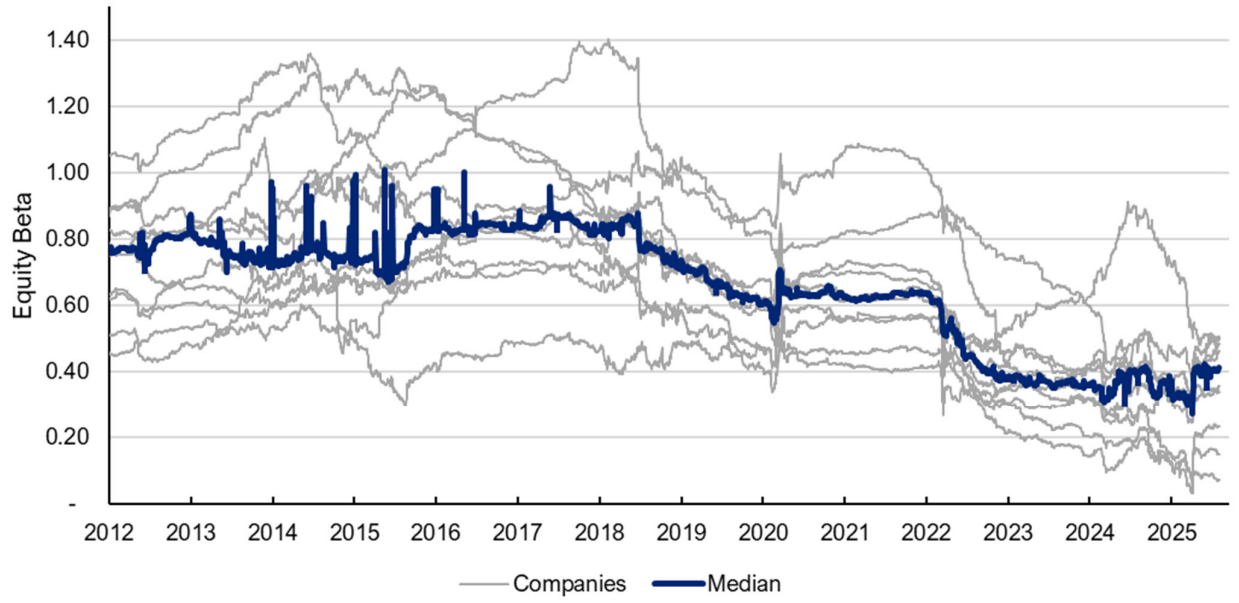
We present a comparison between the Stoxx 600 and Stoxx 600 Telecoms stock market indices in Figure 2.2, and the corresponding time series of equity beta estimates in Figure 2.3.

Figure 2.2: Trends in European telco equity valuations



Source: CEPA Analysis of Bloomberg data

Figure 2.3: 2-year equity betas for European Telecoms comparators over time



Source: CEPA Analysis of Bloomberg data

In addition, a fall in equity valuations – with no change to debt balances – would lead to higher levels of gearing. This would lead to given equity betas being de-levered to a greater extent, deriving yet lower asset betas. The increasing trend in gearing is shown in Figure 2.5 below, though we note improvements over the past 12 months in equity valuations and a reduction in gearing.

We consider that recent spot estimates of empirical 2-year asset betas for European Telcos have been lower than would be implied by a qualitative assessment of risk – as of our cutoff date of 31 July 2025, over 80% of our 11-company peer group features empirical asset betas below 0.30. A further 27% sit below 0.20, and the lowest, Orange SA, has an asset beta of 0.09. We consider that asset beta values this low cannot fairly be interpreted as reflecting true investor perceptions: investors in Orange SA would presumably not be happy with returns close to the risk-free rate.

As a cross-check, we therefore refer to empirical asset betas for regulated water, electricity, and gas networks, which bear less systematic demand risk and asset stranding risk. Using a comparable methodology, with a 0.10 debt beta, we estimate a median asset beta for European energy networks of 0.36.

Our proposed approach to setting a beta in this context seeks to "look through" the low recent empirical betas, and adopt a longer-term view of telecoms risk pricing, consistent with the view that telecoms company betas may be expected to rise in the future.

We consider that exclusion of evidence needs to be considered carefully. There is acceptance that beta measurements exhibit some 'noise' and that low values at one point in time may be offset by high values at another point in time. We do not exclude evidence, but look at using longer term evidence and a distributional assessment of betas.

Conclusion

Table 2.6 presents summary statistics for our estimated 2-year betas (as presented in Figure 2.1) over several relevant time periods. We prefer to take a longer-term view of the evidence, focusing on 5-, 7.5- and 10-year backward-looking windows. For reference, we also report results based on current spot estimates though we do not propose to place any weight on this.

For each relevant time period, we compute the interquartile range of our pooled peer group's asset beta estimates[19].

Table 2.6: Summary statistics (interquartile range) for 2-year asset betas over different periods of time

Window length (back from 31 July 2025)	Lower Quartile	Median	Upper Quartile
Spot asset beta	0.22	0.27	0.29
5 years	0.24	0.31	0.39
7.5 years	0.27	0.38	0.45
10 years	0.30	0.42	0.58

Source: CEPA analysis of Bloomberg data

The median of all beta estimates across our comparator group in the last 7.5 years is 0.38. This estimate sits within a broader interquartile range of 0.27-0.45. The median values over periods spanning the last 5 and 10 years suggest a slightly narrower range of 0.31-0.42.

Taken together, these ranges point to an overall range of 0.27-0.45**.** Our proposed asset beta point estimate is based on the median beta over the 7.5-year window, which is **0.38**.

[19] For example, the "Spot asset beta" row presents the interquartile range of the 11 spot betas estimated for 31 July 2025. The "5 years" row presents the interquartile range of the 20,097 betas estimated over the 5 years (1,827 days) from 31 July 2020 to 31 July 2025 and 11 companies. We note that the actual number estimates included is smaller, as we do not estimate betas for weekends and other non-trading days.

Based on our relative risk assessment in Appendix A, we consider that 0.38 is reflective of the risk of investments in FTTH, FTTC and mobile technologies. We discuss in Chapter 3 how this would differ for PIA and broadcasting; two technologies that we consider face different risk profiles (PIA less risky and broadcasting more risky).

2.2.2. Comparison to EC Notice and ComReg 2020 Decision approaches

In Table 2.4, we present a comparison of our proposed beta methodology with those of the EC (as implemented by BEREC), and the ComReg 2020 Decision Approach

Table 2.7: Beta methodology comparison

	CEPA Proposed Methodology	EC Notice Methodology	ComReg 2020 Decision Approach Methodology
Estimation Procedure	OLS	OLS	OLS
Return interval (or frequency)	Daily	Weekly	Daily
Estimation window	2 Years	5 Years	2 Years
Relative index	Stoxx TMI	Stoxx TMI	Stoxx TMI
Gearing measure	Book value of net debt	Book value of net debt	Book value of net debt
Debt beta	0.1	0.1	0
Low beta bias and additional adjustments	No adjustments	No Adjustments	No Adjustments
Relevant time period	Longer-term interquartile ranges.	Spot Betas	Spot Betas
Final point estimate	0.38	0.36	0.48-0.50[20]

Source: CEPA analysis

There is a significant degree of alignment between the approach proposed in this section and the EC's preferred approach to beta estimation. The key areas of departure from the EC's approach include:

- Our preference for **shorter 2-year estimation windows**, which we consider more clearly facilitate identifying and correcting for the presence of unrepresentative outliers in empirical beta estimates[21], and optimally trades off statistical robustness and relevance with respect to market data.
- Our preference for **daily, rather than weekly, return intervals.** As mentioned above, we consider that the 11 comparators in our final sample are sufficiently liquidly-traded as to ensure our estimates do not reflect

[20] These figures are as published in Europe Economics's 2020 report, and reflects separate fixed-line and mobile estimates. As part of their 2024 WACC update, Europe Economics published estimates of 0.36-0.37, on the basis of the rolled-forward EC Notice approach.

[21] For example, the COVID-19 shock event will only recently have rolled out of the 5-year estimation window.

thin-trading bias. In this case, daily betas feature improved statistical robustness and clarify the impact of shocks.

- Our preference to reflect **longer-term trends in the empirical beta estimates**, rather than relying solely on spot estimates of beta, which may reflect one-off or non-repeatable factors. This offsets some of the difference in the EC's use of a spot value for a longer estimation window. Our use of a 7.5yr average with a 2yr estimation window draws on data points over the last 9.5yrs.

To cross-check our proposed beta methodology against that of BEREC, we present in Table 2.8 a comparison of the two approaches, using BEREC's published peer group and cutoff date (31 March 2025).

Table 2.8: Comparison of BEREC and CEPA beta approaches

Asset Beta Estimates	BEREC Published Spot Estimate[22]	CEPA proposed methodology with BEREC peer group (March 2025 cutoff)[23]	CEPA proposed methodology (July 2025 cutoff)
Deutsche Telekom AG	0.37	0.40	0.39
Elisa Oyj	0.42	0.37	0.37
Koninklijke KPN NV	0.37	0.41	0.40
Orange SA	0.30	0.40	0.39
Proximus SADP	0.36	0.44	0.43
Telefonica SA	0.40	0.42	0.41
Telenor ASA	0.24	0.33	0.33
Telia Co AB	0.32	0.46	0.45
Telekom Austria AG	0.50	0.31	0.30
NOS SGPS SA	0.37	0.42	0.42
Tele2 AB	0.42	0.49	0.48
Vodafone Group PLC	0.37	0.49	-
Digi Communications NV	0.21	0.21	-
Telecom Italia SpA/Milano	0.33	0.33	-
Simple average	0.36	0.39	0.40
Pooled Median		0.38	0.38

Source: BEREC, CEPA analysis of Bloomberg Data

We observe that, despite material differences for individual companies, the pooled median of our sample estimates (0.38) is broadly comparable to BEREC's point estimate of 0.36. We further note that, to two decimal places, it coincides with the results based on our preferred sample and cutoff date.

While the aggregate results from these two approaches are similar, we consider that our preferred approach allows for greater flexibility to reflect changes in underlying market conditions.

For example, under the assumption that recent spot beta estimates reflect market conditions that may not be expected by investors going forward, BEREC's reliance on spot 5-year betas will reflect these conditions for many years, whereas 2-year estimates are potentially more responsive to changes in investor perceptions of risk.

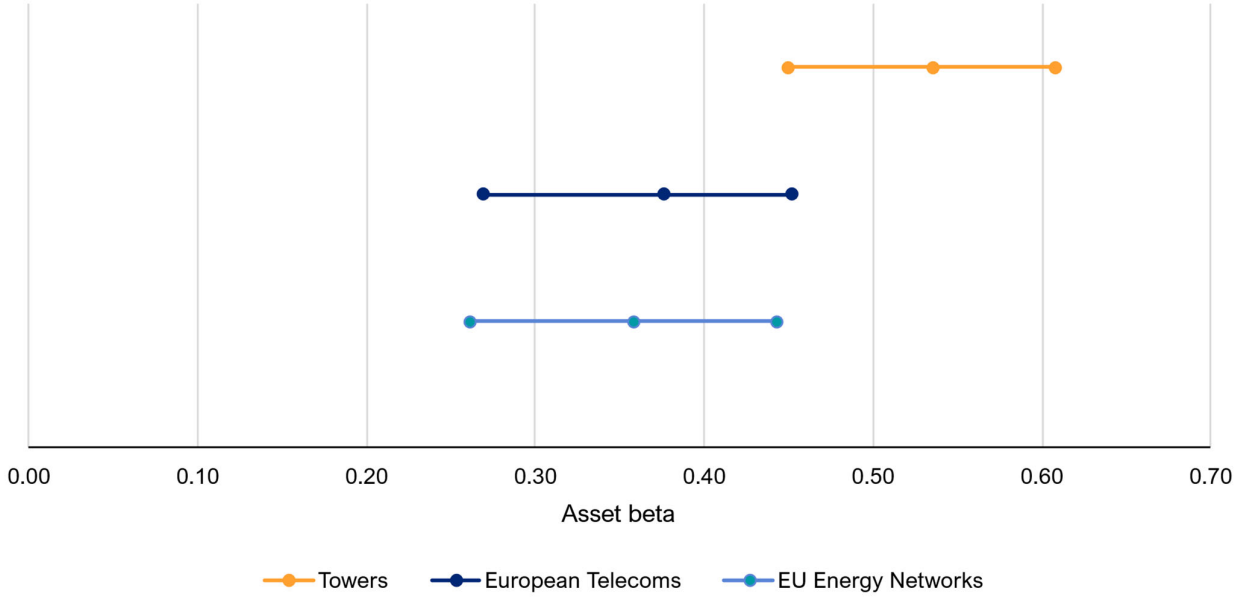
[22] Refers to BEREC's published spot 5-year weekly asset beta estimates, as of 31 March 2025.

[23] Refers to the 7.5-year median of the 2-year daily asset beta, looking backward from 31 March 2025.

Asset beta for other technologies

We have used additional comparator groups to inform our positioning of the risk of these two technologies, as presented in Figure 2.4 below. The ranges and central point estimates are constructed using the equivalent methodology applied to other comparator groups[24].

Figure 2.4: Asset beta ranges by comparator group



Source: CEPA Analysis of Bloomberg data

2.2.3. Beta estimate for PIA

In our view, a downwards adjustment to the asset beta applied for PIA could be justified:

- There is a differential between the systematic risk profiles for PIA and FTTH services, driven by Eircom's SMP in PIA and the associated price regulation imposed on its provision of PIA services. There is reduced demand risk, given that PIA sits upstream of FTTH and a long-term contract exists with NBI.
- PIA also features lower systematic asset stranding risk, given that PIA is needed for all types of electronic communications – specific technologies, such as copper or fibre – are more vulnerable to becoming obsolete due to technological advancement, or replacement from an alternative PIA provider / self-build.
- However, we consider that, ex-ante, PIA should be at least as systematically risky as regulated-revenue utilities, given PIA's demand risk is non-zero.

In calibrating the beta for PIA, we propose an upper bound of our reference case (European telecoms) sample, i.e. 0.38, but that a downwards adjustment of 0.02 is justified based on relative risk, aligning with the 0.36 median asset beta calculated for the European energy networks comparator group.

[24] As described in section 2, we construct mechanistic ranges for the empirical asset betas using the interquartile range of the 2-year beta estimates over the last 7.5 years, as well as the median estimates over the last 5 and 10 years. Summary statistics are calculated on a pooled basis within each comparator group. The central point estimates correspond to the median over the 7.5-year window.

2.2.4. Beta estimate for broadcasting

The qualitative and quantitative evidence on broadcasting both support the view that broadcasting features greater overall systematic risk exposure than wholesale FTTH broadband and leased line services. In particular, the differential in demand risk exposure is expected to grow as consumers substitute towards online content providers and away from traditional broadcasting providers.

We therefore rely fully on a separate comparator set, informed by our Towers comparator sample. This generates a broad range of 0.43-0.61, using the same approach as for our reference case. The median point estimate is 0.54 under such an approach, which we use explicitly.

2.3. Gearing, Inflation, and Tax

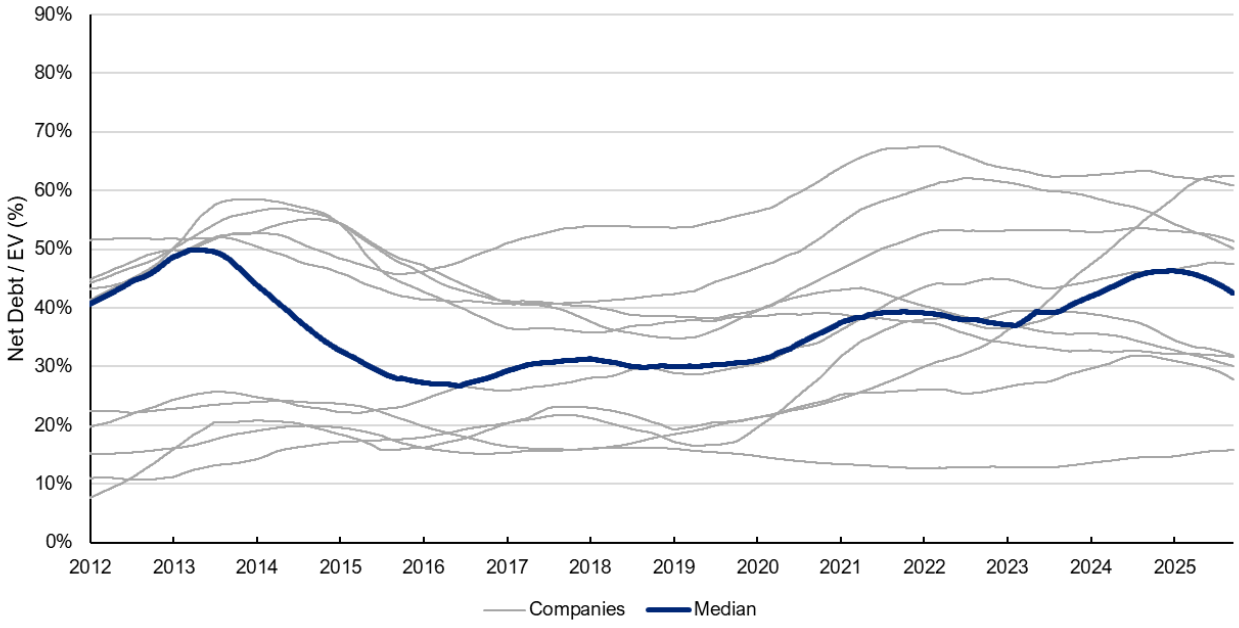
Regulatory gearing is the ratio of the firm's net debt to the value of its asset base. It expresses the relative share of debt and equity in the firm's capital structure. The notional gearing refers to the gearing of the notional firm.

This chapter sets out our independent assessment of the appropriate level of gearing for a notional FTTH operator in Ireland.

2.3.1. Gearing

We rely on empirical evidence from the comparator set to determine the efficient notional level of gearing.

Figure 2.5: Empirical evidence on 2-year average gearing for the peer group.



Source: CEPA analysis of Bloomberg Data

We observe a wide variety of gearing levels that fluctuate over time, but current values of 2-year average gearing tend to lie between 20-60%.

To summarise this evidence, we compute the pooled median of these gearing measurements over a 7.5 year window, in line with our methodology on beta. This suggests a central gearing estimate of 38%. We consider that this approach limits risk of bias caused by de-levering and re-levering on beta.

We therefore propose to round this estimate to **40%** as a plausible notional gearing figure for FTTH.

For broadcasting, we note that ComReg has previously adopted a lower notional gearing assumption of 25% for broadcasting[25]. The empirical evidence on gearing for broadcasting comparators continues to span a wide range. As of our cutoff date, Cellnex's 2-year average net-debt gearing was 47%, with 31% for Inwit, and only 4% for Rai Way. Rai Way's low gearing may be less representative of the notional company's, if some of its debt financing occurs at the level of its parent company. At the same time, the three-company average gearing level as of our cutoff date is ~27%.

For broadcasting, we consider notional gearing assumptions between 25-40% to be appropriate. Below, we present Broadcasting WACC estimates on the basis of 40% gearing for comparability with the other technologies we have assessed.

We note that BEREC does not take a position on the notional level of gearing, but it does publish the average gearing across its peer group, which is 47%[26]. For other NRAs, such as ARCEP in France and CNMC in Spain, the gearing used is the average across a peer group of comparable telecom companies.

Our estimate is slightly below the EC Notice approach and in line with ComReg's 2020 Decision approach on notional gearing.

2.3.2. Inflation

The cost of debt, risk-free rate and the Total Market Return (TMR) can be presented in nominal or real terms. Other cost of capital parameters are independent of inflation (e.g. beta, gearing, Equity Risk Premium (ERP) and tax). We estimate a nominal cost of capital. For the cost of debt and risk-free rate, we use nominal yields on corporate and government bonds respectively. Investors require a real return and compensation for expected inflation. Nominal yields will therefore have inflation expectations reflected in their yield, i.e. higher expected inflation will lead to a higher nominal yield. The expected inflation is relevant to the tenor of the bond, e.g. a 20yr bond yield will reflect expected inflation over 20yrs. For government bonds, breakeven inflation reflects the difference between nominal and index-linked yields of the same tenor. For reference, the difference between 10yr German nominal and index-linked bonds (i.e. breakeven inflation) in the period for which we estimate our risk-free rate is 1.95%.

It is important to reflect the appropriate inflation rate if revenues were linked to inflation that differs to estimation of a real cost of capital. For example, the CRU's PC5 Final and PR6 Draft Determinations have inflation-linked returns tied to Irish inflation, whilst the real cost of capital is estimated using German data (as a proxy for an integrated Eurozone market). Forward-looking inflation is estimated to be up to 40bps lower in Ireland relative to Germany, therefore the relevant inflation for an Irish inflation-linked regime could be 1.55% rather than 1.95%.

In this case, we estimate a nominal return and therefore expected Irish inflation could be deducted (if that is the relevant benchmark) to estimate a real Irish return.

The exception from starting from a nominal return in the cost of capital is the TMR. Historical data involves periods of exceptional inflation that are unlikely to be repeated, e.g. German hyperinflation in the early 1920s. We therefore assume that real historic returns are proxies for real future returns. This real TMR can be estimated relative to an equivalent real risk-free rate to estimate an ERP. In our report, this ERP is added to a nominal risk-free rate to obtain a nominal TMR.

2.3.3. Tax

We assume an Irish corporate tax rate of 12.5%, consistent with the ComReg 2020 Decision. In 2021, political agreement was reached by the OECD Inclusive Framework on a two-pillar approach to international tax reform. This includes the commitment to introduce a minimum effective tax rate of 15% for companies with revenue above €750 million ("Pillar Two"). Pillar Two legislation has been enacted or substantively enacted in most of the jurisdictions where Illiad SA's subsidiaries are based with effect from 1 January 2024. Whilst in theory we would

[25] See Paragraph 6.34 of ComReg's WACC review from 2020, available here.

[26] We understand this reflects the average of the comparators' 5-year average gearing estimates.

expect this to cover Eircom, the 2024 accounts suggest there has not been a material impact from this legislation, therefore we assume 12.5% tax rather than 15%[27]. For broadcasting, we understand that RTE's group-wide total revenue sits below the Pillar Two threshold[28], so we assume 12.5% for broadcasting as well.

2.4. Risk-Free Rate

The risk-free rate represents the rate of return that an investor would require from a riskless investment. In practice, no investment is truly devoid of risks such as default, liquidity, or inflation. In regulatory cost of capital estimation, the risk-free rate is typically proxied by the yield on government debt.

In this section, we outline CEPA's proposed approach to estimating the risk-free rate, and then we compare this to the EC Notice approach.

2.4.1. CEPA assessment

Methodology and regulatory precedent

The risk-free rate is a market-wide parameter; and given the nature of telecommunications investments, we consider that estimates of the risk-free rate should capture a relatively long-term investor horizon of at least ten years. In terms of regulatory precedent in Ireland:

- ComReg's 2020 Decision approach used 10-year Irish government bonds;[29]
- For the CRU's electricity network price controls (PR6), the CRU has focused on 10-year German government bonds as benchmark risk-free assets; and
- The IAA in its 2026 Determination on Airport Charges uses 10-year German and Irish bonds.[30]

In terms of regulatory precedent in other European countries:

- ARCEP, the French telecoms regulator, uses 10-year French bonds.[31]
- The CNMC, the Spanish regulator, uses 10-year Spanish bonds.[32]

[27] Gov.ie (2023), "Minister McGrath notes Ireland's application of effective 15% corporation tax rate for in-scope businesses", Available here

[28] According to RTE's 2024 annual report (available here), RTE's 2024 total revenues were €380.4m.

[29] The EC recommends the use of domestic 10-year government bonds for each Member State. In other words, for Ireland, the EC recommends the use of a 10-year Irish government bond.

[30] IAA (2025), 2026 Determination on Airport Charges at Dublin Airport: Issues Paper Consultation. Available at: www.iaa.ie/docs/default-source/publications/corporate-publications/economic-regulation/2026-determination-on-airport-charges-at-dublin---issues-paper-consultation.pdf?sfvrsn=714ca45f_9.

[31] Source: ARCEP (2023), *Projet de Notification à la Commission Européenne*. Available at: https://www.arcep.fr/fileadmin/user_upload/grands_dossiers/degroupage/projet-notification-CE-WACC-2024_sept2023.pdf.

[32] Source: CNMC (2024), *Inicio de Expediente y Remisión de Informe de Determinación de la Tasa Anual de Coste de Capital a Aplicar en la Contabilidad de Costes del Ejercicio 2024 de Telefónica.* Available at: https://www.cnmc.es/sites/default/files/editor_contenidos/Telecomunicaciones/Consultas%20públicas/1_WACC_DTSA_002_24_ConsPublica_WACC_2024.pdf

- Ofcom, in its 2026 Telecoms Access Review Draft Decision (2025), used UK government bonds with maturities between 10 and 20 years.[33]

[33] Ofcom estimates the nominal RFR by first estimating the real RFR from index-linked gilts, then converting it to nominal terms using an RPI inflation assumption of 2.5%. Source: Ofcom (2025), Annex 1-22: Telecoms Access Review. Available at: https://www.ofcom.org.uk/siteassets/resources/documents/consultations/category-1-10-weeks/consultation-telecoms-access-review-2026-31/main-documents/annexes-1-22.pdf?v=392943.

Table 2.9: Methodological choices for the estimation of the risk-free rate.

Choice	Comments on the approach taken
Overarching assumptions	
Choice of bond issuer	A key assumption we have adopted for our analysis is an integrated Eurozone capital market (for reasons set out in Chapter 1). We consider long-term German government bonds as a suitable proxy for the risk-free rate. We consider that German government bonds constitute a good proxy for the risk-free rate of return on Eurozone investments, as they are widely considered to have negligible default risk, are highly liquid and currently hold AAA credit ratings.
Long-term horizons	Our approach makes use of 10-year German nominal bonds. The use of 10-year bonds is consistent with Irish precedent (i.e., ComReg, CRU, and the IAA), is more closely aligned with the expected investor horizon and Germany issues a high volume of 10-year bonds. An illustration of the nominal yields for 10-, 20-, and 30-year bonds can be seen in Figure 2.6.
Calculation choices	
Bonds used	10-year nominal German government bonds.
Averaging period	We use the 3-month average of the German bonds as our averaging period of choice. The exercise is looking to set a forward-looking cost of capital that reflects efficient costs. On the risk-free rate, we consider that this is best achieved through the use of recent yields[34]. Consequently, we place no weight on averages beyond one year, since we consider that such estimates are less reflective of the likely risk-free rate in the short-term.[35]

Source: CEPA analysis.

Market evidence

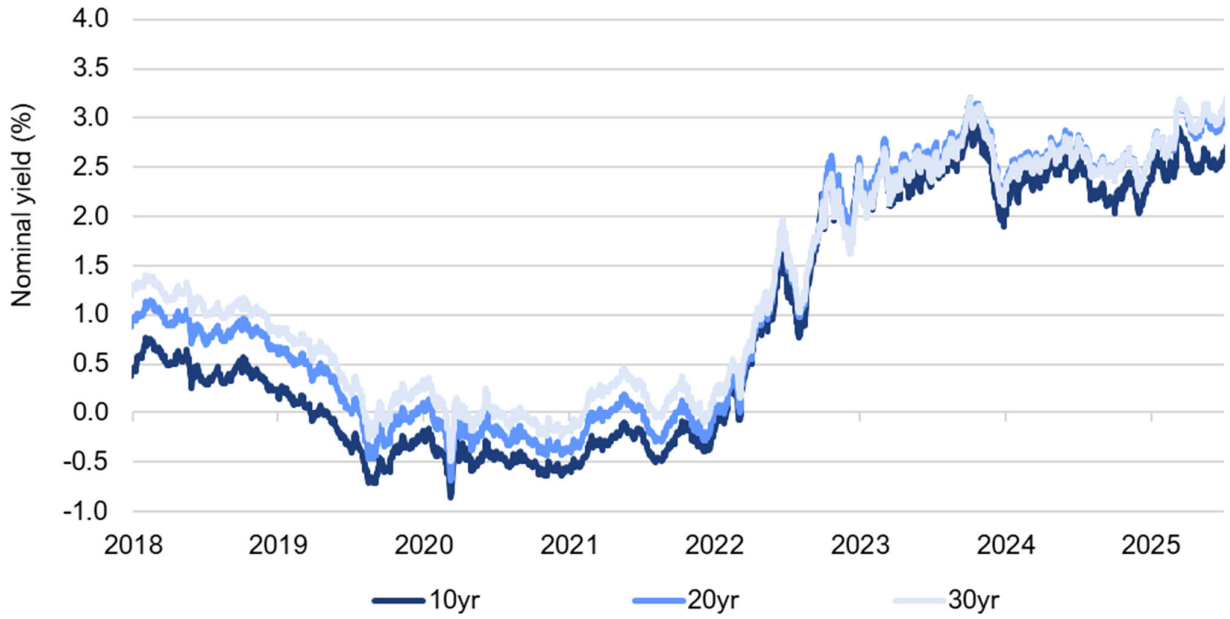
Figure 2.6 below illustrates the spot rates for 10-, 20-, and 30-year German nominal government bonds over the period 2018-2025. For the 10-year government bonds, this shows that rates have increased to a higher level than yields used for setting the allowances of previous years.

If we extend the averaging period beyond one year, the yields included may no longer reflect current or expected future risk-free rates. For instance, using the European Commission's proposed five-year arithmetic average would incorporate nominal yields from 2021 and 2022, which were significantly lower than current levels and unlikely to provide an accurate picture of how yields will evolve year by year.

[34] On other parameters, we consider historical data over different time periods (e.g. on the TMR and beta). This historical data is being used to set our best estimate of the parameter value in a forward-looking sense. This is internally consistent if we focus on the same forward-looking investment horizon for each parameter.

[35] We note that both EU examples (France and Spain) blend a five-year trailing average of 10-year government bond yields with a shorter window. CNMC weights 75% on the five-year average and 25% on a six-month average; ARCEP takes a simple average of the five-year and five-month averages.

Figure 2.6: Nominal yields of German 10-, 20-, and 30-year government bonds.



Source: CEPA analysis based on Bloomberg data.

Summary

To estimate the range of the risk-free rate, we have considered 1-month, 3-month, 6-month and 12-month trailing averages of nominal yields, which are shown in Table 2.10 below. Our proposed value for the risk-free rate is **2.60%**, derived as the three-month backward-looking average from our 31 July 2025 cut-off date. We also present the 31 March cut-off date for better comparability with the EC Notice and ComReg 2020 Decision approaches, since both of their approaches use March of each year as a cut-off point.

Table 2.10: Nominal yields for 10-year German government bonds.[36]

Bond	Cut-off date	Spot	1-month	3-month	6-month	12-month
Nominal rate, 10-year German government bonds	31/03/2025	2.74%	2.78%	2.58%	2.42%	2.41%
Nominal rate, 10-year German government bonds	31/07/2025	2.69%	2.67%	2.60%	2.59%	2.44%

Source: CEPA analysis based on Bloomberg data.

[36] Values shown are trailing averages.

2.4.2. Comparison to EC Notice and ComReg 2020 Decision Approach

Table 2.11 below summarises the EC Notice approach relative to CEPA's.

ComReg's 2020 Decision approach to estimating the risk-free rate was primarily informed by modelling of the relationship between the risk-free rate and changes in Irish economic growth. It therefore has little comparability with either the EC Notice approach or our proposed approach, and is not included in the comparison table below. We understand that under the ComReg 2020 decision approach, annual updates to the risk-free rate were made in accordance with the EC notice approach[37] - for the 2025 update, this updated figure was 0.37%[38].

Table 2.11: Summary of CEPA and EC Notice approaches to estimating the risk-free rate.

Comparison field	EC Notice	CEPA	CEPA alignment	Comments
Bonds residual maturity	10-years	10-years	✓	There is full alignment across both approaches.
Averaging period	5-year averaging window	3-month averaging window	✗	Both the EC Notice and ComReg 2020 Decision approach apply a consistent 5-year averaging period, matching the approach used for estimating the cost of debt and beta. We choose to focus on more recent data to better capture prevailing market conditions, but sufficiently long-term to avoid short-term volatility.
National benchmark	Irish bonds	German bonds	✗	CEPA proposes using German government bonds rather than Irish bonds. This reflects the greater liquidity of German bonds and the highly-integrated nature of European capital markets.
Yield frequency	Weekly	Daily	✗	A potential explanation for the use of weekly frequencies for the Irish bonds by the EC Notice approach is due to illiquidity.
QE adjustments	No	No	✓	There is full alignment across both approaches.
Inflation basis	Nominal	Nominal	✓	There is full alignment across both approaches.
Estimate	**1.61%**[39]	**2.60%**	-	CEPA's estimate is approximately 100 basis points higher than the EC Notice estimate.. The main drivers of this difference are the country of choice, and the averaging period.

[37] At each annual update, the EC notice approach was applied to deliver a range of WACC estimates. A point estimate was selected on the basis of the 80th, 64th, and 138th percentile of the range for Mobile, Fixed-line, and Broadcasting respectively. These percentiles were selected on the basis of the comparison between the ComReg 2020 approach and the EC notice approach at the time of ComReg's 2020 report.

[38] See Europe Economics (2025), "WACC update for the Irish mobile, fixed-line, and broadcasting sectors," available here.

[39] Refers to the Irish risk-free rate, as estimated in BEREC (2025), "BEREC Report on WACC parameter calculations according to the European Commission's WACC Notice of 6th November 2019". Available at: https://www.berec.europa.eu/system/files/2025-06/BoR%20%2825%29%2064%20BEREC%20Report%20on%20WACC%20parameters%202025.pdf

Comparison field	EC Notice	CEPA	CEPA alignment	Comments
				As we can see from Figure 2.6 above, taking a 5-year average includes years prior to 2023, which show a significant difference in yields relative to present yields.

Source: CEPA analysis based the European Commission and ComReg. [40] [41]

The key difference between CEPA's approach and the EC Notice Approach arises from the EC Notice selecting a 5-year averaging period, which significantly lowers the calculated average (see Figure 2.6). This difference to the CEPA estimate is partly offset by the higher yields on Irish bonds compared with German bonds (see Table 2.12).

Table 2.12: Nominal yields for 10-year German and Irish government bonds.[42]

Bond	Spot	1-month	3-month	6-month	12-month	5-years	10-years
Nominal rate, 10-year **German** government bonds	2.69%	2.67%	**2.60%**	2.59%	2.44%	1.39%	0.77%
Nominal rate, 10-year **Irish** government bonds[43]	2.92%	2.93%	2.89%	2.89%	2.76%	1.81%	1.24%
Difference	**0.22%**	**0.25%**	**0.29%**	**0.30%**	**0.32%**	**0.42%**	**0.47%**

Source: CEPA analysis based on Bloomberg data.

2.5. Total Market Return (TMR)

The TMR is defined as the overall rate of return investors expect to earn from holding the market portfolio. It can be decomposed into the risk-free rate and an equity risk premium (ERP), which reflects the additional yield that an investor would expect to earn on a portfolio of equity investments over and above the risk-free rate.

We propose to estimate the TMR directly rather than take an additive approach of risk-free rate plus ERP. This is consistent with established precedent in both Ireland (i.e., CRU electricity and gas network price control decisions, IAA Dublin Airport 2022) and Great Britain (i.e., Ofcom TAR 2026).[44]

2.5.1. CEPA assessment

Methodology

We place weight on both historical ex-post and historical ex-ante approaches to estimating the TMR. Ex-post approaches take the view that historical data on equity total returns is sufficient to forecast investor expectations

[40] European Commission (2019), Commission Notice on the calculation of the cost of capital for legacy infrastructure in the context of the Commission's review of national notifications in the EU electronic communications sector.

[41] Europe Economics (2020), The Cost of Capital for the Irish Communications Sector: Final Report.

[42] Values shown are trailing averages. The cut-off dates used are 31 July 2025.

[43] We note that the value shown for the 5-year average of Irish bonds is not perfectly comparable with BEREC's 5-year RFR point estimate of 1.61%. This is largely due to a timing difference with BEREC's March 2025 cutoff date.

[44] In its 2022 Dublin Airport report, the IAA notes that Irish regulatory precedent has typically treated the ERP as a standalone market input. It adds that the ERP can be counter-cyclical, whereas the total market return (TMR) is more stable and therefore a better basis for deriving the ERP.

without further adjustment. Ex-ante approaches take the view that historical data reflects certain one-off or non-repeatable factors that would not be expected by investors to prevail going forward[45].

As discussed in Section 2.3.2, we estimate the TMR in real terms due to a view that historical real returns are proxies for future real market returns. Periods of historic inflation (e.g. German hyperinflation) mean that we do not consider historical nominal returns are good proxies for future nominal market returns.

We use a real returns framework (alongside a real risk-free rate) to estimate an ERP, which we then pair with a nominal risk-free rate to generate a nominal TMR.

Historical Ex-post estimates

Our ex-post analysis is informed by the long-run average equity returns compiled by Dimson, Marsh, and Staunton (DMS), and published in the 2025 Credit Suisse Global Investment Returns Yearbook[46]. This dataset and time series is a well-established reference for estimating the TMR.

Estimates are presented country-by-country on both an arithmetic mean (AM) and geometric mean (GM) basis[47]. To derive European aggregates, we present the median across selected countries, as shown in Table 2.13.[48]

Table 2.13: Mean annualised real 1900 - 2025 European equity market returns, historical ex post estimates.

	Ex-post TMR, GM	Ex-post TMR, AM
Eurozone (median)	3.48%	6.51%
Eurozone + (median)	4.35%	7.05%
Ireland	4.35%	6.86%

Source: CEPA analysis based on DMS Credit Suisse Equity Returns Yearbook 2025 data.

Long-run historic estimates can vary, depending on the choice of average and the volatility of the underlying data. We place less weight on the Irish specific evidence, given our assumption of an integrated European market. We propose that the Irish evidence should be considered a cross-check only.

Overall, we consider this analysis points to a broad ex-post TMR range of 6.51%-7.05%. Irish evidence sits in the middle part of this range for arithmetic historical ex-post data.

Historical Ex-ante estimates

Our starting point for ex-ante estimates is the geometric-mean ex-post TMR. We then look to correct for one-off non-repeatable factors through the historical returns attributable to expansion in the price to dividend (P/D) ratio in the historical ex-post estimates[49]. The decomposition of historical equity returns that underpins this analysis is published annually on a GM basis by DMS. We derive the implied GM ex-ante TMR in Table 2.14.

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[45] The view taken in this report and by other regulators is that historical equity returns includes an unexpected capital gain component – see Fama and French (2002), *"The Equity Premium"*, available here.

[46] Dimson, Marsh and Staunton (2025), Credit Suisse Global Investment Returns Yearbook.

[47] The arithmetic mean is the simple average (add the values and divide), while the geometric mean shows the rate that would need to be compounded to get from the start date to the end date (ignoring percentage changes in individual years in that time period).

[48] Eurozone countries include Austria, Belgium, Finland, France, Germany, Ireland, Italy, The Netherlands, Portugal, Spain. The 'Eurozone +' sample adds Denmark, Sweden, Norway, Switzerland, and the United Kingdom.

[49] The ex-post equity total return can be decomposed into [(1+ Geometric mean dividend yield) * (1+ Growth rate of real dividends) * (1+ Expansion in the P/D ratio)]-1. Equity capital gains reflect both growth in real dividends and expansion in the P/D ratio, and the expansion in the P/D ratio is assumed to be non-repeatable. see Fama and French (2002), *"The Equity Premium"*, available here.

Table 2.14: Mean annualised real 1900 - 2025 European equity market returns, historical ex-ante estimates[50]

	Ex-post TMR, GM	minus Expansion in the P/D Ratio, GM	*equals* Ex-ante TMR, GM
Ireland	4.35%	0.08%	4.27%
Eurozone (median)	3.48%	0.06%	3.45%
Eurozone+ (median)	4.35%	0.08%	4.26%

Source: CEPA analysis based on DMS Credit Suisse Equity Returns Yearbook 2025 data.

The next step is to calculate the AM ex-ante TMR from our GM estimate. To do this, we must calculate an "AM-GM" wedge that can be used to convert GM figures into AM figures. Since DMS publish average ex-post returns on both an AM and a GM basis, we can derive an AM-GM wedge as the difference between the AM and GM estimates for a particular EU country.

The AM-GM wedge to apply for ex-ante analysis should reflect only the volatility impacting on ex-ante returns (rather than full ex-post values)[51]. It may therefore be appropriate to apply only a portion of the ex-post AM-GM wedge when converting ex-ante figures from GM to AM[52].

This approach to ex-ante TMR involves an exercise of judgement in several ways:

- the degree to which ex-ante returns are less volatile than ex-post returns.
- how and to what extent historical expected returns have differed from historical outturn returns.

We therefore consider results under which both 75% and 100% of the AM-GM wedge is applied[53].

Table 2.15: Mean annualised real 1900 – 2024 European equity market returns, historical ex-ante (75% case) [54]

	Ex-ante TMR, GM	*plus 75%* AM-GM Wedge	*equals* Ex-ante TMR, AM
Ireland	4.27%	+1.80%	6.15%
Eurozone (median)	3.45%	+2.25%	5.63%
Eurozone+ (median)	4.26%	+1.80%	5.92%

Source: CEPA analysis based on DMS Credit Suisse Equity Returns Yearbook 2025 data.

We compare these results to use of the full 100% AM-GM wedge.

[50] Additions and subtractions are geometric, rather than arithmetic, and are computed at the country level. For example, the Irish GM ex-ante TMR is computed as (1+4.35%)/(1+0.08%) – 1 = 4.27%. We perform this calculation individually for every country, so the reported Eurozone and Eurozone+ median figures may not add up exactly.

[51] In a UK context, previous work for Ofwat has suggested that the AM-GM wedge based on ex-ante figures is 60bps smaller than the wedge based on ex-post figures.

[52] This expectation is consistent with the academic literature. For example, see "The Equity Premium" (2002), by Eugene Fama and Kenneth French. On page 16, the authors state that "because the dividend growth rate is less volatile than the rate of capital gain, the expected simple dividend growth rate is less than the expected simple rate of capital gain."

[53] While we have not sought to quantify the magnitude of the required "volatility adjustment" directly in the EU context, the 75% assumption discussed in the main body is consistent with our findings in the UK context.

[54] Additions and subtractions are geometric, rather than arithmetic, and are computed at the country level. For example, the Irish AM ex-ante TMR under the 75% assumption is computed as (1+4.27%)x(1+1.80%%) – 1 = 6.15%. We perform this calculation individually for every country, so the reported Eurozone and Eurozone+ median figures may not add up exactly.

Table 2.16: Mean annualised real 1900 – 2024 European equity market returns, historical ex-ante (100% case)[55]

	Ex-ante TMR, GM	*plus 100%* AM-GM Wedge	*equals* Ex-ante TMR, AM
Ireland	4.27%	2.40%	6.77%
Eurozone (median)	3.45%	3.00%	6.35%
Eurozone + (median)	4.26%	2.40%	6.46%

Source: CEPA analysis based on DMS Credit Suisse Equity Returns Yearbook 2025 data.

As stated above, ex-ante approaches to TMR estimation have theoretical merits but are more subjective in their application. As such, regulators have tended to exercise caution when applying ex-ante approaches, particularly when there is no conclusive evidence on the merits of different adjustments.

Overall, we consider this analysis points to a broad ex-ante TMR range between 5.63%-6.77%. We note that Irish evidence sits in the higher part of the ex-ante range, but the middle of the ex-post range.

Bringing the evidence together

A summary is provided in Table 2.17 below for the real TMR.

Table 2.17: Mean annualised real 1900 - 2024 European equity market returns, historical ex-post and ex-ante

	Ex-post TMR, AM	Ex-ante TMR, AM (75% case)	Ex-ante TMR, AM (100% case)
Ireland	6.86%	6.15%	6.77%
Eurozone (median)	6.51%	5.63%	6.35%
Eurozone + (median)	7.05%	5.92%	6.46%

Source: CEPA analysis based on DMS Credit Suisse Equity Returns Yearbook 2025 data

In setting our final proposed real TMR range, we consider the following factors:

- The Eurozone+ sample is most consistent with our estimates for other CAPM parameters, though Irish TMR evidence is a valuable cross-check.
- The empirical evidence suggests an upper-bound TMR estimate of 7.05%, based on the median estimate for the Eurozone+ countries.
- The ex-ante estimates from the Eurozone+ sample generates a value of 5.92% in the 75% case, or 6.46% in the 100% case.
- An average of the ex-post and ex-ante values for the Eurozone+ sample gives a value of 6.49%.
- The Eurozone sample gives lower values than the Eurozone+ sample. For the Eurozone, empirical evidence suggests a lower-bound estimate of 5.63%, assuming a volatility adjustment where 75% of the ex-post AM-GM wedge is applicable to ex-ante figures. Assuming the entire wedge is applicable, the lower-bound is 6.35%.
- The ex-ante analysis conducted here requires a greater degree of judgement regarding which components of historical returns may be considered non-repeatable by investors, but also regarding the volatility adjustment assumption.

[55] Additions and subtractions are geometric, rather than arithmetic, and are computed at the country level. For example, the Irish AM ex-ante TMR under the 100% assumption is computed as (1+4.27%)x(1+2.40%) – 1 = 6.77%. We perform this calculation individually for every country, so the reported Eurozone and Eurozone+ median figures may not add up exactly.

We consider that a point estimate of **6.50%** is applicable for the real TMR. This is a rounded up estimate to 1 decimal place of the combined ex-post and ex-ante Eurozone+ evidence. It is consistent with the Eurozone median ex-post TMR of 6.51% and slightly above the more conservative ex-ante 100% case for the Eurozone+ of 6.46%.

Regulatory Precedent

A useful crosscheck to these findings is to consider regulatory precedent, as the majority of decisions are made in real terms.

Table 2.18: Recent precedent in Europe and the UK on approach to calculating a real TMR

	Approach	Range (real)
ComReg		
ComReg 2020 Decision Approach (2025 update)	**Historical averages using DMS; weight on arithmetic mean; Regulatory precedent (as a cross check)**	**5.90% to 6.90%**
EC Telecom NRAs		
ARCEP (2023)	Historical averages (arithmetic)[56]; DMS and Bloomberg as sources	5.71%[57]
CNMC (2024)	Historical averages (arithmetic)[58]; DMS and Bloomberg as sources	5.90%[59]
Ofcom (2025)	Historical ex-post; Historical ex-ante; Regulatory precedent	6.70%
BNetzA	TMR/ERP unspecified – on a "glide path" leading to full implementation of the EC notice approach[60].	Unspecified
Other Irish Precedents		
CRU PC5 (2023)	Historical ex-post; Historical ex-ante; and Regulatory Precedent	6.4% to 6.75%
IAA Dublin Airport (2022)	Historical averages using DMS (Blume's method); Forward looking DDM.	5.70% to 6.81%
CRU PR5 (2020)	Historical averages; DGM; Regulatory precedent (as a cross check)	5.70% to 6.75%
Other examples		
Ofwat PR24 (2024)	Historical ex-post; and Historical ex-ante[61]	6.68% to 6.98%
CAA NATS (2023)	Regulatory Precedent	6.1% to 7.4%[62]
UR Gas Distribution (2023)	Regulatory Precedent	6.50%
Ofgem RIIO ED2 (2020)	Historical ex-post; Forward-looking approaches (cross-check only)	6.25% to 6.75%

[56] The ERP value from the Commission Notice is used.

[57] Since ARCEP doesn't publish a real RFR, we deflate ARCEP's nominal RFR of 1.79% using the Fisher equation with 2% inflation, giving –0.21%. Adding the ERP of 5.92% yields a total market return of 5.71%

[58] The ERP value from the Commission Notice is used.

[59] Since CNMC doesn't publish a real RFR, we deflate CNMC's nominal RFR of 1.95% using the Fisher equation with 2% inflation, giving –0.05%. Adding the ERP of 5.94% yields a total market return of 5.90%

[60] For example, see BnetzA's website, available here.

[61] DMS Decompositional and Fama-French DGM approaches based on DMS dataset

[62] Used CMA's PR19 range

	Approach	Range (real)
CMA PR19 (2021)	Historical ex-post; Historical ex-ante; and Forward looking approaches (with no weight placed)	6.1% to 7.4%[63]
UR TSO (2020)	Historical averages; Regulatory precedent	6.7%[64]
Ofgem GD2 & T2 (2020)	Historical averages; Forward looking returns; Regulatory precedent; Investor studies	6.25% to 6.75%
Ofwat PR19 (2019)	Historical averages; Forward looking returns; and Regulatory precedent (as a cross check)	6.50%

Source: UKRN (2024) Cost of Capital report - October 2024 and CEPA review of published regulatory reports.

We note that our proposed estimate sits comfortably in the range proposed under the ComReg 2020 Decision approach (5.90%-6.90%).

Converting the real TMR into a nominal TMR

We have estimate a real TMR range of 6.50% for the real TMR, however we require a nominal TMR to obtain a nominal cost of capital. To convert the real TMR proposed above into nominal terms, we apply German 10-year breakeven inflation. Specifically, we:

- Construct a real risk-free rate benchmark using the yield on 10-year inflation-linked German sovereign debt, using a three-month average of yields[65] – this gives us a 0.65% real risk-free rate.
- We compute the equity risk premium as the difference between the real TMR and the real risk-free rate – this yields a 5.85% ERP.
- We apply this ERP to the nominal risk-free rate estimate of 2.60%.

We therefore propose a final nominal **TMR point estimate of 8.45%**

Summary

We propose a nominal TMR point estimate of **8.45%**.

2.5.2. Comparison to EC Notice and ComReg 2020 Decision Approach

Table 2.19 summarises the differences in how CEPA, the Commission, and ComReg estimate the TMR and ERP.

Table 2.19: Summary of CEPA, EC Notice, and ComReg 2020 Decision Approach to estimating the TMR/ ERP.

Comparison field	EC Notice	ComReg 2020 Decision	CEPA	CEPA alignment	Comments
Overall approach	ERP	TMR	TMR	✗	Unlike the EC Notice, we propose to directly estimate the TMR, and subsequently infer the ERP. This is aligned with the ComReg 2020 Decision Approach.

[63] RPI-deflated: a range of 5.2% to 6.5% in RPI-stripped terms converts into a CPIH-stripped range of 6.1% to 7.4%

[64] Mid-point of CMA's provisional findings in PR19 redetermination - CPIH-real basis

[65] This is equivalent to how we estimate the nominal risk-free rate, except in this case we use index-linked bonds rather than nominal bonds to generate a real risk-free rate.

Comparison field	EC Notice	ComReg 2020 Decision	CEPA	CEPA alignment	Comments
Data sources	DMS and Bloomberg[66]	DMS	DMS	✓	All three use DMS as the main source for the TMR and ERP.
Countries included	All EU/EEA countries are included	EU countries and the UK[67]	EU countries and Norway, Switzerland, and the UK[68]	✓	Although the three approaches differ in certain respects, they largely converge on a common set of EU countries.
Use of *ex ante*	No	No	Yes	✗	Neither ComReg nor the EC reference the consideration of an *ex ante* TMR[69].
Methodology	Weight returns by GDP and by available years in the data	Uses the midpoint between a European average and Ireland	Median values from the included countries in our dataset	✗	All three approaches differ in the proposed method to obtain a final number.
Estimate	5.96%[70]	6.77%	5.85%[71]	-	Overall, the largest difference lies between the EC/CEPA approaches and the one proposed by the ComReg 2020 Decision Approach.

Source: CEPA analysis based the European Commission and ComReg. [72] [73]

The three approaches rely primarily on DMS data, with a primary focus on EU and Eurozone countries. The main difference lies in methodology. The EC Notice uses an ERP-based approach, meaning they derive the TMR by adding the ERP to the risk-free rate, whereas CEPA proposes estimating the TMR directly. The ERP-based method can create more volatility in the TMR over time, since it is sensitive to yearly changes in the risk-free rate, which, as shown in the risk-free rate section, can fluctuate substantially from year to year. Other Irish and GB precedent has typically accepted that the TMR is more stable than the ERP, therefore this approach is likely to better model required equity returns.

Numerically, the largest gap is between the ComReg 2020 Decision approach and the EC/CEPA approaches. This is because the ComReg 2020 Decision approach averages returns from both Europe and Ireland, placing greater

[66] Bloomberg is used for countries not found in the DMS dataset.

[67] EU countries refers to EU countries available within the DMS dataset.

[68] EU countries refers to EU countries available within the DMS dataset.

[69] There is significant regulatory precedent for placing weight on ex-ante approaches to estimation of the TMR/ERP, especially in the UK – see, for example Ofcom's TAR 2026 proposals for BT Group's cost of capital (link) and the UK Regulators Network's cost of capital guidance (link).

[70] Refers to the EU average TMR estimate, as published in BEREC (2025).

[71] We show the estimated ERP here for CEPA's approach. This is derived by subtracting the real risk-free rate (0.65%) from the real estimated TMR (6.50%).

[72] European Commission (2019), Commission Notice on the calculation of the cost of capital for legacy infrastructure in the context of the Commission's review of national notifications in the EU electronic communications sector.

[73] Europe Economics (2020), The Cost of Capital for the Irish Communications Sector: Final Report.

weight on the Irish data. That higher Irish return lifts the TMR estimate to 6.77% under the ComReg 2020 Decision approach, compared to the lower figures implied by the EC Notice and CEPA methods.

2.6. Cost of Debt

The cost of debt component of the cost of capital allowance is intended to capture an efficient notional network operator costs of raising debt finance. In this section, we outline CEPA's proposed approach to estimating the Cost of Debt, and then we compare this to the EC Notice approach.

We present three separate estimates of the cost of debt; one for our reference case (i.e. FTTH, FTTC and mobile), one for PIA and one for broadcasting.

2.6.1. CEPA assessment

Context and regulatory precedent

Under ComReg's 2020 Decision Approach the cost of debt is estimated using a debt premium approach, where the spread of telecom comparators' investment-grade bonds over low-risk government bonds is added to a risk-free rate. The comparators' bonds are plain vanilla, fixed-coupon, non-convertible, senior unsecured instruments with maturities between 7 and 13 years, benchmarked against German 10-year bonds for euro issuances or domestic sovereign bonds for other currencies. This is cross-checked against an "all-in" cost of debt approach, which looks directly at observed corporate bond yields, and further benchmarked against Eircom's own recent bond issuances, to ensure the modelled cost of debt does not diverge materially from actual market evidence.

Other EU NRAs (i.e., ARCEP and CNMC) follow an approach similar to ComReg's 2020 Decision Approach. In essence, they apply the EC Notice approach; where the cost of debt equals the risk-free rate plus a debt premium, and where the premium is the spread between a peer group of telecoms' long-maturity corporate bond yields and domestic sovereign bond yields.

The Irish energy regulator, the CRU, has used market benchmarks, rather than directly using the companies' actual cost of debt, to calculate a notional cost of debt. This is intended to ensure that consumers only pay for efficient debt costs. At the same time, this incentivises companies to seek efficient low-cost financing, without incurring undue risk. The notional debt portfolio is necessarily an abstraction, as it would not be possible for a regulator to perfectly match the complexities of a company's actual debt portfolio, which is managed in real time. This can be seen in the CRU's recent energy network price controls. The CRU relied on Euro iBoxx non-financial corporate A and BBB 10yr+ debt indices as a benchmark for the cost of debt.

The IAA for Dublin Airport used an all-in cost of debt as a blend of existing (embedded) and new debt. Embedded debt reflects Dublin Airport's actual outstanding borrowings, while new debt is notionally benchmarked to long-maturity BBB/BBB+ corporate bond indices, with a 6-month averaging window to reflect current market conditions. A small issuance-cost uplift is included, and the two components are weighted by the forecast debt mix to yield a single pre-tax cost of debt.

Lastly, Ofcom sets the cost of debt using an all-in approach blending new and existing (embedded) debt. New debt is benchmarked to 6-month averages of BBB corporate bond indices at 10- and 20-year maturities. Existing debt receives an allowance so past borrowing costs are recoverable, informed by long-run averages of the 10- and 20-year BBB index and cross-checks to reported rates. Ofcom then weights these two elements to match the control period's cost mix, yielding a single pre-tax cost of debt.

Methodological choices

Table 2.20 below sets out our methodological approach to estimating the cost of debt for our reference case.

Table 2.20: Methodological choices for our cost of debt estimate.

Choice	Comments on the approach taken
Overarching assumptions	
All-in approach	Rather than estimating a debt premium, we propose using full market yields from the chosen indices (discussed below). This avoids risk of mismatched tenors between corporate and government bonds, inconsistent averaging period, and how individual country risk is reflected between the debt instrument and risk-free rate.
Market benchmark	We use non-financial corporate EUR broad BBB rated 10yr+[74] bonds which is: • Consistent with the assumed investment grade rating; • Denominated in Euros, consistent with Eurozone financing environment (but not limited to companies in any specific country or countries); • Consistent with the investor horizon and the risk-free rate (i.e., 10yr+); • Broadly matches regulatory precedent from the CRU (PC5, PR5, and PR6).
Embedded debt allowance	We propose to focus on estimating the cost of debt that reflects an allowance for embedded debt (assumed to be issued over the past ten years) with an allowance for new debt issued in the following year (the relevant period we are considering). This is achieved with the second step in our modelling approach, described below, and is partly consistent with the EC Notice methodology, albeit with a different calibration.
No Irish-specific premium	• We consider that placing full weight on only Irish bonds risks capturing company-specific issues given a much reduced sample size; and • We consider that applying a country-specific premium mighty imply double counting as the EUR benchmark index already captures a mix of sovereign risk already (i.e., bonds will not be only from countries with AAA sovereign risk).
Calculation choices	
Cut-off date	July 31st, 2025
Calculation steps	• First, we estimate the arithmetic average for a backward-looking 10-year window starting from our cut-off date (July 31st, 2025). • Second, we assume that the last spot date at the cut-off date continues for another additional year, and we estimate the 10-year backward average from that new 'future' date (July 31st, 2026). • Third, we estimate an average between the two averages obtained in the previous two steps to obtain our Cost of Debt.

Source: CEPA analysis.

Benchmark against other indices

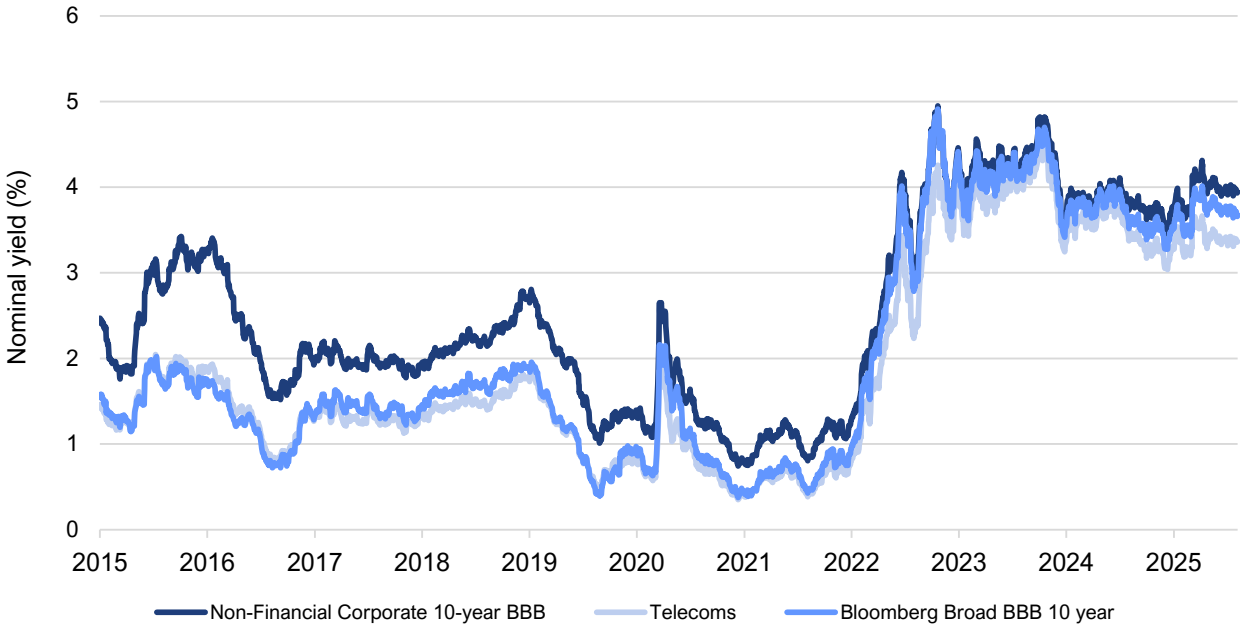
To provide context for our choice of index, we compare the iBoxx Non-Financial Corporates (NFC) 10yr+ index against two reasonably comparable alternatives: the iBoxx Telecoms index, which has an average maturity of around 6.5 years, and the Bloomberg BBB 10-year index. As shown in Figure 2.7, the iBoxx NFC BBB index has generally had higher yields than both the Bloomberg comparator index and the iBoxx EUR Telecoms index, likely

[74] This index reflects a broad basket of Euro-denominated corporate bonds, and is not restricted to issuers from any particular EU country.

reflecting the shorter tenor of the latter two. Since 2022, however, the three indices have shown greater convergence than was observed over the previous seven years.

We continue to consider the iBoxx NFC index the most appropriate benchmark for the cost of debt. The Telecoms index has a varying average maturity and is likely less representative of the long-term financing horizon relevant to telecoms infrastructure investment that we include as an assumption. Meanwhile, although the Bloomberg BBB 10-year index has a more closely aligned tenor, it is not generally used previously in Ireland for the setting of the cost of debt, making it less consistent with established regulatory practice.

Figure 2.7: Evolution of NFC BBB 10yr+, iBoxx Telecoms,[75] and the Bloomberg BBB 10yr indices



Source: CEPA analysis based on iBoxx and Bloomberg data.

In addition to the evidence set out above, we note that Eircom has recently issued €100 million in senior secured notes at an interest rate of 5% and a maturity in 2031[76]. An approach that compensates Eircom for its actual debt costs would therefore likely be more generous than the index-based approach we have outlined here.

Estimates for other technologies

For PIA, we have noted that we consider the risk profile is lower risk (closer to utility networks). As such, we consider it plausible that it could have a stronger credit rating than the broad BBB used for our reference case. We consider that an A/BBB credit rating is suitable, therefore we use a 50%/50% weight on the iBoxx A and BBB 10yr+ indices for PIA. Other aspects within the approach are unchanged.

For broadcasting, we consider that it is potentially higher risk than our reference case and this would be more at the border of sub-investment grade. We cannot access the equivalent sub-investment grade indices. We use an S&P report on the average yield difference from credit rating notches from 2025 and assume between 1-2 notches lower than the broad BBB reference case[77].

[75] The tenor of the iBoxx Telecoms index used here is approximately 6.5 years.

[76] See, for example, Dentons's announcement here.

[77] S&P (2025) The Cost Of A Notch: The Cost Of Becoming A Fallen Angel Holds Steady Despite Market Volatility, 19 August 2025.

Summary

Table 2.21 shows that the 10-year average is 2.57% using the 2025 cut-off date and 2.74% using the 2026 roll-forward. Taking the average of these two figures gives 2.66%, which we adopt as our cost of debt.

Table 2.21: Arithmetic average of the NFC iBoxx BBB 10yr+ index over different averaging periods and cut-off dates – reference case

Cut-off date	Spot	1-year	5-year	10-year	15-year
31/07/2025	3.95%	3.85%	3.04%	**2.57%**	3.13%
31/07/2026	3.95%	3.95%	3.64%	**2.74%**	3.07%
Average	3.95%	3.90%	3.34%	**2.66%**	3.10%

Source: CEPA analysis based on Bloomberg data.

Our proposed **cost of debt is 2.66%** for our reference case.

For PIA, the cost of debt is **2.47%**.

For broadcasting, the S&P publication indicates 39bps between BBB and BBB-, and a further 37bps between BBB- and BB+ (i.e. a cumulative uplift of 76bps). Against our reference case, we assume an uplift of 58bps (the average of 39bps and 76bps). This gives a cost of debt of **3.24%**.

2.6.2. Comparison to EC Notice and ComReg 2020 Decision Approach

Table 2.22 below summarises how our proposed approach for the reference case compares against those of the EC and ComReg.

Table 2.22: Summary of CEPA, EC Notice and ComReg 2020 Decision approaches to estimating the cost of debt.

Comparison field	EC Notice	ComReg 2020 Decision	CEPA	CEPA alignment	Comments
Overall approach	Debt Premium[78]	Debt Premium	All-in	✗	An advantage of using an all-in approach is that it is a transparent and simpler approach that avoids potential for incorrect values driven by incompatible risk-free rate and debt premium assumptions.
Data source	Bloomberg	Thomson Reuters	iBoxx	■	Three different sources are used for each approach. We consider all three sources to be robust enough for regulatory use.
Averaging window	5-year	5-year	10-year	✗	CEPA prioritises long averaging periods because they reflect the long horizons that characterise investments in the sector.
Risk-free Benchmark	Irish Government Bonds	Irish government Bonds	-	✗	CEPA has adopted an all-in cost of debt approach, under which a risk-free proxy is not directly modelled.

[78] The EC acknowledges, however, that the use of yields on corporate bonds is more transparent than alternative approaches, and that the estimation of debt premiums is more complex to calculate.

Comparison field	EC Notice	ComReg 2020 Decision	CEPA	CEPA alignment	Comments
Market benchmark	Spread of EUR 10yr bonds issued by peer group	Spread of EUR 10yr bonds issued by peer group companies	NFC BBB 10yr+ bonds Index	✗	The EC Notice and ComReg 2020 Decision approaches are both based on spreads between corporate debt indices and Irish government bonds. CEPA's approach, give its all-in perspective, takes only the average of the NFC BBB bonds.
Country-specific premium	No	For annual updates only	No	✓	The ComReg 2020 Decision applies a 116 bps Irish-specific premium for annual updates, above the EC Notice result.
Estimate	**2.78%**[79]	**3.67%**[80]	**2.66%**	-	While CEPA and the EC Notice approaches vary, the difference is only 12 bps. The largest difference is with ComReg's 2020 Decision approach, which is mostly driven by the use of an Irish-specific risk premium.

Source: CEPA analysis based the European Commission and ComReg. [81] [82]

We propose an all-in approach to the cost of debt. By contrast, the EC Notice and ComReg 2020 Decision approaches adopt a debt-premium approach, consistent with their ERP methodology. This difference matters because CEPA focuses only on non-financial corporate bond indices, while the EC Notice and ComReg 2020 Decision Approach estimate debt costs using the spread of 10-year bonds over Irish government bonds.

[79] This results from adding BEREC's 2025 arithmetic-average 117 bps Debt Premium to the risk-free rate estimated by BEREC (1.61%). The Debt Premium itself is an average of the premia observed in BEREC's peer group.

[80] This is obtained by adding up ComReg's 2020 Decision approach Irish-specific risk premium of 116 bps to the 2.51% cost of debt estimate for the 2025 update. The cost of debt figure reflects a 1.62% risk-free rate and a 0.89% debt premium For further details, see the most recent update (available here).

[81] European Commission (2019), Commission Notice on the calculation of the cost of capital for legacy infrastructure in the context of the Commission's review of national notifications in the EU electronic communications sector.

[82] Europe Economics (2020), The Cost of Capital for the Irish Communications Sector: Final Report.

3. PROPOSED COST OF CAPITAL ESTIMATES

Our relative risk assessment in Appendix A considers that i) FTTH, FTTC and mobile can be considered to face equivalent systematic risk, and ii) empirical betas can be assumed to reflect systematic risk of FTTH, FTTC and mobile services. These two conclusions lead us to derive a cost of capital applicable across all three technologies, as set out in Chapter 3.1.

We consider that PIA and broadcasting face different risk profiles to FTTH, FTTC, and Mobile. We discuss in Chapter 3.2 how we set the cost of capital for those two technologies.

3.1. PROPOSED WACC ESTIMATES

The cost of capital for these three technologies is consistent with the parameter estimates set out in Chapter 2 of the report and shown in Table 3.1. We also present a WACC based on BEREC's 2025 parameter estimates, for comparison.

Table 3.1: Final Nominal WACC estimates by type of service

	FTTH, FTTC, Mobile	EC Notice Approach[83]
Cost of Debt	**2.66%**	**2.78%[84]**
Risk-free Rate	2.60%	1.61%
Total Market Return	8.45%	7.57%[85]
Equity Risk Premium	5.85%	5.96%
Asset Beta	0.38	0.36
Debt Beta	0.10	0.10
Notional Gearing	40%	47%
Equity Beta	0.57	0.59
Tax	12.5%	12.5%
Pre-Tax Cost of Equity	**6.76%**	**5.88%**
Pre-tax WACC	**5.12%**	**4.41%**

Source: CEPA analysis of Bloomberg data

For FTTH, FTTC, and Mobile, we calculate a Nominal, pre-tax WACC of 5.12%.

We present the WACC estimates for the different telecommunications technologies in Table 3.2.

[83] Based on BEREC's most recently-published estimates. We assume 40% notional gearing and the Irish statutory corporate tax rate of 15%.

[84] The EC Notice only provides an estimate for the debt premium. The 2.78% is derived by adding the provided 1.17% debt premium to the 1.61% risk-free rate.

[85] The EC Notice only provides the ERP. The TMR is calculated by adding the ERP of 5.96% to the RFR of 1.61%.

Table 3.2: Final Nominal WACC estimates by type of service- all

	FTTH, FTTC, Mobile	PIA	Broadcasting
Cost of Debt	**2.66%**	**2.47%**	**3.24%**
Risk-free Rate	2.60%	2.60%	2.60%
Total Market Return	8.45%	8.45%	8.45%
Equity Risk Premium	5.85%	5.85%	5.85%
Asset Beta	0.38	0.36	0.54
Debt Beta	0.10	0.10	0.10
Notional Gearing	40%	40%	40%
Equity Beta	0.57	0.53	0.83
Tax	12.5%	12.5%	12.5%
Pre-Tax Cost of Equity	**6.76%**	**6.54%**	**8.54%**
Pre-tax WACC	**5.12%**	**4.91%**	**6.42%**

Source: CEPA analysis of Bloomberg data

For FTTH, FTTC, and Mobile, we calculate a nominal, pre-tax WACC of 5.12%.

For PIA, the 21bp reduction in the point estimate to 4.91% reflects a slightly lower asset beta and cost of debt.

For Broadcasting, the (130bps) higher WACC of 6.42% reflects the empirical evidence on its relative systematic risk exposure and potential for a higher cost of debt.

This compared to the 2025 ComReg update (using the 2020 Decision approach) of 4.82% for fixed-line, 4.88% for mobile and 6.99% for broadcasting.

Appendix A RELATIVE RISK ANALYSIS

We conduct a qualitative relative risk assessment of the regulated services to test the robustness of our empirical results for asset betas, recognising the limited availability of 'pure-play' comparators for fixed-line, mobile and broadcasting services. We also use the findings from our relative risk assessment to inform whether any potential adjustments to the mechanistic beta range for each service, with any proposed adjustments discussed in Section 2.

Our approach starts by determining a 'reference risk case' against which we compare the relative riskiness of other services. The choice of reference case should affect the results if applied consistently, but should reflect an accepted starting point. Due to its predominant contribution to telecoms companies' activities, we select wholesale FTTH and leased lines as our reference case. We explain our rationale behind this in Box A.1 below.

Box A.1: Selection of wholesale FTTH and leased lines reference risk case

In Ireland, the rollout of very high capacity networks (VHCNs), primarily through FTTH, is accelerating at pace through a combination of commercial investment in densely populated areas and state intervention through the National Broadband Plan, which sets out the defined 'Intervention Area' that National Broadband Ireland (NBI) is currently rolling out to. The pace of this rollout will facilitate the transition from copper, which is due to happen by 2030 based on the EU-wide target set by the European Commission. The ambition of the Irish government was to beat this deadline, with the National Digital Strategy in 2022 including the target that all households and business would be covered by a gigabit network by no later than 2028. We note that fibre coverage does not necessarily equate to fibre take up, however ComReg's communications sector quarterly report for Q4 2025 shows that 51% of all premises in Ireland with FTTP available had an active FTTP service, a figure we would expect to continue to increase over time.

In light of this context, we are of the view that the appropriate reference point from which to conduct any potential adjustments for relative risk is wholesale FTTH and leased lines. We group leased lines with wholesale FTTH for the reference case given their use of the same technology that requires fibre deployment to the premises and broadly equivalent risk profiles. This reference case accounts for the current position of rollout and also the forward-looking nature of ComReg's decisions on the cost of capital.

We also acknowledge the European Commission Recommendation on the regulatory promotion of gigabit connectivity. In our view, the current position of fibre rollout in Ireland also means that there is no need to incentivise investment in FTTH infrastructure through the implementation of the risk premium for very high capacity networks (VHCNs). We expand on our reasoning regarding this recommendation in Appendix D.

To consider whether reference risk case has reasonably similar systematic risk to Physical Infrastructure Access (PIA), mobile, broadcasting (Market A and Market B) we undertake a relative risk assessment structured around the key risk factors we consider to be of relevance in this context. These are listed in Table A.1.

Table A.1*: Risk factors considered and how they may impact systematic risk exposure*

Risk factor	Systematic risk exposure
Absolute relative risk factors	
Demand	Services with higher income elasticity of demand exhibit are expected to have more systematic demand risk, as their demand is more sensitive to fluctuations in macroeconomic conditions.
Asset stranding	Where there is a risk that parts of the network could become economically unviable due to advancements in competing technologies or market developments.
Scalers of relative risk	
Operating leverage	This refers to the ratio of fixed costs to variable costs. Companies with a higher proportion of variable costs to fixed costs are better able to adjust their variable costs as economic conditions change – this reduces the volatility of profits in the face of systematic shocks, and is therefore beta-reducing.
Regulatory arrangements and risk sharing	Differences in domestic policies such as subsidies, risk sharing mechanisms, and economic regulation arrangements may also influence asset betas. We also note that this adds to the challenge in comparing Irish companies to international comparators.

We categorise demand and asset stranding risk as *absolute* relative risk factors because they correspond to risks that could materialise in isolation of the other factors. In contrast, we view operating leverage and regulatory arrangements and risk sharing as *scalers of relative risk* as these aspects are tied to the absolute relative risk factors to varying extents. For example, the degree of a firm's operating leverage would further expose its demand risk during an economic downturn.

Box A.2: Relative Risk Comparison of FTTC and FTTH

As part of previous CEPA work, we have considered whether FTTH should command a "premium" over FTTC. Using a similar relative risk analysis, we concluded that:

- FTTH may feature higher income elasticity of demand, and thus be more sensitive to fluctuations in aggregate income, than cheaper legacy copper services.
- We would expect FTTC to face greater systematic asset stranding risk than FTTH, given the legacy nature of FTTC networks, and the fact that FTTH is a new technology.
- Given that a) the European FTTH rollout is past "peak capex," b) operating leverage primarily magnifies systematic demand risk or asset stranding exposures, and c) the net effect of FTTH's greater systematic demand risk and FTTC's greater systematic asset stranding risk is unclear, we do not consider there to be a robust case for an operating leverage differential between FTTH and FTTC.

On balance, we consider the evidence on the relative risk rankings of FTTH and FTTC to be unclear, with the result depending largely on the differential in income elasticity of demand for the two technologies, on which there is little empirical evidence. In practice, we consider it reasonable to consider them to have broadly equivalent systematic risk profiles. Further details on this relative risk comparison can be found in Appendix D.

We note that Ofcom, as part of its recent Telecoms Access Review consultation, implicitly assumed the presence of an FTTH premium in the context of the economic regulation of Openreach.

The rest of this section considers the relative riskiness of each market in question – namely PIA, mobile and broadcasting – to the reference risk case.

A.1. Systematic Risk Relative to Physical Infrastructure Access (PIA)

We conclude that FTTH wholesale broadband and leased lines could be expected to have **higher systematic risk** relative to PIA.

Demand

FTTH wholesale broadband and leased lines face higher demand risk than PIA. We note that there are likely to be stronger preferences amongst wholesale FTTH and leased line customers than PIA Access Seekers to switch provider once supply is provisioned and in use. As ComReg noted in its 2024 PIA Market Review, switching PIA supplier requires removing Electronic Communication Services (ECS) equipment and installing it elsewhere, which is costly, impractical (due to needing to maintain two networks for a period to ensure service continuity) and give rise to unacceptable operational risks.[86] This means that, while Access Seekers may consider different PIA providers up to the point of installation, following this the likelihood of switching to a different provider is very low.

This is further supported by ComReg designating Eircom with significant market power (SMP) in the national PIA market due to its ubiquitous telecom-specific PI network and the lack of an effective existing or potential rival PI.[87] This means that Eircom has the ability and incentive to leverage its position from PIA into related markets.

In contrast, there may be greater incentives for wholesale FTTH and leased line customers, such as retail service providers (RSPs) to switch wholesale provider, or use multiple wholesale providers, where it is possible to do so. There is a greater level of competition in these markets, which sit downstream of PIA, meaning RSPs are more able to secure margin improvements through switching supplier. The aim of wholesale FTTH providers in seeking to gain RSP customers also means there are more established processes for switching provider, reducing friction. This greater ability to switch provider and the potential for a RSP to utilise multiple wholesale providers means there is greater level of systematic demand risk compared to PIA.[88]

A key aspect of the demand risk faced by the providers of services is their contracting arrangements. Wholesale services, including Access Seekers demanding PIA and broadband retailers and other businesses requiring wholesale FTTH and leased line services, are typically provided on the basis of contractually agreed long-term regular charges. This is partly driven by the desire to spread any sunk costs associated with developing a PIA or FTTH network over a stable long-term time horizon. Such long-term contracts provide a degree of revenue stability for the wholesale provider.

We note that PIA contracts are typically provided over a longer time horizon than wholesale FTTH and leased lines contracts, for example, while FTTH and wholesale leased line agreements could be expected to be in the region of 5-10 years, Eircom has a contract with National Broadband Ireland (NBI) to provide PIA for 25-years (with a possible 10-year extension) that also contains ‘step in rights’ were NBI to fail, effectively insulating the PIA provider from non-payment risk.[89]

Asset stranding

FTTH networks face higher asset stranding risk compared to PI networks. While FTTH is a relatively new technological standard, for example, compared to FTTC, future technological advancements could potentially increase the asset stranding risk of FTTH in the very long-run. While there is currently little to no evidence of this occurring on the horizon, many elements of the PI that are capable of supporting wired ECNs, such as ducts and

[86] ComReg (2024) PIA Market Review para 3.50

[87] ComReg (2024) PIA Market Review para 1.7

[88] For example, as of June 2025 Digiweb announced a new wholesale deal with Virgin Media, sitting alongside its existing arrangements with SIRO, OpenEir and NBI. See Virgin Media announces new wholesale deal with Digiweb

[89] See the Agreement in respect of the national broadband intervention project between the Minister for Communications, Climate Action and the Environment and NBI dated 19 November 2019, in particular Clause 73.

poles, are not specific to fibre or any other individual fixed technology and therefore PIA faces very low asset stranding risk.

We appreciate that there could also be technological advancements that render both FTTH and PI networks stranded – i.e., wireless communications technologies – however, the potential for this to occur even in the very long-run is speculative as of today and therefore we do not consider placing much weight on this.

Operating leverage

The rollout of FTTH networks is progressing well but deployment is ongoing across the country. Such investment in FTTH networks is associated with a relatively large degree of up-front sunk costs, meaning that being a FTTH network operator implies a relatively high operating leverage, at least during the build phase.

While FTTH is in the build phase with significant cash outflows this will likely point towards greater sensitivity of cash flows and returns to economic shocks compared mature infrastructure that requires minimal investment to maintain, such as PIA. This was noted by Ofcom, the communications regulator in the UK, in its Wholesale Fixed Telecoms Market Review in 2021,[90] a view which it is minded to uphold based on its Telecoms Access Review 2026 consultation.[91]

The majority of Eircom's PIA network, and PIA networks more generally, are primarily a sunk asset with relatively low fixed costs relative to total costs. This is demonstrated by ComReg's 2024 PIA Market Review where it stated that "there is little indication that there will be any significant investment in the construction of new PI to support fixed telecoms in the medium term."[92] Therefore, there is higher operating leverage associated with the reference risk case than PIA, at least until the build phase of FTTH is completed.

Regulatory arrangements and risk sharing

There are differing regulatory arrangements in place surrounding the provision of PIA and FTTH wholesale access in Ireland. Eircom, as PIA provider, is subject to a comparatively intensive SMP regime. ComReg has imposed access, non-discrimination, transparency, price control, cost accounting, accounting separation and regulatory governance obligations in relation to PIA. Within that framework, ComReg has set a maximum national price for pole access and deaveraged prices set for duct access.[93] This supports the view that the regulatory framework around PIA reduces the scope for Eircom to vary terms unilaterally and is relevant to the degree of systematic risk it faces.

ComReg's regulation of FTTH and leased lines also includes SMP-based remedies being placed on Eircom in some cases, such as the Commercial NG WLA Market. The main distinction from PIA lies in the pricing framework. Rather than applying the same form of prescriptive charge control, ComReg has adopted a more flexible approach under which the FTTC VUA price acts as a floor for FTTH VUA and any FTTH discount scheme must be notified to, and approved by, ComReg. In practice, FTTH therefore remains subject to SMP regulation, but the pricing remedy is more flexible and case-specific than the regime that applies to PIA.

More broadly, ComReg's framework remains forward-looking and open to deregulation where there is sufficiently effective competition, as discussed in its 2025-2027 Strategy Statement.[94] The last decade has seen steady decline in the use of regulatory tools in ECS markets and in particular retail markets. For instance, the outcomes of the

[90] Ofcom (2021) WFTMR 2021-26 Annexes 1-26 para A21.42

[91] Ofcom (2025) Telecoms Access Review Annex 1-22 para A20.27

[92] ComReg (2024) PIA Market Review para 1.6

[93] ComReg (2024) PIA Market Review para 2.21

[94] ComReg (2025) Strategy Statement 2025-2027 para 2.18

2024 Market reviews for Wholesale Local Access (WLA) and Wholesale Central Access (WCA) withdrawing remedies in the CG WLA, IA NG WLA and the Revised Regional WCA markets, with a 12-month sunset period.[95]

Summary

A summary of our relative risk assessment for the reference risk case relative to PIA is provided in Table A.2 below.

Table A.2: *Summary of relative risk assessment for PIA*

[95] ComReg (2024) Market Reviews Wholesale Local Access (WLA) provided at a fixed location Wholesale Central Access (WCA) provided at a fixed location for mass-market products para 10.2

Regulated service	Risk for reference risk case relative to PIA	
Demand risk	⇗	• Likelihood of a PIA Access Seeker switching PIA network is very low due to operational considerations and a relative lack of competition. In contrast, wholesale FTTH and leased line providers are more likely to switch wholesale network provider, and it is possible for a RSP to utilise multiple wholesale FTTH providers. • Additionally, PIA benefits from greater contractual certainty than FTTH and leased lines due to the longer duration of its contracts e.g. its 25-year contract to provide PI to NBI.
Asset stranding	⇗	• The reference risk case faces higher asset stranding risk compared to PIA, as while FTTH is a relatively new technological standard (e.g. compared to FTTC) potential technological advancements could potentially increase the asset stranding risk of FTTH-based technologies in the very long-run. • PIA has very low asset stranding risk due to its technology-neutral infrastructure, such as ducts and poles. Only substantial developments in wireless communications technologies, which are speculative at this stage, could risk asset stranding for PIA.
Operating leverage	⇗ or ⇔	• As the build out of the FTTH network is still ongoing, which requires large up-front sunk costs, it currently has a relatively high operating leverage. In contrast, PIA requires minimal investment to maintain, and therefore has a lower operating leverage than FTTH. • However, the difference in operating leverage between the reference risk case and PIA will diminish over time as the rollout of FTTH matures in the coming years, reducing the level fixed costs associated with operating a FTTH network.
Regulatory arrangements and risk sharing	⇗	• PIA is tightly regulated with Eircom, designated with SMP, subject to obligations including providing access on a non-discriminatory basis and a price control framework, reducing systematic risk. • FTTH is also subject to regulation, but has greater exposure to market forces.
Degree of systematic risk for fixed line relative to the comparator: ⇗ = Higher ⇔ = Similar ⇘ = Lower		

A.2. Systematic Risk Relative to Mobile

We conclude that FTTH wholesale broadband and leased lines could be expected to have **similar systematic risk** relative to mobile.

Demand

There are arguments on both sides for FTTH services to have greater or lower systematic demand risk compared to mobile services:

- **FTTH exhibits lower demand risk:** Approximately 22% of mobile subscriptions in Ireland are not bill pay (i.e. not contracted) according to ComReg data from Q4 2025.[96] Customers under such arrangements will tend to have great flexibility to adjust their consumption of telecoms services in response to fluctuations in their income. This line of reasoning suggests that demand for FTTH services, which are more likely to be contracted, may be less exposed to fluctuations in aggregate income (and therefore be less systematically risky) than mobile services.
- **FTTH exhibits greater demand risk:** At the same time, higher-speed FTTH services may be increasingly viewed as at greater risk of downtrading in the event of a reduction in aggregate income.[97] It may also be less flexible than mobile services, in the sense that mobile services can substitute for fixed-line services, but not vice-versa. This view suggests that consumers may be more likely to reduce their consumption of higher-speed FTTH services than mobile services in the event of a systematic downturn, which would then feed through into wholesale demand.[98]

While we have not seen strong empirical evidence for the second bullet set out above, we consider on balance that it is more likely to be a significant factor, especially in an Irish/EU context, where companies have a low share of pre-paid mobile customers relative to other jurisdictions (see Figure A.1 below). We also note that a study on consumer choices in the Polish telecommunications market in 2024 found that there is a moderate substitution effect between fixed and mobile services, and this this could increase as 5G technology becomes more widespread and affordable.[99]

However, this empirical evidence in isolation is insufficient to support the claim that mobile services carry less systematic demand risk than fixed-line services. Therefore, we take the view of these services having similar demand risk.

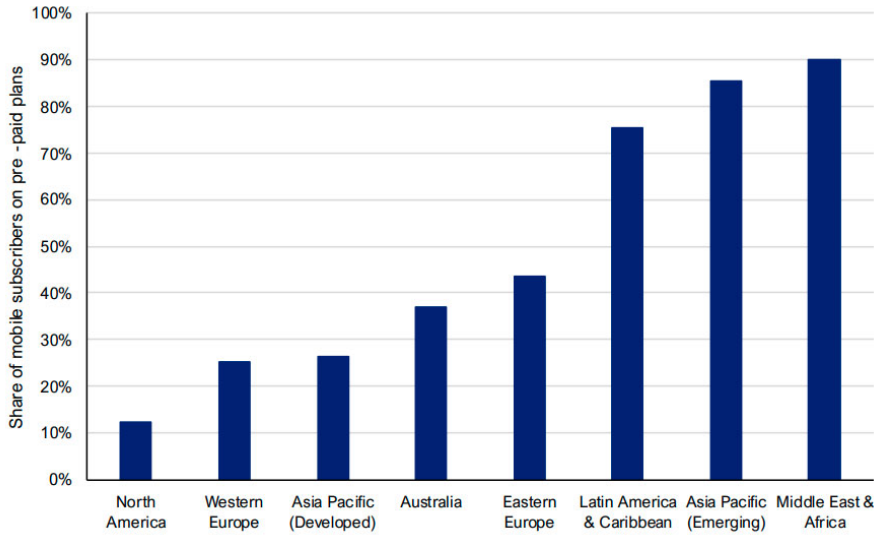
[96] ComReg (2025) Electronic Communications Sector Quarterly Report for Q4 2025

[97] This is particularly true to the extent that entry-level speeds are viewed by investors as sufficient for the standard consumer's everyday use (e.g. to support working from home or VOD services). In technical economic language, higher-speed FTTH plans are likely to feature a greater income elasticity of demand than (typically lower-speed) FTTC services.

[98] At the same time, it is plausible that telecoms services delivering entry-level speeds over FTTH and FTTC at the same price point are equally exposed to systematic risk. But to the extent that FTTH also includes these riskier higher-speed plans, we expect that it carries greater overall systematic demand risk exposure.

[99] Czajkowski et al. (2024) Assessing the substitutability of mobile and fixed internet: The impact of 5G services on consumer valuation and price elasticity

Figure A.1: Share of mobile subscribers on pre-paid plans, latest available year



Source: CEPA analysis of International Telecommunication Union data

Asset stranding

There are different market dynamics with mobile and FTTH network investment: FTTH can be viewed as a long-term, relatively future-proof investment while investment in mobile infrastructure typically comes in more regular cycles e.g. 4G, 5G etc. As such, it could be conceivable that the asset stranding risk for FTTH would be slightly lower than that for mobile. However, any difference would be relatively small, given that new mobile technology does not result in quick asset stranding of previous deployments and some mobile infrastructure assets can be sold (e.g. towers). For example, Ireland's first 2G network was launched in 1993 and guidance published in 2024 stated that as of June 2024 no mobile network operator had yet notified ComReg of plans to withdraw a 2G service.[100] At the same time, we understand that 3G is being phased out more rapidly, and several Irish operators are in the process of switching off 3G services. As a result, we consider it plausible for either mobile and FTTH to have similar asset stranding risk or mobile to have slightly higher asset stranding risk.

Operating leverage

The Irish Government's Digital Connectivity Strategy from 2022 set out that all Irish households and businesses will be covered by a (FTTH) Gigabit network by 2028, while all populated areas will be covered with 5G by 2030.[101] Given these targets and progress made to date, we have not seen robust evidence for a material difference in operating leverage between FTTH and mobile.

Regulatory arrangements and risk sharing

As discussed in section A.1, FTTH is subject to SMP remedies in some markets but broadly there has been steady decline in the use of regulatory tools in ECS markets. Similarly, certain mobile markets, such as mobile termination, have also been subject to deregulation by ComReg in recent decisions.[102]

While the SMP remedies for FTTH could point towards higher systematic risk, it could also be argued that the need to acquire spectrum licences to provide mobile services may result in slightly higher risk for mobile, with historically there often being demand for 'sweet-spot' mid-band spectrum that is highly effective for deploying mobile services.

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[100] ComReg (2024) 2G/3G Switch off Guidance for Mobile Network Operators

[101] DECC (2022) The Digital Connectivity Strategy for Ireland

[102] ComReg (2023) ECS Strategy Statement Ch 3. Competition and Investment para 3.25

However, spectrum licences tend to be awarded by ComReg on a long-term basis, in part to ensure operators have the appropriate incentives to invest in mobile network infrastructure despite the relatively long payback periods operators face. For example, the MBSA2 award process awarded c.20-year licences in 2022 in the 700 MHz, 2.1 GHz, 2.3 GHz and 2.6 GHz bands.[103]

Summary

A summary of our relative risk assessment for the reference risk case relative to mobile is provided in Table A.3 below.

Table A.3*: Summary of relative risk assessment for mobile*

Regulated service	Risk for reference risk case relative to mobile	
Demand risk	⇔	• Fixed services are more likely to be contract-based than mobile, implying lower demand risk in response to fluctuations in income. • However, FTTH might be viewed as more sensitive to fluctuations in come or substitutable by mobile, leading to greater demand risk.
Asset stranding	⇔ or ↘	• FTTH is viewed as a long-term, relatively future-proof investment while investment in mobile infrastructure typically comes in more regular cycles e.g. 4G, 5G etc. Therefore, it could be conceivable that the asset stranding risk for FTTH would be slightly lower than that for mobile. However, any difference would be relatively small, given that new mobile technology does not result in quick asset stranding of previous deployments.
Operating leverage	⇔	• Both FTTH and mobile networks are currently undergoing nationwide rollouts, with high upfront investment and sunk costs.
Regulatory arrangements and risk sharing	⇔	• Both the reference risk case and mobile are generally subject to declining or less invasive regulation. • Spectrum licensing could add modestly higher risk for mobile, though long licence terms mitigate this risk.
Degree of systematic risk for fixed line relative to the comparator: ↗ = Higher ⇔ = Similar ↘ = Lower		

[103] ComReg (2022) Multi Band Spectrum Award 2022 (MBSA2)

A.3. Systematic Risk Relative to Broadcasting

We conclude that FTTH wholesale broadband and leased lines could be expected to have **lower systematic risk** relative to broadcasting.

Demand

The demand for wholesale broadcasting services in both Market A and Market B is fundamentally underpinned by the demand for terrestrial television services at the retail (i.e. viewer) level.

Free to air (FTA) Digital Terrestrial Television (DTT) has relatively stable demand, with a household penetration rate of 35% as of July 2025.[104] ComReg noted in its recent consultation and draft decision for the market review of broadcasting transmission services that Pay TV services, subscription video on-demand (SVOD) and DTH FTA satellite TV services are not likely to be effective substitutes for FTA DTT or DTT multiplexing services.[105]

However, ComReg's analysis also indicated that households are increasingly utilising other platforms to consume TV in addition to FTA DTT e.g. IPTV platforms and subscription video on-demand (SVOD) platforms, with only 12% of TV viewers relying on FTA DTT as their only TV service.[106] Many of the alternatives for terrestrial television rely on internet connection rather than broadcast towers or traditional multiplex operators, meaning there is higher demand risk for broadcasting (particularly for non-public service broadcasting channels) than FTTH and leased lines as audiences continue to migrate to online viewing, particularly over the medium and long-term.

Asset stranding

Digital TV multiplexes require spectrum in order to broadcast TV, with this spectrum potentially being at risk of being allocated to more productive uses through the development of international harmonisation measures, as determined by the World Radiocommunication Conference and European Commission harmonisation decisions. Currently, digital terrestrial TV multiplexes are only guaranteed to run until at least 2034,[107] which could run the risk of asset stranding beyond that point, depending on the availability of new spectrum that could be utilised for existing assets. However, whether that is likely to materialise at that point in time is currently speculative.

In contrast, while FTTH could be at risk of asset stranding as a result on technological advancements in the future, this is currently not on the horizon. We therefore conclude that the reference risk case has similar or slightly lower asset stranding risk relative to broadcasting.

Operating leverage

As is the case with PIA, broadcasting infrastructure assets primarily require routine maintenance and relatively limited additional investment, whereas the FTTH network will be associated with a higher degree of operating leverage while the network rollout is ongoing. But as the rollout of FTTH continues to mature, this differential will reduce and we would expect operating leverage to be of minimal difference when the rollout is complete by 2028.

Regulatory arrangements and risk sharing

Various provisions in the Broadcasting Act 2009 stipulates help to reduce the demand risk for broadcasting. For example, section 130(1)(a)(ii) obliges TG4 to be carried on the DTT platform and it must seek ministerial consent should it with to remove either TG4+1 and Cúla4 from the DTT platform.[108] However, the regulatory environment regarding the transition to fibre, underpinned by the Copper Switch off, also helps to mitigate the demand risk for

[104] ComReg (2026) Market Review Broadcasting Transmission Services Response to Consultation and Decision para 3.12

[105] ComReg (2025) Market Review Broadcasting Transmission Services Response to Consultation and Decision para 3.32

[106] Nielsen/TAM Establishment Survey (July 2025)

[107] Clean Feed (2023) Terrestrial TV saved from 2030 cliff edge

[108] Broadcasting Act 2009 section 130(1)(a)(ii)

FTTH. On balance, we conclude that the regulatory arrangements provide similar degrees of risk mitigation to broadcasting and the reference risk case.

Summary

A summary of our relative risk assessment for the reference risk case relative to PIA is provided in Table A.4 below.

Table A.4*: Summary of relative risk assessment for broadcasting*

Regulated service	Risk for reference risk case relative to broadcasting	
Demand risk	↘	• Demand for wholesale broadcasting services is underpinned by terrestrial TV viewing, which is declining as households increasingly migrate towards online viewing with through services such as IPTV and SVOD, meaning the demand risk for wholesale FTTH and leased lines is lower than that for broadcasting, especially in the long-run.
Asset stranding	↘ or ⇔	• DTT multiplexes rely on spectrum which could be at risk of being re-allocated in the future, potentially stranding assets. It remains to be seen whether alternative spectrum compatible with existing technology could be secured were such a re-allocation to occur post 2034. • FTTH could face asset stranding risks in the future if there were to be technological advancements, but this is currently not on the horizon.
Operating leverage	↗ or ⇔	• While the rollout of the FTTH network is ongoing, it will face a higher degree of operating leverage compared to broadcasting assets, which primarily require routine maintenance and relatively limited additional investment, but this differential will reduce once rollout is completed.
Regulatory arrangements and risk sharing	⇔	• Broadcasting benefits from various provisions under the Broadcasting Act, mitigating demand risk. • Wholesale FTTH and leased lines is also supported by the wider regulatory environment and transition to fibre with the Copper Switch Off.
Degree of systematic risk for fixed line relative to the comparator: ↗ = Higher ⇔ = Similar ↘ = Lower		

Appendix B SUMMARY OF THE EC NOTICE APPROACH

Table B.1 below presents a summary of the approach to estimate the cost of capital by the European Commission.

Table B.1: EC Notice approach to estimating the cost of capital

Choice	Comments
Peer Group	
Criteria for the choice of the peer group	Companies should be listed on a stock exchange and be liquidly traded.
	Companies must own/invest stock in electronic communications.
	Investment grade credit rating: a 5-year period is considered, if 4 out of 5 years comply, then the comparator is included.
	The companies cannot have been recently involved in M&A activity.
	The main operations have to be in the EU/EEA. This implies that the companies' headquarters have to be located in the EU, and that a large proportion of revenues have to be within the EU.
	This yields a group of 14 comparator companies.
Beta	
Data sources used	Raw data is obtained from Bloomberg.
Index	The STOXX Europe TMI is used to estimate the betas of the comparators.
Frequency and window	The EC recommends the use of a weekly frequency and a 5-year window.
Debt beta	The debt beta is assumed to be 0.1.
Equity beta	The equity beta is obtained by regressing company returns on STOXX returns. Last price of chosen trading day.
Gearing	The gearing used to unlever the equity betas is derived as a 5-year average of the spot gearing using net debt.
Asset beta	Obtained by unlevering the equity beta. The suggested betas are spot values.
Risk-free rate	
Data sources used	10-year Irish nominal government bond from EU Member states obtained from Eurostat.
Averaging period	5-year arithmetic average.
TMR/ERP	
Data sources	Data retrieved from the 2025 DMS Global Returns Yearbook. For countries not included in that dataset, data was retrieved from Bloomberg using the Implied Pricing Method.[109]
Assumptions	• Given the data limitations, an available years weighting is used to obtain the final ERP value. All EU/EEA countries are used.

[109] First, the P/E ratio per index is obtained. Second, 1/(P/E) is estimated. Third, a total bond return index is subtracted from the earnings yield.

Choice	Comments
	• The equity component of the EU index will be based on each country's market capitalisation (sourced from Bloomberg), while the bond component will be weighted by each country's GDP (from Eurostat). • A 5-year averaging window is used when calculating the weights for equities and bonds
Calculation steps	• For each year and country in the equity and bond time series, equity returns are weighted by market capitalisation and bond returns by GDP. • For each country, final equity and bond indexes are obtained by weighting per available years with data (i.e., the maximum amount of years is 125 and some countries start in 2001, therefore the weight applied is 24/15) • The arithmetic mean of the EU ERP is the measure finally used.
Cost of debt	
Overall method	Debt premium-based approach.
Data sources	Data retrieved from Bloomberg is used to estimate the debt premium of the companies within the peer group. The bonds chosen have a maturity date between April 2031 and March 2039, targeting a residual maturity of around 10 years.
Candidate instrument filtering criteria	• Step 1: Identify bonds issued in domestic currency by peer group companies. • Step 2: Identify government bonds that match the corporate bonds by issuer country and maturity date. • Step 3: Use Mid Yield to Maturity (YLD_YTM_MID) to calculate the spread between corporate and government bonds. • Step 4: Estimate the arithmetic average for each company on a weekly basis, and then calculate the debt premium as the arithmetic average over a 5-year window.

Source: CEPA analysis.

We also present below a review of the EC's responses to NRA methodological deviations from the EC Notice approach, as published by BEREC in its 2024 and 2025 annual update reports.

Table B.2: Review of EC responses to NRA methodological deviations

Country	Deviation	EC View
Finland	Partially-updated WACC	EC requests a fully-updated WACC
Poland	Gearing - Poland adopts an unspecified transformation of BEREC's published gearing ratio	EC requests alignment on gearing.
Spain	RFR – Averaging period	EC accepts the deviation.
Slovenia	RFR – Averaging period	EC accepts the deviation.
Greece	RFR – Averaging period	EC accepts the deviation.
Germany	RFR – Averaging period	EC accepts the deviation.
France	RFR – Averaging period	EC accepts the deviation.

Country	Deviation	EC View
Italy	RFR – Overall approach[110]	EC requests a rationale and alignment with BEREC
Poland	Beta – relevering approach	EC requests alignment.

Source: CEPA analysis

For the most part, NRAs have deviated on the basis of the averaging period for the risk-free rate, to reflect country-specific factors. The EC has been accepting of these deviations.

The EC has been less accepting of calculation errors or more material changes in approach – for example, Italy appears to adopt a materially different overall approach to estimating the risk-free rate.

[110] Italy's RFR is based on "the real yield of long-term government bonds and swaps plus expected inflation (2%)". See the EC's response to Italy's WACC notification, available here, pp. 17.

Appendix C SUMMARY OF COMREG 2020 DECISION APPROACH

Table C.1 below presents a summary of the approach to estimate the cost of capital from Com Reg's 2020 Decision approach.

Table C.1: ComReg 2020 Decision approach to estimating the cost of capital

Choice	Comments
Peer Group	
Criteria for the choice of the peer group	Companies should be listed on a stock exchange and be liquidly traded.
	Companies must have an investment-grade credit rating.
	The companies cannot have been recently involved in M&A activity.
	50% of revenues must be generated in Europe.
	This yields a group of 12 comparator companies.
Beta	
Data sources used	Raw data is obtained from Bloomberg.
Index	The STOXX Europe TMI is used to estimate the betas of the comparators.
Frequency and window	2-year daily betas are used.
Debt beta	The debt beta is assumed to be 0.
Equity beta	The equity beta is obtained by regressing company returns on STOXX returns. Last price of chosen trading day.
Gearing	The gearing used to unlever the equity betas is derived as a 2-year average of the spot gearing using net debt.
Asset beta	Obtained by unlevering the equity beta. The proposed betas are spot values.
Risk-free rate	
Overall approach	Inferred from analysis of the relationship between the risk-free rate and changes in Irish economic growth.
TMR/ERP	
Data sources	Data retrieved from the 2019 DMS Global Returns Yearbook.
National focus for equity returns	Equal weight was placed on Irish and European evidence from DMS, as well as Irish regulatory precedent.
Calculation steps	Judgement was applied to adjust the final ERP figure for the Irish economy's place within the business cycle.
Cost of debt	
Overall method	Debt premium-based approach.
Data sources	Data retrieved from Bloomberg is used to estimate the debt premium of the companies within the peer group.
Candidate instrument filtering criteria	Filtering criteria: Time to maturity between 7 and 13 years Investment grade rating Denominated in EEA currencies Bonds must exhibit standard characteristics (plain vanilla fixed-coupon, nominal, non-convertible, senior unsecured and non-guaranteed bonds) .

Source: CEPA analysis.

Appendix D CONSIDERATION OF EC RECOMMENDATION ON GIGABIT CONNECTIVITY

The European Commission (EC) Recommendation on gigabit connectivity dated 6 February 2024[111] aims to build upon the general objectives set out in Article 3(2) of Directive (EU) 2018/1972 which were aimed at incentivising investment in very high capacity networks (VCHNs). Specifically, the objectives were to improve the regulatory conditions needed to:

a) promote connectivity, access to and take-up of VHCNs;

b) promote effective competition;

c) contribute to the development of the internal market for electronic communications networks and services;

d) promote the interests of people in the Union; and

e) increase legal certainty and regulatory predictability in view of the long-term horizons for investment in VHCNs.

The recommendation sets that a FTTH network could be considered to be the typical form of a modern and efficient VHCN. This is the case with FTTH networks in Ireland, with even rural deployment by National Broadband Ireland (NBI) offering speeds of up to 2GBps, with plans for a 5GBps product to be made available in the future.[112]

Regarding the WACC, the EC recommendation specifically states the allowed return on capital should strike a balance between providing sufficient incentives for operators to invest and promoting allocative efficiency, sustainable competition and avoid excessive returns. Additional and quantifiable risk of investing in new VHCNs needs to be adequately reflected, otherwise investments will be held back to the detriment of consumers.

In particular, the EC notes the higher demand risks associated with rural areas and the long-term payoffs associated with the capital investment for VCHNs. It states that as a result of this, investments in VHCNs are likely to expose operators to higher risks compared to their investments in legacy networks, and if required, a risk premium should be applied on top of the applicable WACC to ensure maximum transparency.

However, in Ireland, the rollout of very high capacity networks (VHCNs), primarily through FTTH, is accelerating at pace through a combination of commercial investment in densely populated areas and state intervention in rural areas. Of particular note are Open Eir's rollout, which has passed 1.4 million homes out of the total 1.9 million homes it plans to connect, and NBI's rollout in the state defined 'Intervention Area' which as of 12 September 2025 has passed over 403,000 out of the 565,000 premises it is due to pass in total. This pace of rollout will facilitate the transition from copper, which is due to happen by 2030 based on the EU-wide deadline set by the European Commission. We note that the ambition of the Irish government was to even potentially beat this deadline, with the National Digital Strategy in 2022 including the target that all households and business would be covered by a gigabit network by no later than 2028.

We also note that the arguments for legacy services, such as FTTC, having different systematic risk profiles to FTTH are declining and will continue to diminish as the rollout of FTTH matures.

- Regarding demand risk, FTTH may have exposure to more variable end-user demand and counterparty risk, particularly due to the slightly greater degree of product differentiation at the retail level for FTTH. Thus, consumers may alter their service level in response to income fluctuations i.e. FTTH may have a higher income elasticity of demand relative to FTTC. However, consumer switches are typically driven by upgrades to higher speeds as opposed to downgrades, while consumers can be somewhat 'sticky' when it

[111] EC (2024) Recommendation on the regulatory promotion of gigabit connectivity

[112] NBI (2025) National Broadband Ireland Launching 5 Gig Broadband Service

comes to the headline speed of their fixed-line broadband package. We also note that fibre is becoming increasingly more 'utility-like' due to changes in lifestyles for consumers (e.g. increased hybrid working and use of internet for leisure activities). Therefore, the difference in behaviour between FTTH and FTTC consumers in an economic downturn may be somewhat muted.

- Asset stranding risk is higher for FTTC than FTTH due to the direction of travel towards the copper switch off, whereas there are no technological advancements on the horizon that would displace FTTH.
- Operating leverage is currently higher for FTTH, as it is still in the build phase with significant cash outflows that will likely point towards greater sensitivity of cash flows and returns to economic shocks compared to legacy services, such as FTTC. However, this difference will diminish once the rollout of FTTH matures.
- The approach taken to regulating both FTTC and FTTH by ComReg is relatively light-touch. A slightly different in the approach taken by ComReg to regulating FTTC and FTTH, for instance FTTC VUA is cost oriented while FTTH VUA is not. But, in our view, these differences do not significantly alter the relative risk profile of FTTC relative to FTTH.

In light of the relatively small and declining difference in systematic in systematic risk profiles between FTTC and FTTH outlined above, and the wider context of current FTTH development in Ireland in both urban and rural areas, we are of the view that a risk premium for VHCNs, such as FTTH, including under the potential scenario that FTTH were to become cost oriented in the future, is not required.

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