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BoR (26) 72

BEREC Report on WACC parameter calculations according to the European Commission's WACC Notice of 6th November 2019

(WACC parameters Report 2026)

2nd June 2026

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Executive Summary

In this seventh[1] BEREC Weighted Average Cost of Capital (WACC) parameters Report (hereafter WACC Report), BEREC calculates the WACC parameters following the non-binding European Commission WACC 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 of 6th Nov. 2019[2]. The cost of capital is the core element of any regulatory pricing decision NRAs take. The Notice aims to ensure a consistent calculation of the WACC by national regulatory authorities (NRAs) thereby contributing to the development of the internal electronic communications market.

As the Commission's Notice has not changed, BEREC is following the same methodology (incl. 'technical choices') as in last year's Report providing utmost continuity.

BEREC applied three general principles:

- Follow the Notice as closely as possible, which mainly refers to the methodologies to be used for the estimations;
- Be transparent, using publicly available data where possible or using data which is widely used and accepted in the financial markets, which refers to the data sources to be used for the estimations;
- Explain every step of the calculation and proceed in a straightforward manner, which refers to the calculations as such.

For each of the parameters of the WACC formula (using the Capital Asset Pricing Model (CAPM) approach) the Report sets out:

- the application of the methodologies according to the WACC Notice,
- the assumptions and choices made,
- the data and data sources used,
- the steps of the calculations,
- the results.

[1] The six previous BEREC WACC parameters Reports are available on the BEREC website, www.berec.europa.eu, BEREC WACC parameters Report 2020 (BoR (20) 116); BEREC WACC parameters Report 2021 (BoR (21) 86); BEREC WACC parameters Report 2022 (BoR (22) 70), BEREC WACC parameters Report 2023 (BoR (23) 90), BEREC WACC parameters Report 2024 (BoR (24) 102), BEREC WACC parameters Report (BoR (25) 64).

[2] https://digital-strategy.ec.europa.eu/en/library/commission-publishes-notice-calculation-cost-capital-legacy-infrastructure

By explaining precisely and transparently how the results were derived NRAs will be able to follow the BEREC calculation steps from start to end and to fully understand the logic of the calculation process so that they can replicate the results shown in the WACC parameters Report. This ensures that NRAs are confident that the results are robust and were derived using state of the art professional standards as well as following the Notice as closely as possible taking into account also best regulatory practices where the Notice provides for NRAs' flexibility.

All results were cross checked and verified to ensure that no methodological mistakes have been made, no questionable data has been used and no calculation errors have occurred, so that BEREC was able to exclude any systematic bias. Only after these checks were carried out, was BEREC satisfied that the results were correct and NRAs will be confident to use them in their own WACC calculations.

The following Table provides a summary of the structure of the WACC parameters Report, BEREC's calculations and (references to) the results derived from it.

Table 1 Summary of the structure of the BEREC WACC parameters Report 2026 with references to result tables

Chapter	Parameter	Results	Reference (Table)
Chapter 1	Introduction WACC formula		
Chapter 2	RFR	RFR for each EU member state	Table 2, Table 3
Chapter 3	Peer group	BEREC Peer Group 2026 comprising 14 companies	Table 4
Chapter 4	Debt premium, Cost of debt	Debt premium, Cost of debt for each of the 14 companies of the BEREC Peer Group	Table 5
Chapter 5	Equity beta, Gearing, Asset beta	Equity beta, Gearing, Asset beta for each of the 14 companies of the BEREC Peer Group	Table 8, Table 9, Table 10, Table 11
Chapter 6	ERP	EU/EEA ERP	Table 15, Table 17
Chapter 7	Summary	All WACC parameters as calculated by BEREC	Table 18

A complexity of the Notice and hence the BEREC WACC parameters Report is the calculation of an EU-wide ERP (equity risk premium). Based on the calculations described in Chapter 6 BEREC considers that the appropriate value of the single EU-wide ERP for 2026 is **6.15 % (Arithmetic Means, AM).** As the same methodology as last year was used, the increase from 5.96 % in 2025 to **6.15 %** in 2026 is attributable to factual developments. In comparison to last

year, the level of ERP is increasing by 0.19 points, in line with the "European ERP" evaluated by DMS with a difference of 0.20 points from 2025 to 2026 (AM, 2025 and 2026 Yearbook). This shows that in 2025 geopolitical risks became a growing concern for investors when the shock following the Russian aggression against the Ukraine and the subsequent increase in inflation (and consequently interest rate increases by Central Banks) had been largely absorbed and in 2024 an apparent stabilization of the economic conditions seemed to happen in comparison to previous years. The inflation rate continued to decrease in 2024, but at a much lower rate than in 2023 which explains that the ERP remains substantially constant. In 2025 the inflation rate stays more or less at the level of the two previous years, still remaining higher compared to the values generally experienced since the 2000. The negative effects of geopolitical instability also contribute to widen the ERP as it impacts more the return in the bond market, which is more sensitive than equities to expectations of rising inflation[3]. This is also verified analysing the historical "geopolitical risk" at single country level with respect to the historical bond and Equity return through the DMS time series. As a result, the difference between equity and bond returns widened resulting in the significant increase of the ERP in 2025. This shows the preference of investors to hedging the inflation risk through Equity instead of Government Bonds.[4]

Since 2021, BEREC estimates additionally a separate EU/EEA-ERP for exclusive use by Nkom (Norway), ECOI (Iceland) and AK (Liechtenstein)[5].

The BEREC peer group comprises 14 companies this year, remaining identical to last year's, as no new peer fulfilled the requirements.

In section 7.2 (Taxes and inflation) BEREC finds that longer term inflation rate expectations remained stable at the ECB's target rate of 2.0 % and the effect of a temporarily increased inflation rate, as described in last year's report[6] is easing.

The 2026 BEREC WACC parameters Report contains an Annex "EC comments on WACC notifications of NRAs".

BEREC publishes the estimated WACC parameter values and NRAs are assumed to take into account those parameter values when carrying out their own calculations for their national regulatory decisions, but they do have some flexibility within this framework to take account of national specificities. BEREC observes that over time most NRAs follow the Notice and use the BEREC parameter values in their national decisions.

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[3] Global geopolitical risk is historically associated both with higher global inflation and with a larger share of countries experiencing higher-than-average inflation (Caldara, D. and M. Iacoviello (2022): "Measuring geopolitical risk," American Economic Review, 112, 1194–1225 and Dario Caldara, Sarah Conlisk, Matteo Iacoviello, Maddie Penn "Do geopolitical risks raise or lower inflation?" Journal of International Economics Volume 159 November 2026).

[4] Cf. for a more detailed analysis Ch. 6.5 below and the UBS Global Investment Returns Yearbook 2026 Summary Edition, published on 4th March 2026 at Global Investment Research & Insights | UBS Global, available here: https://www.ubs.com/global/en/investment-bank/insights-and-data/2025/global-investment-returns-yearbook-2025.html.

[5] As no data is available for Liechtenstein, the separately estimated EU/EEA-ERP includes only data for Norway and Iceland.

[6] BEREC WACC parameters Report 2025 BoR (25) 102, section 7.2.

For reference by NRAs the Report is to be published before 1st July 2026 when the Commission applies it according to the Notice when reviewing NRA's notifications in the EU electronic communications sector.

BEREC has taken utmost care to develop this Report according to the best knowledge and technical expertise of its members. Nevertheless, improvements may be necessary in the future yearly update where deemed appropriate.

1. General introduction

This Report contains the results of the calculations run by BEREC to estimate the parameters of the Weighted Average Cost of Capital (WACC) according to the non-binding 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[7] and the Commission Staff Working Document (SWD)[8] accompanying the WACC Notice which describes the methodologies in more detail. Acc. to para. 6 of the Notice the scope is limited to the WACC calculation for legacy infrastructure.[9]

The following introductory chapter describes the tasks assigned to BEREC by the Notice and the general principles BEREC follows in fulfilling these tasks as assigned acc. to section 7[10] of the Notice.[11] The goal of this Report – according to the tasks – is to enable NRAs to make use of the results of the calculations when setting the WACC in their national regulatory decisions.

For this purpose, it is important that the Report is as clear and as detailed as possible in describing each step of the calculation in such a manner that each NRA can replicate the results and thus rely fully on the robustness of BEREC's calculations. The Report therefore explains for each of the parameters estimated:

- the application of the methodologies according to the WACC Notice,
- the assumptions and choices made,
- the data and data sources used,
- the steps of the calculations,
- the results.

By explaining precisely and transparently how the results were derived NRAs can be confident that they meet state-of-the-art professional standards and that BEREC followed the Notice as

[7] OJ 2019/C 375/01 of 6th Nov. 2019, https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52019XC1106(01)&from=EN – the Notice.
[8] SWD (2019) 397_final, https://ec.europa.eu/newsroom/dae/document.cfm?doc_id=62834, the SWD.
[9] Legacy infrastructure means infrastructure of an SMP operator not subject to a Next Generation Access (NGA) premium.
[10] See section 1.1. below
[11] BEREC is not taking any view regarding the Notice in this Report. BEREC provided input during the Commission's public consultation in 2018, cf. BEREC Position Paper – Input to the Commission's WACC consultation 2018, BoR (18) 67, publ. in Oct. 2018, https://berec.europa.eu/eng/document_register/subject_matter/berec/opinions/8257-berec-position-paper-input-to-the-commission8217s-wacc-consultation-2018.

closely as possible taking into account also best regulatory practices where the Notice provides for NRAs' flexibility as well as drawing on the explanations of the SWD.

At the end of the introduction the structure of the Report will be outlined for a better understanding and easy reference.

Also, for an easy reference, the standard **WACC formula** as used in the WACC Notice[12] is shown hereafter:

$$WACC = R_E \times \frac{E}{D+E} + R_D \times \frac{D}{D+E}$$

R_E = RFR + ß x ERP

R_D = RFR + Debt Premium

$$WACC = [(\frac{E}{D+E}) \times (RFR + ß \times ERP)] + [(\frac{D}{D+E}) \times (RFR + Debt\ Premium)],$$

Where

R_E = the cost of equity (to be estimated using the Capital Asset Pricing Model (CAPM));

ß = beta;

ERP = the equity risk premium;

R_D = the cost of debt;

RFR = the risk-free rate;

Debt Premium = the additional return that lenders require from a company with a given credit risk, over and above the RFR;

E = the value of equity, with $\frac{E}{D+E}$ being the share of equity in the company value (D+E);

D = the value of debt, with $\frac{D}{D+E}$ being the share of debt in the company value (D+E); the share of debt in the company value is also called *gearing (g)*;

V = the value of the company, which is equal to the sum of debt and equity (V = D+E).

This is the seventh Report that is being produced by BEREC. BEREC has taken utmost care to develop this Report according to the best knowledge and technical expertise of its members based on their longstanding experience of applying regulatory principles[13] when setting the

[12] As set out in section 2 of the WACC Notice.
[13] For the regulatory principles see below section 1.2.1.

WACC in pricing decisions which are reported every year in a specific chapter of the BEREC Regulatory Accounting in practice Report.[14]

As the Commission's Notice has not changed, BEREC is following the same methodology (incl. 'technical choices') as in last year's Report. This implies that changes in the results are due to factual developments, i.e. reflect market and other developments.

1.1. BEREC's tasks according to the WACC Notice

BEREC's tasks are described in para. 64 – 67 of section 7 of the Notice "Role of BEREC and the Commission in the calculation of WACC parameters". Acc. to section 7 BEREC in close collaboration with the Commission estimates the WACC parameters consistent with the approach described in the Notice. BEREC will estimate and publish the values on an annual basis for the parameters reflecting general economic conditions and the company-specific parameters for the selected peer group.

The parameters reflecting general economic conditions described in section 4 of the Notice consist of the **RFR** which will be estimated for each EU member state and a **single EU-wide ERP**. The single EU-wide ERP follows from the assumption of ultimately reaching an integrated EU capital market (cf. para 38 Notice).

The company-specific parameters described in section 5 of the Notice consist of the following parameters: **equity beta, gearing, debt premium**, and the **cost of debt** (R_D), the latter being calculated indirectly as the sum of the **domestic RFR** and the **debt premium**. Given that the calculation of the cost of debt includes the *domestic* RFR the debt premium must also be estimated using (besides the relevant corporate bonds) corresponding government bonds of the *home country*[15] of the company as a benchmark in order to avoid inconsistencies. This assumes an investor taking a "home country" approach or, in the context of the Notice, an EU rather than a global investor's perspective. The company-specific parameters will be estimated for each company of the peer group.

BEREC prepares a list of companies suitable for the **peer group** by following the criteria for selecting the peer group as outlined in para. 44 of the Notice. BEREC estimates the equity beta, gearing, debt premium and cost of debt for each company included in the list. Acc. to para. 67, BEREC also describes factors that may justify the removal of one or more companies from the "BEREC peer group" to take into account national specificities.

When estimating the parameters BEREC takes into account the assumptions common to several WACC parameters as described in section 3 of the Notice, namely the length of the averaging period and the averaging method. This ensures "internal consistency" of the

[14] For an overview of current NRAs' practices when setting the WACC cf. to the latest BEREC Regulatory Accounting in practice Report, WACC chapter (ch. 5), BoR (25) 168, publ. in Dec. 2025 https://www.berec.europa.eu/en/all-documents/berec/reports/berec-regulatory-accounting-in-practice-report-2025.

[15] In a few exceptional cases, government bonds of a country with the same credit rating as the home country were used as a proxy (see Ch. 4).

estimations. Also, to be consistent throughout all parameters, the cut-off date is set at 1st April 2026 for this Report.

BEREC publishes the estimated WACC parameter values and NRAs are assumed to take into account those parameter values when carrying out their own calculations for their national regulatory decisions, but they do have some flexibility within this framework to take account of national specificities. The Report is due to be published before 1st July 2026.

1.2. The Gigabit Connectivity Recommendation

In this paragraph some elements, introduced in the 2024 Gigabit Recommendation on WACC, are reported. More specifically the Gigabit Recommendation[16] explicitly states that the "applicable WACC", when mentioned, is set in accordance with the methodology established in the Notice and the corresponding annual BEREC Report.[17] The Commission specifically notes as well that the "applicable WACC" is also the base for the VHCN project specific WACC that can include a specific risk premium on top of the applicable WACC. In the revised Staff Working document the relevance of the principles in the Notice for the estimation of the "applicable WACC" has been reiterated. The applicable WACC is a solid base for the estimation of any Rate of Return: "*When discussing any premium for rewarding investments into VHCNs, this staff working document takes as the base the applicable WACC set in accordance with the methodology established in the Notice*". The applicable WACC remains related to the legacy product and independent of any risk premium that can be applied on top of the applicable WACC, for VHCN services, where relevant.

In the Gigabit Recommendation in the section "Adequately rewarding the investment risk on new VHCN projects" some elements have been introduced on the applicable WACC estimation in point 64-66 relevant in the application of the Notice:

"64. Where NRAs consider price control obligations to be appropriate, ***they should allow the undertaking an efficient rate of return on capital employed****, taking into account investment-specific risks.*

65. ***When establishing the applicable WACC, NRAs should ensure that it reflects current macroeconomic parameters. If the applicable WACC does not sufficiently take into account prevailing economic conditions, the NRA should consider updating the applicable WACC, thus ensuring the correct macroeconomic parameters in the foundation of the project-specific WACC for new investments.***

[16] Gigabit Connectivity Recommendation (EU) 2024/539 of 6th February 2024, OJ of 19 Febr. 2024

[17] "This staff working document takes as the base the applicable WACC set in accordance with the methodology established in the Notice" p. 108 of the Staff Working Document (SWD (2024) 18_final, https://digital-strategy.ec.europa.eu/en/library/recommendation-regulatory-promotion-gigabit-connectivity).

*66. **When applying the rate of capital costs, NRAs should ensure that inflation is not double counted, as it could have already been taken into account within the costing methodology implementation.**"*

In this perspective all the principles already provided in the Notice are still applicable and more attention on the general efficiency principle of the WACC calculation with respect to the current macroeconomic conditions is addressed.

1.3. General principles

The work of BEREC is guided by the following three main principles:

- Follow the Notice as closely as possible, which mainly refers to the methodologies to be used for the estimations;
- Be transparent, using publicly available data where possible or using data which is widely used and accepted in the financial markets, which refers to the data sources to be used for the estimations;
- Explain every step of the calculation and proceed in a straightforward manner, which refers to the calculations as such.

The three principles are set out in the following sections. Taken together they serve to ensure a robust result on which NRAs can rely.

1.3.1. Follow the Notice as closely as possible

Following the Notice as closely as possible ensures that BEREC uses the methodologies of the Notice (and detailed in the SWD), i.e. BEREC is doing what it is asked to do. By applying the methodologies foreseen in the Notice BEREC contributes to a consistent application of the regulatory framework thus promoting a competitive internal market for electronic communications networks and services. More specifically, BEREC thus contributes to NRAs using a consistent calculation method for estimating the WACC by NRAs.

In this regard it is important to recall that in line with the objectives of the EU Framework, the Notice is based on four regulatory principles laid down in para. 8: (i) consistency in the methodology; (ii) predictability; (iii) promotion of *efficient* investment taking into account the risk incurred; and (iv) transparency of the method to determine the reasonable rate of return avoiding unnecessary complexity. When calculating the WACC NRAs equally observe these regulatory principles[18].

[18] Cf. also BEREC Position Paper – Input to the Commission's WACC consultation 2018, BoR (18) 67, publ. in Oct. 2018.

With regard to the methodological approach the Notice follows the financial market theory known as the Capital Asset Pricing Model (CAPM)[19]. This methodological approach to estimate the cost of equity is based on a number of assumptions. Generally, the application of any methodology requires making assumptions and choices to reflect the concrete situation and specific purpose of the calculation.[20] In particular this is true for the estimation of WACC parameters, which is a very complex multi-dimensional process that in some instances imply that trade-offs must be solved one way or the other.

Thus, BEREC also had to make some 'technical' choices to be able to apply the methodologies foreseen in the Notice in a meaningful and consistent manner to reach robust results applicable by all NRAs. When making choices BEREC used the margin left in the Notice mindfully to stay in line with the Notice and financial market theory in these cases. Where these choices are made, they are made objectively and the reasons are explained in detail. BEREC followed the best regulatory practice stemming from the application of the CAPM which all NRAs already currently use when calculating the WACC.[21]

1.3.2. Be transparent, using public data where possible

The second principle relates to the ensuring that only reliable data is used for the estimations. The choice of the data sources used must be made transparent and explained clearly. Whenever possible, preference was given to the use of publicly available data, in particular official EU data sources such as Eurostat and the ECB.

However, the estimation of certain parameters required specific financial market data, namely long-term historic data series from LBS[22] necessary to estimate the single EU-wide ERP and data derived from the Bloomberg financial system[23] to estimate certain company specific parameters. Both data sources are widely used and accepted by financial market players. Access to this data has to be procured by the BEREC Office to be able to estimate the parameters and publish the results of the calculations based on this specific data. Being proprietary, the data as such cannot be published. In order to be able to rely on this type of data BEREC needs to be sure it understands exactly how the data was compiled. BEREC therefore requested and received explanations from the providers on how the data was compiled and aggregated.

[19] Cf. Chapter 5 below for a description.
[20] In this case to estimate WACC parameter values reflecting the cost of capital (SMP) operators face across the EU when investing in telecoms infrastructure for the WACC calculations of NRAs.
[21] Cf. BEREC Regulatory Accounting in practice Report, ch. 5, BoR (25) 168, publ. in Dec. 2025, https://www.berec.europa.eu/en/all-documents/berec/reports/berec-regulatory-accounting-in-practice-report-2025.
[22] The data source is Dimson/Marsh/Staunton, Global Investment Returns Database 2026, a soft copy of the latest DMS data set was provided by London Business School (LBS) Inc.. UBS/LBS publish a yearly hard copy as the *UBS Global Investment Returns Yearbook* (published at: Global Investment Research & Insights | UBS Global, https://www.ubs.com/de/en/wealthmanagement/insights/global-investment-returns-yearbook.html). For the calculations in this BEREC Report the 2026 version with data from 1900 through to 2025 was used, i.e. the DMS Global Investment Returns Database 2026 (distributed by LBS Inc.) acquired by BEREC Office for BEREC.
[23] BEREC Office acquired for BEREC access to the Bloomberg financial system, which is henceforth referred to as Bloomberg. This year, BEREC was able to make more extensive use of Bloomberg, therefore the data quality has improved.

1.3.3. Explain every step of the calculation and proceed in a straightforward manner

The third principle relates to the calculation process as such. To ensure that all NRAs can easily understand and replicate the results of the BEREC calculations, every step of the estimation of each of the parameters is explained in detail and in a straightforward manner. Thus, NRAs will be able to follow the BEREC calculation steps from start to end and to fully understand the logic of the calculation process. This ensures that NRAs are confident that the results are robust and were derived using state of the art professional standards.

All results were cross checked and verified to ensure that no methodological mistakes have been made, no questionable data has been used and no calculation errors have occurred, so that BEREC was able to exclude any systematic bias. Only after these checks were carried out, BEREC was satisfied that the results were correct and NRAs will be confident to use them in their own WACC calculations.

1.4. Structure of the Report: parameter by parameter following the WACC formula

The introduction closes with a short overview of the structure of the report which largely follows the structure of the Notice which itself follows the WACC formula:

$$\text{WACC} = \left[\left(\frac{E}{D+E}\right) \times (\text{RFR} + ß \times \text{ERP})\right] + \left[\left(\frac{D}{D+E}\right) \times (\text{RFR} + \text{Debt Premium})\right].$$

Chapter 2 describes the estimation of the RFR.

Chapter 3 sets out the peer group and provides criteria that NRAs may use to remove peer group members to take account of national specificities.

In Chapter 4 the debt premium and the cost of debt is calculated for each member of the peer group.

In Chapter 5 the beta and gearing are estimated for each member of the peer group.

Chapter 6 contains the calculation of the single EU-wide ERP and also the separate EU/EEA ERP for exclusive use by Nkom (Norway), ECOI (Iceland) and AK (Liechtenstein), which is a key parameter and certainly the most complex to calculate. Therefore, it is placed at the end of the Report.

Chapter 7 summarises all results in an overview table for easy reference. Furthermore, this chapter also touches upon taxes and inflation (section 6 of the Notice). It also contains a short section comparing the results of the 2026 and the 2025 WACC parameters Report.

2. RFR

2.1. Definition and data source used

The risk-free rate (RFR) is the rate of return an investor would expect to gain from investments in financial instruments that theoretically do not carry any risk of default, such as a government bond. However, even the safest investments might carry some risk of default.

In the CAPM the risk free rate is a parameter used to calculate the cost of equity and the cost of debt:

Cost of equity = Risk Free Rate + ß x Equity Risk Premium

Cost of debt = Risk Free Rate + Debt Premium

The established practice by most NRAs in the past has been to calculate the risk free rate by using yields on 10-year domestic government bonds. This practice has continued because NRAs increasingly follow the methodology outlined in the Notice.[24]

BEREC's calculation of the risk free rate is based on data retrieved from Eurostat as the official publicly available source for EU data[25] and referred to in para. 36 of the Notice. The Eurostat dataset is described as follows: "Long term government bond yields are calculated as monthly averages (non-seasonally adjusted data). They refer to ce33ntral government bond yields on the secondary market, gross of tax, with a residual maturity of around 10 years. The bond or the bonds of the basket have to be replaced regularly to avoid any maturity drift. This definition is used in the convergence criteria of the Economic and Monetary Union for long-term interest rates, as required under Article 121 of the Treaty of Amsterdam and the Protocol on the convergence criteria".[26]

2.2. Methodology with reference to Notice

BEREC uses yields on domestic 10-year government bonds for each Member State to calculate the risk-free rate. The approach of using long-term bonds, which are less volatile than shorter-term bonds, is in line with the longer-term nature of investments in electronic communications networks. Moreover, it follows the Notice, since the Commission underlines that the use of domestic government bonds, together with a consistent methodology, will ensure that differences in risk free rates capture specific country-risks and reflect differences in financing conditions within the Member States.[27]

[24] BEREC Report, Regulatory Accounting in Practice 2025, Chapter 5.2.1 Risk Free Rate, Figure 12 Methodology used to estimate RFR (fixed market), BoR (25) 168, where WACC methodologies and parameter values are recorded for 30 NRAs.
[25] Online data code: TEIMF050, Eurostat Data Source IRT_LT_MCBY_M. Data Source: European Central Bank.
[26] https://ec.europa.eu/eurostat/databrowser/view/teimf050/default/table. Also see further information on long-term interest rate statistics and convergence criteria for EU Member States in the Eurostat Metadata.
[27] Cf. Notice and SWD.

Eurostat provides the following description of how it derives this data: Long term government bond yields are calculated as monthly averages (non-seasonally adjusted data). They refer to central government bond yields on the secondary market, gross of tax, with a residual maturity of around 10 years. The bond or the bonds of the basket have to be replaced regularly to avoid any maturity drift.[28] The European Central Bank (ECB) provides the underlying data in line with their prescribed methodology.[29] The rates/yields are calculated as monthly arithmetic averages based on daily data provided by National Central Banks' official rates. Daily values are obtained from real trade, in line with the requirements stipulated by the ECB, with the benchmark bond, or imputed values from prior trades when no transactions with the benchmark bond have been made. The monthly values are calculated as an unweighted arithmetic average of daily yields.

The yield to maturity serves as a nominal long-term interest rate without any adjustments for coupon effects, taxes, or inflation. The rates are not subject to seasonal adjustments.[30] The risk free rates have not been adjusted for any quantitative easing programs in line with the Notice[31].

The averaging period BEREC uses for calculating each country-specific risk free rate is **five-years** and is based on monthly data retrieved from Eurostat. This is in line with the Notice on the calculation of the cost of capital, which highlights that this approach would strike the right balance between predictability and efficiency.[32]

2.3. Assumptions and choices made

The data used by BEREC has been retrieved from a reliable, publicly available official source (Eurostat). The Eurostat reference area for this data are EU member states. In the past, Estonia had not issued any 10-year government bonds that comply with the definition of long-term interest rates for convergence purposes until May 2023. Neither had the ECB been able to identify any suitable proxy indicator that could be used as an alternative. Consequently, Eurostat has harmonised the data series for all the Member States.

Eurostat does not collect corresponding data for Iceland and Norway. Therefore, data for Iceland and Norway have been derived by BEREC using benchmark bonds with 10 years residual maturity. The choice of bonds to be included has been derived from Bloomberg[33].

[28] See: Eurostat Data set "Long term government bond yields" (online data code TEIMF050) Explanatory text.
[29] See ECB background information on the full monthly time series of long-term interest rate data on.www-ecb.europa.eu.
[30] See European Central Bank, Convergence Report, June 2022, section 6.5. https://www.ecb.europa.eu/pub/convergence/html/ecb.cr202206~e0fe4e1874.en.html.
[31] Section 4, para. 36.
[32] Notice, para 27.
[33] Via the Bloomberg Terminal, providing financial market data. Also refer to Annex 1

2.4. Calculation steps – description of how the result is derived

The determination of the Risk Free Rate per country is based on data published by Eurostat[34] and calculating a five-year arithmetic average of this data from 1st April 2021 to 31st March 2026.[35]

A country credit rating reflects the interest premium on private loans or government bonds due to the underlying risk associated with the country in question. Thus, from the perspective of an investor, it represents a risk premium. The level of the risk premium is dependent e. g. on the general economy, political stability and credit worthiness of the country. These factors are considered by Rating Agencies such as Fitch, Moody's and Standard & Poor's for establishing the country risk rating. The rating usually corresponds with the credit rating for the country's government bonds. The five-year average has been evaluated considering comparable returns in term of credit rating along the time series.

Moody's credit rating was used for this purpose (see Table 2).

2.5. Results

A **Risk Free Rate** based on a five year arithmetic average (April 2021 to March 2026) has thus been determined for each EU/EEA member state.

[34] Source Eurostat Data set Long term government bond yields 2021M04 to 2026M03, last updated on 20.04.2026.
[35] Notice, paragraphs 27 and 29.

Table 2 Country Economic Factors and Risk Free Rates

Country Code	Country	Country Credit Rating[36]	GDP per capita[37]	HICP (Harmonised Consumer Price Index)[38]	Risk Free Rate 5 year arithmetic average[39]
AT	Austria	AA1	109.832	102.59	2.28
BE	Belgium	AA3	116.826	102.32	2.36
BG	Bulgaria	BAA1	142.982	102.82	2.86
HR	Croatia	A3	134.893	102.72	2.78
CY	Cyprus	A3	124.864	100.45	2.81
CZ	Czechia	AA3	110.842	101.17	3.94
DK	Denmark	AAA	118.271	100.25	1.90
EE	Estonia	A1	105.644	101.71	2.79
FI	Finland	AA1	105.387	102.33	2.27
FR	France	AA3	115.734	101.40	2.39
DE	Germany	AAA	104.342	102.11	1.79
EL	Greece	BAA3	127.333	102.59	3.16
HU	Hungary	BAA2	121.274	101.64	6.53
IE	Ireland	AA3	124.177	102.86	2.22
IT	Italy	BAA2	120.740	101.7	3.25
LV	Latvia	A3	119.220	102.63	2.73
LT	Lithuania	A2	118.187	104.26	2.02
LU	Luxembourg	AAA	100.003	102.63	2.18
MT	Malta	A2	126.125	99.01	2.85
NL	Netherlands	AAA	112.993	101.54	2.02
PL	Poland	A2	134.642	102.73	5.16
PT	Portugal	A3	119.029	101.61	2.50
RO	Romania	BAA3	136.862	106.18	6.39
SK	Slovakia	A3	115.963	102.86	2.69
SI	Slovenia	A2	121.478	101.45	2.48
ES	Spain	A3	122.760	102.64	2.63
SE	Sweden	AAA	113.795	100.58	1.92
IS	Iceland	A1	108.112	103.29	6.05
NO	Norway	AAA	111.598	102.35	3.21

[36] Moody's via Bloomberg (Moody's country credit ratings are comparable to S&P's country credit ratings), updated to 01.04.2026.

[37] Eurostat, GDP aggregates per capita, online data code: NAMQ_10_PC, Q4 2025, Index 2020 = 100, per capita. Gross Domestic Product at market prices. Data for BE, BG, DE, EL, ES, HR, IS, CY, LU, HU, NL, PL, PT, RO provisional, Data for IT, PT estimated, Data extracted on 20/04/2026 from [ESTAT], last updated by Eurostat on 20.04.2026. Further information on content and estimation see Eurostat explanatory texts (metadata).

[38] Eurostat HICP All items; online data code TEICP000, M3 2026, Index 2025 = 100; Data extracted on 27/04/2026 from [ESTAT], last updated by Eurostat on 15.04.2025. Further information on content and estimation see Eurostat explanatory texts (metadata). Concept and methodology of the HICP (harmonised index of consumer prices) which is calculated by Eurostat, see: https://ec.europa.eu/eurostat/statistics-explained/index.php?title=HICP_methodology.

[39] BEREC average based on Eurostat Long term government bond yields 2021 M04 to 2026 M03. Data extracted from [ESTAT] on 27.04.2026, last updated 15.04.2026. Data for Iceland and Norway derived by BEREC from Bloomberg data. Also refer to the table in Annex 1.

Remarks on results

Current 10-year government bond yields may differ from the values shown in Table 2 since the methodology for determining the Risk Free Rate, following the Notice, is based on a five-year arithmetic average of national government bond yields for the period 1st April 2021 to 31st March 2026.

The ongoing trend of increasing government bond yields reflects current macroeconomic developments: the increased interest rates as a measure by Central Banks to combat rising inflation in Europe has seemingly succeeded. The long-term 5 year ECB inflation forecast (which, following the Notice, is used to calculate real WACC) sees inflation levelling out at the ECB inflation target rate of 2 %. The ECB monetary policy will in turn influence the market; more recent inflation trends across Europe support this development[40].

The following table illustrates the very low interest period (when the first BEREC WACC parameters Report was published) from 2020 to 2022. The yield trend from 2020-2021 was decreasing (average of -0.29 %), the decrease slowing in 2021-2022 (average of -0.17 %) and increasing from then on, with an average of 0.32 % in 2022-2023 to an average of 0.45 % in 2023-2024 and 0.56 in 2024-2025 and, in continuation of this upward trend, to the as yet highest average of 0.63 % in 2025-2026.

[40] Also see the ECB's HICP inflation forecast for shorter time periods as well as the five year prognosis: https://www.ecb.europa.eu/stats/ecb_surveys/survey_of_professional_forecasters/html/table_hist_hicp.en.html.

Table 3 RFR evolution (2020 – 2026)

Country	2020 BoR (20) 116	2021 BoR (21) 86	2022 BoR (22) 70	2023 BoR (23) 90	2024 BoR (24) 102	2025 BoR (25) 64	2026 BoR (26) 72
Austria	0.46	0.26	0.20	0.54	1.03	1.62	2.28
Belgium	0.57	0.36	0.30	0.62	1.08	1.68	2.36
Bulgaria	1.41	0.97	0.62	0.76	1.39	2.12	2.86
Croatia	2.53	1.95	1.43	1.56	1,87	2.33	2.78
Cyprus	2.58	1.92	1.33	1.61	1.90	2.36	2.81
Czech Republic	1.16	1.27	1.64	2.32	2.77	3.29	3.94
Denmark	0.32	0.10	0.07	0.36	0.81	1.33	1.90
Estonia	1.09	0.97	0.50	0.93	1.49	2.13	2.79
Finland	0.44	0.24	0.19	0.53	1.02	1.61	2.27
France	0.57	0.37	0.30	0.59	1.05	1.67	2.39
Germany	-0.17	-0.03	-0.09	0.17	0.60	1.15	1.79
Greece	5.67	4.04	2.73	2.49	2.42	2.70	3.16
Hungary	2.96	2.73	2.84	3.97	4.74	5.61	6.53
Ireland	0.75	0.50	0.40	0.70	1.08	1.61	2.22
Italy	1.96	1.82	1.70	2.05	2.33	2.75	3.25
Latvia	0.67	0.45	0.40	0.84	1.40	2.03	2.73
Lithuania	0.59	0.35	0.26	0.45	0.97	1.48	2.02
Luxemburg	0.29	0.12	0.03	0.39	0,88	1.50	2.18
Malta	1.09	0.90	0.85	1.20	1.67	2.25	2.85
Netherlands	0.37	0.15	0.05	0.33	0.80	1.37	2.02
Poland	2.93	2.62	2.51	3.15	3.66	4.36	5.16
Portugal	2.16	1.71	1.12	1.16	1.45	1.95	2.50
Romania	4.06	4.05	4.23	4.98	5.31	5.73	6.39
Slovakia	0.66	0.47	0.37	0.75	1.31	1.98	2.69
Slovenia	0.94	0.60	0.45	0.77	1.26	1.86	2.48
Spain	1.30	1.01	0.84	1.09	1.51	2.05	2.63
Sweden	0.49	0.34	0.31	0.56	0.96	1.42	1.92
Iceland	-	4.39	4.14	3.76	4.67	5.29	6.05
Norway	-	1.38	1.45	1.73	2.11	2.57	3.21

Country	Delta 2020-2021	Delta 2021- 2022	Delta 2022- 2023	Delta 2023- 2024	Delta 2024- 2025	Delta 2025- 2026
Austria	-0.20	-0.06	0.34	0.49	0.59	0.66
Belgium	-0.21	-0.06	0.32	0.46	0.60	0.69
Bulgaria	-0.44	-0.34	0.14	0.63	0.73	0.73
Croatia	-0.58	-0.52	0.13	0.31	0.46	0.45
Cyprus	-0.66	-0.60	0.28	0.29	0.46	0.45
Czech Republic	0.11	0.37	0.68	0.45	0.52	0.65
Denmark	-0.22	-0.03	0.29	0.45	0.52	0.56
Estonia	-0.12	-0.47	0.43	0.56	0.64	0.66
Finland	-0.20	-0.05	0.34	0.49	0.59	0.67
France	-0.20	-0.07	0.29	0.46	0.62	0.72
Germany	-0.20	-0.07	0.26	0.43	0.55	0.64
Greece	-1.63	-1.31	-0.24	-0.07	0.28	0.46
Hungary	-0.23	0.11	1.13	0.77	0.87	0.93
Ireland	-0.25	-0.10	0.3	0.38	0.53	0.61
Italy	-0.14	-0.12	0.35	0.28	0.42	0.51
Latvia	-0.22	-0.06	0.44	0.56	0.63	0.70
Lithuania	-0.24	-0.09	0.19	0.52	0.51	0.54
Luxemburg	-0.17	-0.08	0.36	0.49	0.62	0.68
Malta	-0.19	-0.05	0.35	0.47	0.58	0.61
Netherlands	-0.22	-0.10	0.28	0.47	0.57	0.65
Poland	-0.31	-011	0.64	0.51	0.70	0.80
Portugal	-0.45	-0.59	0.04	0.29	0.50	0.56
Romania	-0.01	0.18	0.75	0.33	0.42	0.66
Slovakia	-0.19	-0.11	0.38	0.56	0.67	0.71
Slovenia	-0.34	-0.15	0.32	0.49	0.60	0.62
Spain	-0.29	-0.17	0.25	0.42	0.54	0.58
Sweden	-0.15	-0.03	0.25	0.40	0.46	0.51
Iceland	-	-0.25	-0.38	0.91	0.62	0.76
Norway	-	0.07	0.28	0.38	0.46	0.64
Average	-0.29	-0.17	0.32	0.45	0.56	0.63

3. Peer group

3.1. Definition and data source used

The peer group is defined by selecting the companies that fit the Commission criteria – see section 5.3.2.3 of the SWD together with subsequent clarifications issued by it.

The data source used to check if a company is listed on a stock exchange is Bloomberg.

3.2. Criteria from the Notice and subsequent clarifications

BEREC has closely followed the criteria in the Notice and the SWD when deciding on which companies to include in the peer group. The SWD lists the following criteria for selecting the companies that should be included in the peer group.[41]

The companies in the peer group:

- are listed on a stock exchange and have liquidly traded shares;
- own and invest in electronic communications infrastructure;
- have their main operations located in the Union;
- have an investment grade (credit rating BBB/Baa3 or above); and
- are not, or have not been recently, involved in any substantial mergers and acquisitions.

Clarifications issued by the European Commission

In addition, in 2021 the European Commission provided the following clarifications[42]:

1. Companies that are based in the European Economic Area ("EEA") and that meet the criteria are eligible for inclusion in the peer group. It is appropriate that companies (with headquarters) located in the EEA be considered for inclusion in the peer group if they meet the criteria listed in the SWD.

2. Companies are also assessed as to the level of their operations in the EU/EEA before inclusion in the peer group.

The European Commission also clarified that one of the aims in developing the peer group is that companies that are actively operating in the EU/EEA and meet the criteria are considered for inclusion in the peer group. Companies that possibly meet the criteria but have limited operations in the EU/EEA must be analysed further to assess if it is appropriate to include them. A simple application of the criteria could result in companies being added to the peer group from outside the EU/EEA who have limited operations in the EU/EEA, which would not ensure ***consistency*** as set out in the SWD[43]. Therefore, and generally, it is important that the

[41] See section 5.3.2.3 of Staff Working Document (SWD)
[42] These are discussed further in Annex 5.
[43] See section 5.3.2.2 of the SWD.

criteria are not applied mechanically but with a view to the objective of getting a fair representation of European operators with electronic communications infrastructure when considering whether or not to add companies to the peer group. This will ensure that companies who are outside of the EU/EEA, but possibly meet various criteria are not automatically included within the peer group without further analysis.

National Specificities

BEREC has further assessed the criteria concerning national specificities and maintains its approach that two criteria require further refinement:

1. Companies have their main operations located in the EU/EEA

A strict application of this criterion without consideration of national specificities could result in the exclusion of companies that generate a substantial proportion of their turnover in the EU/EEA. BEREC considers that, over the five-year period on which the parameters are calculated, where:

(a) a company's headquarters are located in the Union and therefore major strategic decisions are taken within the EU/EEA; and

(b) a substantial proportion of a company's revenue is generated within the EU/EEA.

These companies should qualify to be included in the peer group.

In addition, this will allow the home country (domestic) debt premium to be estimated for a wider range of companies. As a result, NRAs will have a wider selection of companies/countries that are closer to their national specificities. However, this will also have to be compared to an overall assessment of the criteria when compared to the level of operations in the EU/EEA.

2. Companies have an investment grade credit rating (BBB/Baa3 or above)

A review of the company credit rating at a particular point in time could result in certain companies being included in one period's peer group and excluded from the next in cases where they do not have an investment grade rating. BEREC considers that it is more appropriate to consider the investment grade status of a company over a five-year period and that if a company has had an investment grade rating in four of the five years it would qualify under this criterion. The choice of a five-year averaging period is also consistent with the averaging periods for the WACC parameters presented in the Notice[40].

As a conclusion from the above considerations, it follows that if a company meets four of the five criteria (as modified) it is considered appropriate for inclusion in the peer group. However, it is mandatory that a company meet criterion 1 "*are listed on a stock exchange and have liquidly traded shares*" as a prerequisite for inclusion, as otherwise no equity market data is available.

[40] Notice, para. 27.

BEREC also considers that NRAs, in order to reflect national specificities should, where necessary, amend the companies included in the peer group by selecting those that are most reflective of their national specificities. In accordance with paragraph 67 of the Notice this may involve removing one or more companies from the peer group (but not adding any that do not meet the criteria as set out above).

Where possible, NRAs should maintain a peer group that is as wide as possible using the companies in Table 3 being representative of the national specificities.

According to para. 67 and in order to avoid "arbitrary" choices BEREC considers it justified to remove peer group members from the list primarily for the following reasons:

(a) Certain companies in the peer group may not reflect the size of the SMP operator in the particular member state. For example, it may be inappropriate to include a very large company in the peer group if its scale is significantly greater than the SMP operator or the member state itself has a relatively small population[41];

(b) Competition conditions within the electronic communications sector, and in particular infrastructure-based competition, may vary between member states increasing risk for both SMP and OAO operators (access seekers and wholesalers).[42] For example, the presence of a significant cable operator could present particular competitive conditions in one member state that may be absent from another;

(c) The share of regulated vs non-regulated revenues of peer group members may vary. Indeed, as mentioned by the Brattle report[43], regulated telecommunication activities could be seen to be less sensitive to changes in the economy than those of an average firm with non-regulated activities;

(d) The scope of segments of activity (i.e. mainly mobile, mainly fixed, combined, etc.) of certain companies in the peer group may differ significantly from the SMP's types of business to an extent of not being representative.

BEREC has applied these criteria as well as taking into account national specificities in preparing the list of companies included in the peer group of this edition. It has also examined whether or not, based on the five criteria, there are additional companies that could be added to the peer group.

[41] The size of an operator could be based on Market Capitalisation. However, the use of a country specific size premium is not considered appropriate.

[42] See Digital decade dashboard, DESI 2023 dashboard for the Digital Decade - Digital Decade DESI visualisation tool (europa.eu), Digital infrastructure

[43] See Brattle report "Review of approaches to estimate a reasonable rate of return for investments in electronic communications networks in regulatory proceedings and options for EU harmonization" a study for the Commission (2016), p50: https://op.europa.eu/fr/publication-detail/-/publication/da1cbe44-4a4e-11e6-9c64-01aa75ed71a1/language-en.

Recent investment activity

During the review of data for the 2026 WACC parameters Report, BEREC, as in previous years, has observed varying levels of investment activity being undertaken by peer group members[44]. As a result of this it is providing further analysis on criterion 2 and criterion 5.

Criterion 2[45]

A review of the data indicates that criterion 2 remains relevant to all members of the peer group. All peer group members continue to own and invest in legacy electronic communications infrastructure.[46]

Criterion 5[47]

BEREC considered M&A activities of the members of the peer group.

While there have been some M&A activities over the period, the majority of it relates to investment in fibre networks or the carve out of tower infrastructure, sale of non-European businesses or even other businesses, rather than being directly related to legacy infrastructure. This activity is similar to previous years. Fibre investment and tower infrastructure are not subject to the Notice.

While Telecom Italia has transferred, without any residual share participation, its fixed-line access network and wholesale business unit to a wholly-owned subsidiary of KKR[48], it continues to invest in electronic communications infrastructure. During 2025, its capex to sales ratio was greater than 10% in line with other peers included in the peer group. Telecom Italia, through the use of co-located equipment has an extensive transport network to all local central offices throughout Italy. In addition, it has the highest market share in Italy's retail fixed broadband market and provides fixed wireless access to support a significant number of access lines, with licenced spectrum resource and related equipment. BEREC is, therefore, of the view that Telecom Italia, in line with previous years, continues to meet the necessary criteria for inclusion in the peer group. Vodafone UK completed its merger with Three (31 May 2025), with Vodafone Group retaining a 51% stake in the venture. Vodafone UK still own and invest in electronic communications infrastructure.

Vodafone Romania acquired Telekom Romania Mobile Communications, with the exception of prepaid mobile business and certain network assets that were acquired by Digi. On March 20 2026, Digi acquired 51% shareholding in Whyfibre Limited UK, a fibre-infrastructure vehicle. This transaction does not represent a substantial M&A activity for Digi during the period, thus it remains in the peer group.

No new companies have been added to the list.

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[44] This includes mergers and acquisitions, investment and disinvestment / sale
[45] […] own and invest in electronic communications infrastructure
[46] The ratio of capital expenditures to sales for the FY2025 for the peer group ranges from 8.97% (Tele 2) to 32.2% (2024 figure) (Digi), the peer group average being 14.91 %. Source: Bloomberg terminal (F1705) Capex headline over revenue (IS010)).
[47] […] are not, or have not been recently, involved in any substantial mergers and acquisitions
[48] https://www.gruppotim.it/en/press-archive/corporate/2024/PR-Closing-NetCo-1-luglio.html

3.3. Updates in the 2026 WACC parameters Report

BEREC has reviewed companies against the criteria as set out in the SWD and subsequent clarifications issued by the European Commission.

Based on BEREC's analysis there continue to be 14 members of the peer group (same as in 2025).

3.4. Results

Therefore, based on both the criteria and national specificities the BEREC peer group 2026 is shown in Table 4.

Table 4 BEREC peer group 2026

No.	Company	Country	S&P rating as of April 2026	Rating last reviewed by S&P	Stock Symbol
1	Deutsche Telekom AG	DE	BBB+	28 May 2025	DTE GR
2	DIGI Communications N.V.	RO	BB-	20 October 2025	DIGI BVB
3	Elisa Oyj	FI	BBB+	15 April 2025	ELISA FH
4	Koninklijke KPN N.V.	NL	BBB	16 April 2025	KPN NA
5	NOS	PT	BBB-	25 March 2026	NOS PT
6	Orange S.A.	FR	BBB+	23 September 2025	ORA FP
7	Proximus S.A.	BE	BBB+	17 March 2026	PROX BB
8	Tele 2 AB	SE	BBB	10 December 2025	TEL2B SS
9	Telecom Italia	IT	BB	09 July 2024	TIT MI
10	Telefónica	ES	BBB-	17 December 2024	TEF SM
11	Telekom Austria AG	AT	A-	07 May 2025	TKA AV
12	Telenor	NO	A-	09 July 2025	TEQ
13	Telia Company AB	SE	BBB+	16 May 2025	TELIA SS
14	Vodafone Group plc	UK	BBB	16 October 2025	VOD LN

STOXX Europe Total Market Telecommunications index

When assessed against the STOXX Europe Total Market Telecommunications index[49], which lists all possible candidates for a peer group that would be representative of the European Telecommunications Market, the BEREC peer group would represent about 61.28 %[50] by market capitalisation of the STOXX Europe Total Market Telecommunications index (the representativeness of the peer group is lower, compared with last year).

[49] https://www.stoxx.com/index-details?symbol=BTEP.
[50] STOXX Europe Total Market Telecommunications index includes not only telecom operators, but also tower operators, ICT providers, satellite operators, etc.

Remarks

Infrastructure competition and the role of tower companies

BEREC also analysed tower companies as possible peers.

In recent years tower companies (towercos), which build and operate (mainly) physical assets for mobile networks, are playing an emerging role in infrastructure investments, and as a result, access and competition. Tower companies include companies which started out as independent investors (such as Cellnex) as well as companies which were created by telecom operators from the spin-off of key infrastructure.

Although some towercos control backhaul and/or have engaged in deploying indoor cells (Distributed Antenna Systems), towercos typically focus on deploying and operating passive assets.

Towercos in Europe are primarily focused on consolidating their existing portfolio of mobile operators working as wholesale only operator by increasing the tenancy ratio and appealing to additional types of clients (such as FWA, IoT providers or broadcasters). Developments with the creation of towercos are in general too recent to assess concrete impact on competition and investment, which are expected predominantly in 5G.

In terms of applicability to towercos of provisions regarding access to infrastructure it is important to mention primarily State aid regulation and Access to physical infrastructure under BCRD/GIA, while, although approaches vary among EU countries, no SMP and symmetric regulation is currently imposed.

Two companies, in particular, were considered:

1. **Cellnex** is a provider of telecommunications infrastructure and wireless connectivity throughout Europe and is considered of particular relevance to Spain and Italy, but also other countries in the EU (for example, France, Poland). While it meets many of the criteria necessary for inclusion in this report as in the vast majority of countries[51] it is mainly concentrated in the provision of towers and mast infrastructure rather than relevant electronic communications as envisaged in the SWD it is currently not included in the peer group.

2. **Inwit** is a provider of wireless connectivity infrastructure, mainly in Italy. While it meets many of the criteria necessary for inclusion in this report as it is mainly concentrated in the provision of wireless connectivity infrastructure rather than relevant electronic communications as envisaged in the SWD it is currently not included in the peer group.

Because of the growing role of towercos in supporting electronic communications infrastructure, as envisaged under the SWD, a reflection on their possible inclusion in the peer group may arise in the future.

[51] With the exception of Spain (where the broadcasting business is regulated under ex-Market 18).

Nevertheless, currently the main focus of towercos on the use of physical infrastructure for the deployment of 5G rollout – although very important for connectivity – refers to markets related primarily[44] to the mobile access that are not susceptible to ex ante regulation according to the Commission's Recommendation on Relevant Markets (Recommendation (EU) 2020/2245), and in any case, not linked to legacy networks. As there are potentially different risk profiles between towercos and the current peer group companies, also in light of the specific wholesale only model, the towercos are therefore not included as peers (cf. Annex 5).

WACC for Physical Infrastructure Access

In case an NRA considers it appropriate to calculate a separate "PIA WACC" which is not mentioned in the Gigabit Recommendation, it needs to ensure it is consistent with the costing methodology for CEI as foreseen in the Gigabit Recommendation. The Gigabit Recommendation distinguishes between two types of CEI, namely existing CEI and newly built CEI. For existing CEI it foresees in Rec. 48 – 53 a RAB approach with an indexation method similar to the costing methodology used in utilities. For newly built CEI it foresees that pertinent costs are those actually incurred and that current market conditions are taken into account, which may represent a higher risk-profile of new investment projects and be rewarded "by way of a (higher) risk premium" (Rec. 54). In any case the calculation of the WACC should follow the methodology of the Commission WACC Notice.

4. Debt premium and cost of debt

4.1. Definition and data source used

The cost of debt is defined as the interest or financial cost paid by a company on its debt. It can be expressed as the sum of the risk-free rate and a debt premium:

$$\textit{Cost of debt} = \textit{Risk Free Rate} + \textit{Debt Premium}$$

The debt premium is the additional return lenders or investors require for a company above the risk free rate. The level of the debt premium depends to a large degree upon the perceived credit risk and credit rating. The debt premium can be estimated by using the yields on corporate bonds above the interest rate on long-term government bonds. The debt premium is calculated as:

$$\textit{Debt premium} = \textit{Cost of debt} - \textit{Risk Free Rate}$$

In order to calculate the debt premium BEREC assesses, in line with established practice, the yield on long-term corporate bonds above the risk free rate. Although BEREC strives to use

[44] Fixed wireless networks may benefit from towercos infrastructure as well.

the same averaging period (five years) and maturity (ten years) as for the calculation of the risk free rate, the secondary market for corporate bonds has different characteristics compared to the market for government bonds. Companies issue corporate bonds in order to raise capital, but given that market conditions vary over time they are not necessarily issued with a regular frequency, they could use different currencies in order to respond to investor interest, and some companies use the bond market to a less extent as they use other sources to obtain capital.

The data source used for the calculation of the debt premium is Bloomberg. Bloomberg is extensively used in the financial and corporate sector.

4.2. Methodology with reference to Notice

Deducting from corporate bond yields the risk free rate with similar maturity and the same currency is the established method to calculate the debt premium. It is in line with the Notice, which states to add the domestic risk free rate to the debt premium.

Altogether, BEREC estimates the debt premiums for the companies in the peer group from which NRAs can select the appropriate value for their SMP or regulated operator (having regard to its characteristics) and adds this to the estimated domestic RFR to derive the cost of debt.

4.3. Assumptions and choices made

In calculating the debt premium and cost of debt, BEREC has made some assumptions in order to carry out its designated task:

- Considering that the capital market is global, companies use different currencies when they issue corporate bonds according to their needs, market characteristics, and investor interest. However, the calculations of the debt premium is limited to corporate bonds that have been issued in the domestic currency, which primarily is EUR, apart from a few exceptions, in order to be able to match domestic long term government bonds. Inflation-linked bonds have been excluded in order to keep consistency in the results.
- The five-year averaging window, where available, will cover the period from April 2021 to March 2026, while the maturity year of the bonds must be within the period from April 2032 - March 2040. BEREC has chosen this maturity period of the bond for the following reasons:
    - Striving to be as close as possible to a 10-year residual maturity.
    - Avoiding excluding too many corporate bonds.

- Assuming a bias for the longer maturities rather than for the shorter ones in order to balance the fact that the yield curve by maturity period shows an exponentially decreasing rather than a linear form[52].

The above takes into consideration that companies issue corporate bonds depending upon demand for capital and market conditions, which vary over time. Consequently,

- it is not possible to apply a strict five-year averaging window for all bonds as they have been issued at different times resulting in different periods with a maximum of five years for calculating the average bond yields.

Based on the above-mentioned criteria, BEREC has included as many corporate bonds as possible issued by the peer group companies. However, some companies only have few traded corporate bonds, only a single one or even none, which means that the underlying data sample varies between the different companies in the peer group[53].

Given that this effect has intensified in recent years, in order to incorporate more companies from the peer group into the cost of debt calculation, companies without corporate bond issuances have been identified for which a benchmark can be performed using bonds issued by other companies with the same credit rating. Specifically:

- For Elisa: to estimate its cost of debt, all corporate bonds issued by DT, Orange, Proximus, and Telia that share the same credit rating (BBB+) have been used. For the estimation of the debt premium, the monthly yields of these bonds have been compared with Finnish government bonds of similar maturity.

- For Tele2: all corporate bonds issued by Vodafone (denominated in euros) and KPN have been used, as both companies have a BBB credit rating. To derive the debt premium, these corporate bonds have been compared with German government bonds consistent with the approach used for other Swedish companies.

- For Digi: corporate bonds issued by Telecom Italia have been used and compared with Italian government bonds.

For Telekom Austria and NOS no estimation could be carried out due to the lack of comparable corporate or government bonds.

All things considered, BEREC concludes that this approach is in line with the Notice.

4.4. Calculation steps – description of how the result is derived

BEREC has retrieved data for the corporate bonds from Bloomberg. The following steps have been undertaken:

[52] https://www.ecb.europa.eu/stats/financial_markets_and_interest_rates/euro_area_yield_curves/html/index.en.html

[53] DIGI, Elisa, NOS, Tele2 and Telekom Austria have not issued any bond which meets the criteria set in the section 4.3.

1) Identify corporate bonds that have been issued in the domestic currency by the companies in the peer group, which maturity date is within April 2032 - March 2040, and which are traded on the secondary market. As noted in the previous section, this year the companies Digi, Elisa, and Tele2 have been included in the calculation. In the absence of their own bond issuances meeting the representativeness criteria, bonds issued by companies with the same credit rating have been identified.

2) Identify government bonds that match each corporate bond, that have been issued by the respective governments or by governments with a comparable credit rating, that closely match each corporate bond in terms of maturity date, and which are traded on the secondary market. This facilitates the establishment of pairs of bonds consisting in a corporate bond compared with a domestic government bond. Additionally, in most cases only sovereign bonds with an averaging time window equal or larger than the comparable corporate bond were considered in order to calculate the debt premiums in all dates since the date corporate bonds were issued. When possible, the closest time to maturity over the five-year time series is used in order to minimize potential maturity drift while remaining consistent with the RFR calculation. As a result, different government bonds may be used over the five-year period to achieve the closest maturity match. In the appendix, the corporate bonds are presented alongside the corresponding government bonds traded over the five-year time series. For the debt premium calculation, the government bond used at each point in the five-year period is always the one traded, whose maturity best matches that of the corporate bond.

3) Provide a description of each bond pair, both the corporate and government bonds, with the following details:

    a. ticker, which is the label and identifier for each bond which is used in the secondary market, including information,

    b. time to maturity information.

4) Retrieve data from Bloomberg for the maximum period 1st April 2021 up to 31st March 2026 based on weekly data for identified corporate bonds and benchmark government bonds for the following parameter

    - Mid Yield to Maturity (*YLD_YTM_MID* in Bloomberg), which is the yield of a fixed income security that will solve for the mid-price when valuing the security to maturity. It is the total return anticipated on a bond if the bond is held until it matures. Yield to maturity is considered a long-term bond yield and is expressed as annual return, which could be described as the internal rate of return (IRR) of an investment in a bond if the investor holds the bond until maturity, with all payments made as scheduled and reinvested as the same rate.

      Bloomberg provides a weekly value for the mid yield to maturity for each bond, which facilitates for BEREC for each pair to deduct the value of the government bond from the value of the corporate bond on a weekly basis. This gives a debt premium on a weekly basis.

5) Subsequently, BEREC calculates for each company the arithmetic average of the debt premiums of the identified bond pairs on a weekly basis. Then, the debt premium for

each company is calculated as an arithmetic average of the previously described weekly average during the 5-years averaging window. All of this depends on the availability of corporate bonds that fulfil the above listed criteria.

On the whole, this calculation results in the debt premium for each company in the peer group as input for calculating the cost of debt:

Cost of debt = Risk Free Rate + Debt Premium.

In order to make the calculation complete the domestic risk free rate taken from Table 2 is added, which gives the cost of debt for each company.

BEREC now also shows for information purposes averages of the peer group, however there is no obligation for NRAs to use these averages.[54]

4.5. Results

The results are presented in Table 5.

Table 5 Debt premium and Cost of debt

	Debt premium	Risk Free Rate	Cost of debt
Deutsche Telekom	122	179	301
DIGI Communications	197	639	836
Elisa	68	227	295
KPN	104	202	306
NOS		250	250
Orange	52	239	291
Proximus	56	236	292
Tele 2	139	192	331
Telecom Italia	197	325	522
Telefónica	52	263	315
Telekom Austria		228	228
Telenor	106	321	427
Telia Company	110	192	302
Vodafone Group	111	337	448
Weighted Average (information only)[55]	105		
Arithmetic Average (information only)	109		

Remarks on results

The calculations of the debt premium are in line with the Notice and follow the same criteria as those of the 2025 WACC parameters Report with the sole exception of completing the

[54] For calculation details see Chapter 5 and Annex 3.
[55] The market cap has been calculated in Euro considering a five years average based on weekly prices of the shares (consistent with BEREC's approach to calculate five years averages). See Annex 3 for details.

calculation for those companies without representative corporate bonds (Elisa, DIGI Communications and Tele2) by using bonds issued by companies with the same credit rating.

Given that the mid yield to maturity of the corporate bonds have been compared with the mid yield to maturity of the domestic government bonds, this may not fully reflect the international investor perspective and will be dependent on how the capital market assesses the value of the government bonds. This means that the debt premiums for international companies based on high RFR countries are significantly lower compared with what would have been if the calculations had been based on benchmark bonds regularly used by Bloomberg, this is, German government bonds.

The approach excludes corporate bonds issued in non-domestic currencies since the results can not exactly show how companies are raising capital on the international market. This does not apply for the Swedish company Telia Company and for the Norwegian Telenor. The two companies have not issued corporate bonds in the domestic currency (SEK or NOK). Since Norway and Sweden have the same Moody´s credit rating as Germany (AAA), those corporate bonds (Telia and Telenor) have been compared to German government bonds.

For NOS and TA any corporate bond and any corresponding government bonds for AT and PT are currently traded with time to maturity between April 2032 - March 2040, for this reason for those operators no debt premium is estimated.

In addition, it must be borne in mind that some of the peer companies do not have or have only a very limited number of traded corporate bonds meeting the criteria. The cost of debt is slightly reduced due to the updated time window, as the debt premium in 2026 has declined for most companies in the peer group and, to a lesser extent, due to the joint inclusion of data from DIGI Communications and Elisa, companies for which no data were estimated in the 2025 report.

5. Beta and gearing

5.1. Definition and data sources used

According to Capital Asset Pricing Model (CAPM) the cost of equity considers that a particular relation holds between the level of risk of a company and the level of risk within the whole economy. The level of systematic risk[56] due to macro-economic conditions related to the increment of the interest rates as well as risk related to the demand, affecting all companies in the economy, is described by the relation:

$$\text{Cost of equity } (R_E) = \text{Risk free rate } (RFR) + \text{beta\_Equity x Equity risk premium } (ERP) \quad (1)$$

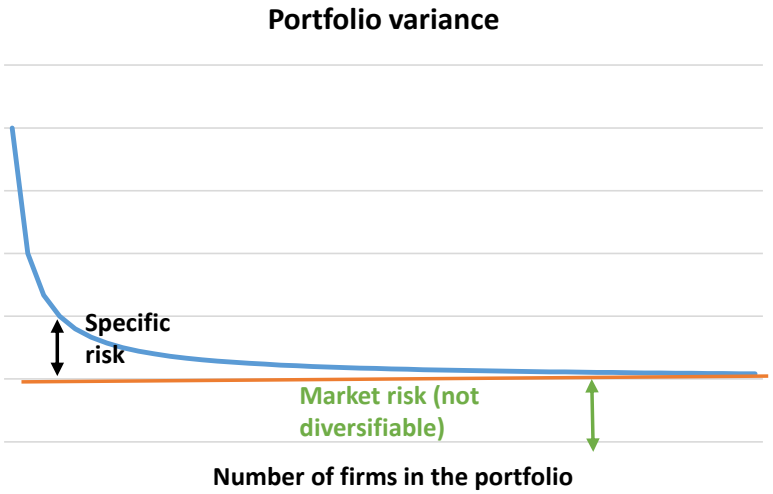
The idea behind the CAPM model is that, in a competitive market, the expected risk premium in an asset varies with respect to the risk free rate in direct proportion to “beta”. The beta is the measure of the risk contribution of an individual security to the risk of a well-diversified portfolio. Stocks with betas between 0 and 1 tend to move in the same direction of the market as a whole, but not as far. Stocks with betas greater than 1.0 tend to amplify the overall movements of the market.[57]

Formally the risk of a portfolio is described by the variance of the return and covariance of the return between each security included. If the number of the stocks (N) included in the portfolio increases with equal proportion of capital invested in each security, the level of the risk of the portfolio measured as the variance of the portfolio itself becomes mainly proportional to the covariance of the stocks between each other and not on the variance of each security included (Figure 2). If ideally the average covariance of a portfolio becomes equal to 0 all risks by holding a sufficient number of securities will be eliminated. Unfortunately, common stocks move together, not independently, so a market risk is the one that cannot be diversified. So, the risk of a well-diversified portfolio depends on the market risk of the securities included in the portfolio. The market risk is proportional to the average beta included in the market portfolio. Formally this can be understood calculating the variance of the portfolio that is equal to:

$$\text{Portfolio variance} = \sum_{i=1}^{N} \sum_{j=1}^{N} x_i x_j \sigma_{ij} \quad (2)$$

[56] Systematic Risks are non-diversifiable market risks in contrast to non-systematic risk relating to the risk associated with individual shares. CAPM serves to measure the systematic risk.
[57] Brealey, Myers, Allen, “Principles of corporate finance”, 11th Edition (2014).

Figure 1 Portfolio variance



Where x_i x_j are the proportions of the resources allocated for each security, and σ_{ij} the covariance between the stocks "i" and "j" included in the portfolio. In other words, the contribution of stock "i" to portfolio risk is equal to the relative size of the holding (x_i) times the average covariance between stock 1 and all the stocks in the portfolio.

To evaluate the relative contribution to the portfolio risk of each security we need to divide the average covariance with the portfolio variance. This ratio formally describes the relative contribution to the risk of the portfolio and it is exactly the beta:[58]

$$\beta_i = \frac{\sigma_{i,m}}{\sigma_m^2} \qquad (3)$$

Where $\sigma_{i,m}$ is the covariance of the stock with respect to the market portfolio and σ_m^2 the variance of the market portfolio itself.

Generally, the higher the value of the beta, the higher the uncertainty about the returns on a firm's equity with respect to the reference market considered.

Companies with high equity betas tend to have high business risk and/or high financial risk such as:

- Non-diversified businesses with revenues, earnings and cash flows that are highly sensitive to economic factors;
- Highly geared, capital intensive businesses that have a large proportion of fixed operating costs (increasing the volatility of operating and net cash flows);
- Early stage or start-up ventures.

The average beta of the market should be equal to one and this can be effectively addressed considering a portfolio that is the wider as possible approaching the corresponding whole

[58] Theoretical relation in case of "unbiased" estimation of the OLS linear regression line between market index return and stock return

market. From a technical point of view the equity beta of a company/asset is estimated through a regression analysis, i.e. by measuring the relationship between the returns of that company's shares and the returns of a market index, which is meant to approximate the whole economy.[59]

Given the above, the corresponding risk of an asset to the portfolio will depend also on the **financial leverage** or **'gearing'** of the firm.

As the Notice suggests, to estimate the equity beta in the CAPM model from a "peer group" of companies, it is relevant, in this case, to make reference, for fair comparison of the systematic risk, to an unlevered beta or asset beta from the observed equity beta of each peer. The use of asset beta will ensure that actual differences in underlying business risks (systematic risk) are compared between peers removing from the betas differences in financing decisions.

The main elements to estimate the equity beta are:

i) the methodology (Bottom-up/notional vs SMP operator);
ii) time horizon and sampling period for the estimation of the formula;
iii) market index;
iv) adjustment of the beta;
v) the unlevering formula to get the asset beta.

For beta estimation the return of the security of each company should be calculated with a daily, weekly or monthly sampling period. A corresponding return of a market index in accordance with portfolio theory should be chosen. For the estimation of the asset beta of each peer an unlevering formula should be considered that need also the gearing estimation of each company. So, the gearing is faced in this section of the report due the fact that it is strictly related to the asset beta estimation.

The gearing (g) is a measure of a company's financial leverage. It compares the amount of debt financing to the amount of the value of the company. This parameter is relevant in the WACC formula as it provides the weight for the cost of debt and the complement (1-g) the weight for the cost of equity, but it is also strictly related to the estimation of the final equity beta as it is used in the formula for levering and re-levering the beta as already mentioned.

The "gearing" (g), in accordance with the Notice, is formally considered as the relative weight of debt on the overall firm value, in formula as:

$$g = \frac{D}{D + E}$$

This measures the company's **financial leverage** and shows to what extent its operations are funded by lenders as opposed to shareholders.

The main points for the gearing estimation are the following: i) kind of approach for the estimation of the debt and equity component (market vs book values); ii) kind of debt that can

[59] See Notice, para. 45.

be considered in the debt component; iii) time windows and sampling period of the estimation as for the other main parameters (risk free rate, beta, cost of debt) of the WACC.

5.2. Methodology with reference to Notice

Following the Notice the approach to estimate the equity beta should be the following:

- Estimate the equity beta for each company in the group of EU companies, which form the peer group;
- Estimate the gearing level for each company in the peer group;
- Derive the asset betas from each company in the peer group, including the SMP operator (using the equity beta and gearing level for each company);
- Relever the asset beta to obtain the final equity beta.

BEREC will provide the data for asset beta and gearing for each company of the peer group, from which the corresponding ranges of values for each parameter can be used for estimating the final equity beta in the WACC formula by each NRA.[60]

The Notice states that the equity beta calculation should use weekly data, a sampling period and a time window of five years, which is in line with the time window used for the calculation of the risk free rate (RFR).

Moreover, the Notice highlights that no adjustments to the equity beta calculation should be done with methods such as Blume[61], Dimson[62], Vasicek[63]. The Commission doubts that these adjustments would improve the efficiency of the beta estimator and are likely to make the regulator's approach more complex and less transparent.[64]

The Commission, in line with portfolio theory, suggests using a wide index[65] which in this case is an EU index rather than a domestic market index and favours the STOXX Europe TMI (Europe Total Market Index), also in line with the provision regarding the EU-wide Equity Risk Premium.

Moreover, for the estimation of the beta the levering and unlevering formula is crucial.

A company's financial structure, in fact, has an effect on its equity beta. In particular, financial leverage increases the risk of company's share. For this reason, and in order to be able to

[60] See SWD, page 86.
[61] The adjustment of the Blume formula relies on the idea that over the long-term companies should tend towards a beta of 1 (e.g. firms that survive in the market tend to increase in size over time, become more diversified and have more assets in place, which should push betas towards 1) and adjusts the estimated company beta towards 1.
[62] Dimson corrects for distortions in the beta estimation when using daily returns due to the potential for mismatch between the changes in the market index and the reaction of the company's stock to these.
[63] The Vasicek formula is similar to the Blume adjustment, except that it does not assume a tendency of the beta to go to 1, but rather towards an industry average or some other prior expectation of beta, and the extent of the adjustment depends on the standard error of the observed beta.
[64] See SWD, page 80.
[65] In the CAPM framework the market portfolio includes all risky assets, in proportions defined by their relative market values.

compare the systematic risk of a company, which is included in the equity beta, with the others, it is common to estimate an asset beta from the company's equity beta. When estimating the equity beta in the WACC formula from the peer group, one must first assess the effect of financial leverage on the observed equity betas (so-called 'levered betas') by calculating the unlevered (or asset) betas.

The Notice suggests using the formula known as "Miller Formula"[66]:

$$\beta_A = \beta_E \frac{E}{D+E} + \beta_D \frac{D}{D+E}$$

With reference to the beta debt the Notice considers that it entails significant difficulties to be estimated. The reason is the illiquidity of the biggest part of the traded bonds, which means that an estimation of debt betas as the ratio of the covariance between bond yields and market returns and the variance of the market return can give incorrect results. For this reason, the Commission suggests to lever and re-lever the beta including a beta debt of 0.1.[67]

With respect to the gearing the Notice provides the following: the Equity component should be measured considering the market value obtained as the product of the price of the share and the number of outstanding shares for each company. The motivation behind this is related to the fact that it is the market value of equity that measures the future earnings potential of firms and their ability to sustain debt.

As the level of liquidity of corporate bonds could be low, the book value of the debt is a good approximation of the market value of the debt. With respect to the kind of debt to be considered to be consistent with a market value estimation, the Notice suggests using only long-term debt, as all the short-term debt are generally netted off by the cash. As long-term debt the Commission considers it relevant to also include capital lease obligation.

5.3. Assumptions and choices made

BEREC estimates the asset beta and corresponding gearing of the 14 peer group companies that fulfil the Commission's selection criteria as reported in chapter 3 above. In this section the equity beta, gearing and asset beta are evaluated from raw data on equity prices of shares obtained on weekly basis of each peer and the corresponding price of the STOXX Europe TMI. The raw data have been obtained from Bloomberg.

The equity beta for each peer of the group is estimated regressing the variation of the share price on a weekly basis with the corresponding variation of the price of the market index, the beta is obtained using OLS estimator (the analysis and the consistency of the estimation are reported in the Appendix).

The asset beta is derived applying the Miller formula including a beta debt of 0.1 as suggested by the Notice. The gearing is derived from the spot gearing evaluated on a weekly basis using a five years' time window. In the present report the relevant parameters estimated by BEREC

[66] The formula proposed is the one used by most NRAs as reported related to beta in op. cit., page 28.
[67] See SWD, page 85.

for the purpose to fulfil the Notice mandate are gearing and the asset beta of each peer. The equity beta reported in the present paragraph is derived using the following formula rounding with two decimal points from the asset beta and gearing estimated for each peer considering of a beta debt equal to 0.1.[68]

$$\beta_E = (\beta_A - \beta_D * g) * \frac{1}{1-g}$$

A standard statistical test has been carried out and liquidity merit figures have been calculated to provide transparency on the data consistency for the equity beta estimation needed for the corresponding asset beta (see Annex 3). Testing for statistical criteria and liquidity in this context is relevant to check the efficient market assumption of CAPM, which is useful for the final quotation of the peer group and asset beta range estimated.

5.4. Calculation steps – description of how the result is derived

For each comparable operator the information on gearing and asset beta has been derived, the equity beta is derived to fulfil the mandate of estimating the corresponding asset beta which is the only relevant figure that NRAs should consider.

The equity beta is calculated regressing the return of each company with the return of the STOXX Europe TMI, an analysis of the quality of the estimation of this parameter is reported in Annex 3.

The STOXX Europe TMI covers approximately 95 % of the free float of European market capitalization (generally more than 1,800 peers from different economic sectors)[69] across 17 European countries: Austria, Belgium, Denmark, Finland, France, Germany, Ireland, Italy, Luxembourg, the Netherlands, Norway, Poland, Portugal, Spain, Sweden, Switzerland and the United Kingdom.

The calculation is derived on a weekly sampling period, in line with the Notice.

The weekly estimation for the equity beta and the Equity component of the gearing is derived from the daily data selecting the information of the last price of the security and the corresponding price of the market index of one trading day for each week that is included in the time window.[70] For a time window of five years 260 points are collected from a general cut-off date of 1st April 2021 to 1st April 2026.

The gearing has been evaluated from a five year average of the spot gearing taken at weekly frequency. Gearing is evaluated using the book value of the net debt, for five years annual data. The net debt is equal to the Short-term Debt plus Long-term Debt minus Cash and Cash

[68] This formula is the one reported at paragraph 50 of the WACC Notice where g=D/V and g/(1-g)= D/E.
[69] BKXP Stoxx Europe TMI, https://qontigo.com/index/bkxp/.
[70] The net return have been evaluated as r_t=P_t/P_(t-1)-1, with P_t the last price of the current trading day of one week and P_(t-1) the last price of the selected trading day of the week before for both the company and the market index (Friday and, when not available (i.e. market close), the previous trading day in the week has been considered).

Equivalent.[71] The Commission states that "short term loans and liabilities are likely to be offset by short-term assets such as cash and cash equivalents"[72] and that it would seem appropriate to estimate the gearing using the book value of the firm's net debt, including the value of financial leases (capital lease). This is also the approach most frequently used by NRAs[73] also before the WACC Notice was widely adopted. According to this approach for the book value of the debt component only long-term debt[74] and capital lease[75] will be included as proxy of the net debt definition.

This assumption on the definition of the net debt is partially fulfilled: the ratio between "Cash" and "Cash Equivalent" of current liabilities "Notes Payable/Short-Term Debt" and "Current Portion of Long-Term Debt/Capital Leases" from the balance sheet of each peer is about 85 % on average considering the same number of peers in the 2025 BEREC report. At the same time, Bloomberg provides gearing data based on the book value of debt and the market value of equity. Debt also includes finance leases. Cash is not netted off.

In comparison to Table 5 of the 2025 WACC report (BoR (25) 64), the ratio values of cash and equivalent of current liability reached 84.77 % from 81.34 % estimated in the 2025 report for 14 operators included in the peer group.

The evolution is mainly due to an increase of the "cash and cash equivalent" components in some cases combination with a reduced increase of the short term debt component. This can be attributed to a different allocation strategy of the companies' capital. The assumption that short term loans and liabilities are likely to be offset by short-term assets such as cash and cash equivalent holds, also in comparison to past years.

[71] Net Debt = STD+LTD−CCE.
[72] SWD, page 87.
[73] See Regulatory Accounting Report 2021 (BoR (21) 161), WACC chapter.
[74] Not including pension liabilities.
[75] A capital lease is a contract entitling a lease holder to the temporary use of an asset, and such a lease has the economic characteristics of asset ownership for accounting purposes. In comparison operating leases are recorded only as operating expenses. The capital lease requires a lease holder to book assets and liabilities associated.

Table 6 Ratio between Cash and Cash Equivalent[76]

	Ratio between cash and cash equivalent in relation to current liabilities					
Company	2021	2022	2023	2024	2025	Average
Deutsche Telekom	73.21%	44.19%	29.72%	47.89%	45.92%	44.55%
DIGI Communications	4.16%	8.52%	150.10%	79.95%	16.33%	54.25%
Elisa	104.21%	96.45%	28.94%	20.92%	160.19%	65.05%
KPN	72.01%	97.42%	114.33%	92.26%	76.70%	88.61%
NOS	171.03%	12.52%	11.94%	11.20%	6.30%	9.14%
Orange	122.19%	179.98%	96.67%	81.18%	203.77%	135.99%
Proximus	382.72%	112.16%	162.84%	102.29%	448.41%	181.12%
Tele2	20.59%	21.91%	28.70%	29.54%	4.19%	17.88%
Telecom Italia	113.78%	106.25%	63.14%	44.86%	58.72%	68.11%
Telefónica	64.54%	103.04%	127.19%	125.37%	111.56%	114.60%
Telekom Austria	23.34%	31.18%	15.27%	49.04%	33.03%	48.96%
Telenor	123.99%	93.66%	62.71%	123.36%	100.42%	89.69%
Telia Company	265.52%	387.95%	101.37%	85.41%	224.26%	179.44%
Vodafone Group	113.20%	68.58%	62.67%	79.51%	156.11%	89.38%
AM						84.77%

[76] "Notes Payable/Short Term Debt" and "Current Portion of Long Term Debt/Capital Leases". Source: Operator's balance sheets retrieved from Bloomberg. The differences in the tables compared to the 2021 BEREC WACC parameters Report (BoR (21) 86) are related to a restatement of the balance sheet for some operators: specifically, for Orange this is due to the application of IFRS 16 on lease term; For Vodafone the classification of the Balance Sheet is the one of the release (31/03) of each year. Differences due to restatements of the balance sheet for some operators may also occur compared to the 2022 and -2025 Report BoR (22) 70 and BoR (25) 64.

Table 7 Raw balance sheet data for the ratio calculation[77]

Company	Cash and cash equivalent (millions of own currency)				
	2021	2022	2023	2024	2025
Deutsche Telekom	7,617	5,767	7,274	8,472	7,818
DIGI Communications	97	1,293	1,101	331	331
Elisa	114	86	63	90	190
KPN	793	399	608	662	405
NOS	11	15	18	9	15
Orange	8,621	6,004	5,618	8,766	12,167
Proximus	249	298	715	497	565
Tele2	880	1,116	1,634	317	249
Telecom Italia	6,904	3,555	2,912	2,924	2,048
Telefónica	8,580	7,245	7,151	8,062	6,564
Telekom Austria	534	150	169	367	362
Telenor	15,223	9,929	19,556	10,380	16,335
Telia Company	14,358	6,871	11,646	9,812	11,527
Vodafone Group	4,956	6,322	10,303	5,286	9,215

Company	Short-term borrowings/short-term lease liabilities/current portion of long-term debt-Capital Leases (millions of own currency)				
	2021	2022	2023	2024	2025
Deutsche Telekom	17,236	19,407	15,188	15,390	17,027
DIGI Communications	1,141	861	1,377	2,026	2,026
Elisa	118	295	303	480	118
KPN	814	349	659	1,062	528
NOS	87	127	162	242	230
Orange	4,790	6,211	6,920	7,407	5,971
Proximus	222	183	699	622	126
Tele2	4,016	3,889	5,531	6,252	5,945
Telecom Italia	6,498	5,630	6,492	4,326	3,488
Telefónica	8,327	5,696	5,704	7,617	5,884
Telekom Austria	1,714	981	344	316	1,096
Telenor	16,253	15,833	15,853	15,194	16,267
Telia Company	3,701	6,778	13,636	9,991	5,140
Vodafone Group	7,227	10,088	12,958	6,607	5,903

The equity component of the gearing is evaluated weekly from the number of outstanding shares[78] times the last price value of the share in the relevant trading day. The information is taken from Bloomberg.

[77] Differences due to restatements of the balance sheet for some operators may also occur compared to the 2022, 2023 and 2024 Reports, BoR (22) 70, and BoR (23) 90, BoR (24) 102.

[78] The numbers of outstanding shares are those available in the balance sheet for every year, as reported by Bloomberg in the Financial Analysis section of each operator (see Annex 3).

5.5. Results

The results for the asset beta and gearing for each of the peers is shown in Table 8. The asset beta is evaluated following the formula provided in the Notice:

$$\beta_A = (1-g)\left(\beta_E + \frac{D}{E}\beta_D\right)$$

The results are given with β_D (beta debt) equal to "0.1". The beta equity in the previous formula is the one estimated for each peer from the regression analysis previously illustrated where the results are also widely discussed in the Annex 3.

In line with the 2025 WACC report, the asset beta estimation is reported, considering also the "Pension liabilities"[79] for each operator in the debt component of the gearing, only for sensitivity purposes. In the literature, Pension Liabilities and Pension Assets should be treated in a way to include an adjustment to the asset beta provided in the Miller formula. A theoretical framework for taking into account pension assets and liabilities in the CAPM model has been developed by Jin, Merton and Bodie (JMB framework).[80] This framework sets out the need to estimate separate betas for pension asset (β_PA) and pension liabilities (β_PL) as well as the amount of pension asset (PA) and pension liability (PL), other than the equity beta (β_E), the beta debt (β_D), the Equity (E) and debt (D) components of a firm, as reported in the Miller formula, thus estimating the asset beta correctly.

In this framework the Miller formula for asset beta is only unbiased in case the pension liabilities and the pension assets offset each other and the β_PA and the β_PL are equal. The new asset beta can thus be rewritten in the following way:

$$\beta_A = \beta_E \frac{E}{D+E-S} + \beta_D \frac{D}{D+E-S} + \left(\beta_{PL}\frac{PL}{D+E-S} - \beta_{PA}\frac{PA}{D+E-S}\right)$$

This theoretical framework is hard to be applied in practice due to the fact that pension liabilities are not tradable as such. In general, an upward adjustment to the asset beta is needed in case there is a negative balance between pension liabilities and pension assets (S=PA-PL<0) within the hypothesis that the β_PA and beta β_PL are equal.

The pension deficit reported in the balance sheet is generally understood by investors as a source of debt. Therefore, equity beta can be affected by a pension deficit as a leverage risk. At the same time the JMB framework states that the systematic "unlevered" risk increases in the presence of a pension deficit. Those two different views are sources of uncertainty about how to treat pension deficit: i) one view treated it to 100 % as a source of debt; ii) the other to 100 % as a source of systematic risk as in the JMB framework.[81]

[79] Amount of pension obligations disclosed on companies' non-current liabilities section. The number may or may not net off with pension assets. It includes both pension and other post-retirement benefit obligations.
[80] L. Jin, R. Merton Z. Bodie: Do a firm's equity returns reflect the risk of its pension plan. Journal of Financial Economics 2006, Vol 81, Issue 1.
[81] https://www.ofcom.org.uk/__data/assets/pdf_file/0016/111535/Draft-statement-annex-30.pdf.

Consequentially, the asset beta estimation has been carried out considering a case in which a pension deficit is treated as a full source of debt, in line with the "practitioners'" approach, with the outcome that the pension deficit, independent from the share of input to debt, does not have a material impact on the gearing calculation with an increase of the standard evaluation of about 1 % and a decrease of the asset beta on average of about 0.01. The sensitivity analysis on impact of pension fund is reported in table A1 in Annex 3 for each peer.

In the following Table 8 the weighted average (WA)[82] as well as the arithmetic mean (AM) are provided for the asset beta and gearing. The equity beta is also reported and derived from the asset beta and gearing with a beta debt equal to 0.1, rounding the estimation with two digits using the formula reported in paragraph 5.3.

Table 8 BEREC Peer Group - Asset beta, gearing, Equity beta, Market cap

Company	Asset Beta	Gearing	Equity beta	Market cap (billion Euro)
Deutsche Telekom	0.32	54.08%	0.58	112.30
DIGI Communications	0.27	60.72%	0.53	1.00
Elisa	0.31	13.51%	0.34	7.60
KPN	0.17	32.18%	0.2	13.30
NOS	0.24	42.13%	0.34	1.87
Orange	0.15	56.46%	0.21	29.55
Proximus	0.25	53.88%	0.43	3.32
Tele2	0.27	24.56%	0.33	7.45
Telecom Italia	0.4	71.15%	1.14	6.90
Telefónica	0.3	62.02%	0.63	23.00
Telekom Austria	0.37	28.66%	0.48	4.79
Telenor	0.24	34.04%	0.31	16.63
Telia Company	0.2	40.39%	0.27	11.88
Vodafone Group	0.3	64.40%	0.66	29.51
WA (information only)	0.28	51.19%	0.5	
AM (information only)	0.27	45.58%	0.46	

Remarks on results

BEREC has performed, in line with previous reports, a cross-check of the results above with a rolling regression method to verify that the beta evolution is correctly reflecting the trend. The estimation with the rolling regression method has confirmed the slow decrease[83] of beta

[82] The market cap has been calculated in Euro and reported in Billion Euro considering a five year average based on weekly prices of the shares (consistent with BEREC's approach to calculate five year averages). See Annex 3 for details.

[83] Only in a few cases a small increase was observed since last year.

after the spike in the variation of the risk due to the pandemic shock in the first quarter of 2020 for most operators.[84] After this spike the risk conditions reverted again for most operators. The main decreasing trend has been accelerated over the years 2021 and 2022 without shock showing a reduction of the average perceived risk of telecom operators with respect to the market as a whole, i.e. the beta "normalises" rapidly at a trend level comparable to the one experienced before the shock for most operators. Thus, it can be concluded that the hypothesis of a small variation over time of the beta still holds.

For the 2026 BEREC WACC Report, it is possible to show that the unusual volatility observed very close to the last year cut-off date (1th April 2025), was not a spot event, but effectively a structural break happened shifting the perceived risk for almost all the peers. This allows BEREC to use the data until the 1st April 2026 for the 2026 BEREC WACC Report in line with its standard approach.

A comparison of the three parameters (equity beta, gearing and asset beta) is reported in relation to the estimation of past reports since 2020 the first publication of the BEREC WACC Report. From this evidence some considerations can be drawn.

Table 9 shows that the risk perceived by the market for the selected peers has, on average, been decreasing. The average equity beta declined by more than 0.10 points over the five-year period from 2020 to 2025. Including 2026, the total average reduction since 2020 is approximately 0.30 points, with the most significant decrease occurring in the last year.

The figure below reports additionally the rolling equity beta for all peers[85] over a five-year time window. It clearly shows that, starting in March 2025, a break emerges for almost all the companies included in the peer group.

The perceived risk has been decreasing on average more rapidly since last year, suggesting that the telecom sector is seen as less exposed to macroeconomic instability compared to other sectors due to the "inherent localised nature of the business"[86]. It is starting to be perceived as a "defensive stock" investment.[87]

The evolution of beta indicates that portfolio managers that are risk adverse may increasingly prefer to overweight safer securities while underweighting riskier ones.[88]

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[84] If beta varies only slowly (relative to the data sampling frequency) the forward looking beta may be well approximated by the current estimate on the most recent historical data,
cf. e.g. https://www.ofgem.gov.uk/sites/default/files/docs/2018/12/ofgem_dr_dec_2018.pdf.

[85] In the Appendix 3 operator by operator data are also provided.

[86] https://www.telecoms.com/public-policy/telecoms-is-relatively-insulated-from-trump-s-global-trade-war

[87] https://www.investopedia.com/terms/d/defensivestock.asp

[88] The outlook of macroeconomic instability driven by geopolitical tensions throughout 2025 and early 2026 may help to explain the average reduction in the beta of the telecom sector seen as less exposed to the instability. This suggests that equity investors increasingly perceive telecom stocks as defensive assets. More generally, a defensive strategy in portfolio allocation tends to intensify during periods of financial stress. This is also supported by empirical evidence showing that, over the long term, stocks with lower beta and lower volatility tend to deliver higher risk-adjusted returns compared to riskier securities. In the academic literature, this phenomenon is referred to as the "low-risk anomaly" (Andrea Frazzini, Jack Friedman, Hoon Kim, *"Understanding Defensive Equity" AQR Capital Management 2012*).

Figure 2 Rolling equity beta for all peers

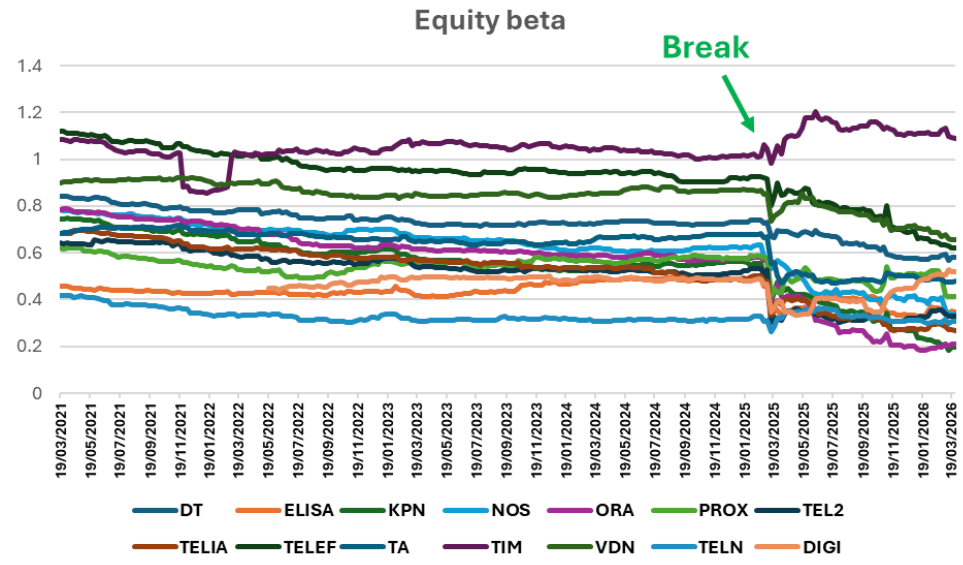


Table 9 Equity beta evolution (2020 - 2026)

Company	2020 BoR (20) 116	2021 BoR (21) 86	2022 BoR (22) 70	2023 BoR (23) 90	2024 BoR (24) 102	2025 BoR (25) 64	2026 BoR (26) 72
Deutsche Telekom	0.91	0.84	0.78	0.72	0.72	0.74	0.58
DIGI Communications	-		0.46	0.50	0.50	0.48	0.53
Elisa	0.59	0.46	0.43	0.42	0.48	0.47	0.34
KPN	0.72	0.75	0.65	0.57	0.53	0.51	0.20
NOS	0.77	0.78	0.7	0.67	0.63	0.57	0.34
Orange	0.85	0.79	0.7	0.62	0.58	0.57	0.21
Proximus	0.74	0.62	0.53	0.55	0.57	0.59	0.43
Tele2	0.8	0.64	0.58	0.54	0.53	0.53	0.33
Telecom Italia	1.12	1.08	1.02	1.07	1.06	1.08	1.14
Telefónica	1.07	1.12	1.01	0.95	0.93	0.93	0.63
Telekom Austria	0.69	0.69	0.68	0.65	0.67	0.68	0.48
Telenor	-	0.42	0.33	0.31	0.30	0.32	0.31
Telia Company	0.75	0.68	0.62	0.57	0.54	0.48	0.27
Vodafone Group	0.8	0.9	0.9	0.85	0.85	0.85	0.66
WA (information only)		0.82	0.75	0.70	0.69	0.69	0.50
AM (information only)	0.79	0.75	0.67	0.64	0.64	0.63	0.46

Company	Delta 2020-2021	Delta 2022-2022	Delta 2022-2023	Delta 2023-2024	Delta 2024-2025	Delta 2025-2026	Total
Deutsche Telekom	-0.07	-0.06	-0.06	0.00	0.02	-0.16	-0.33
DIGI Communications			0.04	0.00	-0.02	0.05	0.07
Elisa	-0.13	-0.03	-0.01	0.06	-0.01	-0.13	-0.25
KPN	0.03	-0.1	-0.08	-0.04	-0.02	-0.31	-0.52
NOS	0.01	-0.08	-0.03	-0.04	-0.06	-0.23	-0.43
Orange	-0.06	-0.09	-0.08	-0.04	-0.01	-0.36	-0.64
Proximus.	-0.12	-0.09	0.02	0.02	0.02	-0.16	-0.31
Tele2	-0.16	-0.06	-0.04	-0.01	0.00	-0.20	-0.47
Telecom Italia	-0.04	-0.06	0.05	-0.01	0.02	0.06	-0.02
Telefónica	0.05	-0.11	-0.06	-0.02	0.00	-0.3	-0.44
Telekom Austria	0	-0.01	-0.03	0.02	0.01	-0.20	-0.21
Telenor		-0.09	-0.02	-0.01	0.02	-0.01	-0.11
Telia Company	-0.07	-0.06	-0.05	-0.03	-0.06	-0.21	-0.48
Vodafone Group	0.1	0	-0.05	0.00	0.00	-0.19	-0.14
WA (information only)		-0.07	-0.05	-0.01	0.00	-0.19	-0.32
AM (information only)	-0.04	-0.08	-0.03	-0.01	-0.01	-0.17	-0.34

As reported in the previous paragraphs the equity beta takes into account not only the systematic risk, but it is influenced *inter alia* by the level of financial leverage (gearing) of the company. In the following table the gearing estimations of previous reports in comparison with the one reported in the present report are shown.

Even if the equity beta is decreasing, the corresponding gearing was increasing for almost all operators at least until March 2025: generally, a higher gearing spurs a higher equity beta. The level of gearing is influenced by the level of debt (higher debt generally increases the level of gearing) as well as by the level of the equity (lower stock prices increase the market value of gearing). Looking at long term debt and capital lease relevant for the gearing calculation, since 2018, on average, the debts have increased by about +32.75 % (+ 32.27% in the 2025 BEREC WACC Report and +39.21 % in the previous report in homogenous term). In the 2025 BEREC WACC Report a reduction of the debt component had been experienced by most operators.[89] At the same time the gearing, on average, was still higher than in previous years; this is due to a decrease of the market capitalisation on average in general.

Regarding the 2026 WACC Report, the debt component has, on average, increased again for some operators; however, gearing has declined, mainly due to a general increase in the market capitalization of the peer group. The figure below presents the evolution of the five-year average market capitalization of the peers.[90]

It is possible to observe a reversal in market capitalization starting from March 2025, including companies more focused on EU markets. This behaviour, combined with a reduction in perceived risk, suggests that the telecom sector is increasingly being valued as a safe asset.

In the past, a decline in beta was accompanied by a decrease in market capitalization, indicating reduced investor interest - particularly in Europe - likely due to weaker cash flow trends and relatively lower liquidity compared to other sectors. However, data from the past year show a stabilization and subsequent upward trend in market capitalization. This shift suggests that the sector is now perceived as more profitable on the one hand, while also being less risky than other sectors on the other characteristics that are typical of defensive equity stocks.

[89] Since 2024 a decrease of the debt component is observed for some operators. Telecom Italia has consistently reduced the long term debt since last year as "*On July 1, 2024, the transaction for the sale of the business related to the domestic fixed network (primary network and wholesale business of TIM S.p.A.), to FiberCop S.p.A. and Telenergia S.r.l. ("NetCo") was completed".*

[90] A slightly different trend can be observed for DT in the past.

Figure 3 Market cap (five year average) of all the peers

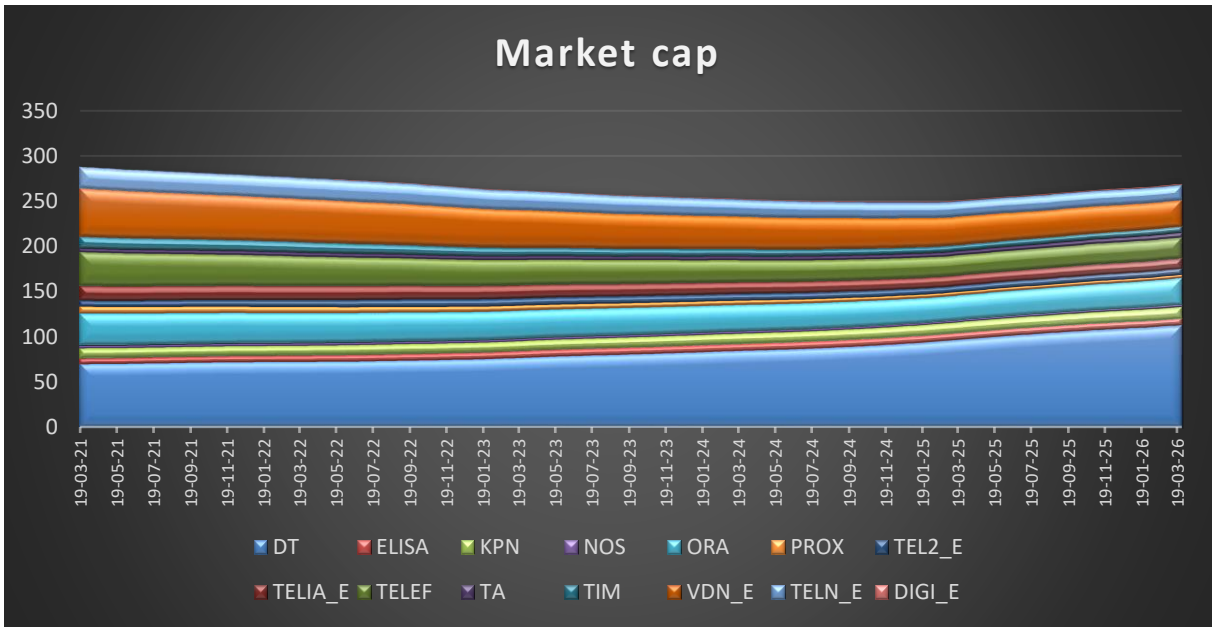


Table 10 Gearing evolution (2020 - 2026)

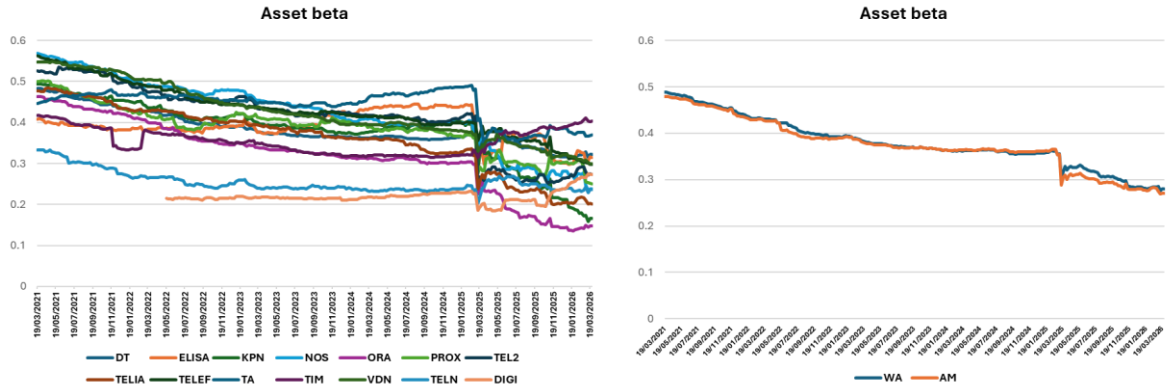
Company	2020 BoR(20)116	2021 BoR(21)86	2022 BoR(22)70	2023 BoR(23)90	2024 BoR(24)102	2025 BoR(25)64	2026 BoR(26)72
Deutsche Telekom	42.57%	48.85%	52.69%	56.15%	58.08%	57.78%	54.08%
DIGI			66.60%	70.90%	72.83%	71.25%	60.72%
Elisa	13.51%	13.61%	13.28%	13.04%	12.57%	12.62%	13.51%
KPN	38.75%	39.12%	38.55%	38.18%	35.62%	34.44%	32.18%
NOS	25.80%	31.90%	35.39%	38.02%	41.31%	43.09%	42.13%
Orange	43.99%	50.19%	50.58%	54.09%	56.68%	57.61%	56.46%
Proximus	19.48%	23.02%	26.66%	31.96%	38.78%	47.17%	53.88%
Tele2	16.64%	21.32%	22.41%	23.85%	25.41%	25.90%	24.56%
Telecom Italia	63.80%	68.24%	70.52%	75.02%	78.06%	76.52%	71.15%
Telefónica	50.39%	55.29%	58.01%	60.70%	62.75%	63.73%	62.02%
Telekom Austria	41.82%	37.66%	34.35%	33.27%	33.11%	30.99%	28.66%
Telenor		27.04%	29.71%	34.58%	36.23%	36.14%	34.04%
Telia Company	34.10%	35.81%	36.27%	37.70%	40.70%	41.60%	40.39%
Vodafone Group	45.77%	48.26%	50.06%	55.62%	61.17%	64.01%	64.40%
WA (information only)		45.32%	47.07%	50.26%	52.56%	52.99%	51.19%
AM (information only)	36.95%	39.22%	42.42%	45.36%	46.66%	47.35%	45.58%

	Delta 2021-2020	Delta 2022-2021	Delta 2023-2022	Delta 2024-2023	Delta 2024-2025	Delta 2025-2026	Total
Deutsche Telekom	6.28%	3.84%	3.46%	1.93%	-0.30%	-3.70%	11.51%
Digi			4.30%	1.93%	-1.58%	-10.53%	-5.88%
Elisa	0.10%	-0.33%	-0.24%	-0.47%	0.05%	0.89%	0.00%
KPN	0.37%	-0.57%	-0.37%	-2.56%	-1.18%	-2.26%	-6.57%
NOS	6.10%	3.49%	2.63%	3.29%	1.78%	-0.96%	16.33%
Orange	6.20%	0.39%	3.51%	2.59%	0.93%	-1.15%	12.47%
Proximus	3.54%	3.64%	5.30%	6.82%	8.39%	6.71%	34.40%
Tele2	4.68%	1.09%	1.44%	1.56%	0.49%	-1.34%	7.92%
Telecom Italia	4.44%	2.28%	4.50%	3.04%	-1.54%	-5.37%	7.35%
Telefónica	4.90%	2.72%	2.68%	2.05%	0.98%	-1.71%	11.62%
Telekom Austria	-4.16%	-3.31%	-1.08%	-0.16%	-2.12%	-2.33%	-13.16%
Telenor		2.67%	4.87%	1.65%	-0.09%	-2.10%	7.00%
Telia Company	1.71%	0.46%	1.42%	3.00%	0.90%	-1.21%	6.28%
Vodafone Group	2.49%	1.80%	5.56%	5.55%	2.84%	0.39%	18.63%
WA (information only)		1.75%	3.18%	2.30%	0.43%	-1.80%	7.67%
AM (information only)	2.27%	3.20%	2.95%	1.30%	0.68%	-1.77%	10.40%

Looking at the asset beta in Table 11 a corresponding decrease can be seen due to a combination of a general decrease of the equity beta in combination, contrary to the past, with a decrease of the corresponding gearing. This means that a reduced systematic risk for the

sector, on average, is perceived in a context where the level of investments is still significant[91]: on average for 2025, the ratio between capital expenditure and revenues is still high equal to 15.5% when it was 15.8% in 2024. This is not far from the average of the last 10 years of ar. 16% for the peer group as a whole.[92]

Figure 4 Asset beta (five time windows) of all the peers, and averages (WA, AM)



With a perspective of long run data, the level of increased gearing due to the increase of debt and reduced corresponding market capitalisation for most of the operators in past years were not offset by a more relevant increase of the corresponding equity beta that instead is still decreasing for the majority of operators as shown before. When the outcome was mainly attributable to the years 2020 and 2021 coinciding with the pandemic shock that intensified the lesser perceived systematic risk for the telecom sector compared to all other sectors of the economy. This situation is still present and is even exacerbated in the macro-economic crisis in comparison to other sectors of the economy. This is confirmed by looking at new data reported in the present report. This might signal that long-term investors such as pension or infrastructure fund managers are looking for opportunities, which might facilitate funding of VHCN infrastructure investments for utilities (facilitating the achievement of connectivity targets in Europe).

Table 11 Asset beta evolution (2020 - 2026)

Company	2020 BoR (20) 116	2021 BoR (21) 86	2022 BoR (22) 70	2023 BoR (23)90	2024 BoR (24) 102	2025 BoR (25) 64	2026 BoR (26) 72
Deutsche Telekom	0.57	0.48	0.43	0.38	0.36	0.37	0.32
DIGI Communications			0.22	0.22	0.21	0.21	0.27
Elisa	0.52	0.41	0.38	0.38	0.43	0.42	0.31
KPN	0.48	0.49	0.44	0.39	0.38	0.37	0.17
NOS	0.6	0.57	0.49	0.45	0.41	0.37	0.24
Orange	0.52	0.44	0.40	0.34	0.31	0.30	0.15
Proximus	0.62	0.5	0.41	0.41	0.39	0.36	0.25

[91] This is also confirmed looking more deeply into the balance sheets data as reported in the Annex 3 at least in dynamic terms.
[92] See Appendix III

Tele2	0.69	0.52	0.47	0.43	0.42	0.42	0.27
Telecom Italia	0.47	0.42	0.38	0.35	0.31	0.33	0.4
Telefónica	0.58	0.56	0.49	0.44	0.41	0.40	0.3
Telekom Austria AG	0.45	0.47	0.48	0.47	0.48	0.50	0.37
Telenor		0.33	0.26	0.24	0.23	0.24	0.24
Telia Company	0.53	0.48	0.43	0.39	0.36	0.32	0.2
Vodafone Group	0.49	0.52	0.50	0.44	0.39	0.37	0.3
WA (information only)		0.48	0.43	0.38	0.36	0.36	0.28
AM (information only)	0.53	0.47	0.41	0.38	0.36	0.36	0.27

Company	Delta 2020-2021	Delta 2021-2022	Delta 2022-2023	Delta 2023-2024	Delta 2024-2025	Delta 2025-2026	Total
Deutsche Telekom	-0.09	-0.05	-0.05	-0.02	0.01	-0.05	-0.25
DIGI Communications			-0.01	-0.01	0.00	0.06	0.04
Elisa	-0.11	-0.03	-0.01	0.05	-0.01	-0.11	-0.22
KPN	0.01	-0.05	-0.04	-0.01	-0.01	-0.2	-0.3
NOS	-0.03	-0.08	-0.04	-0.04	-0.04	-0.13	-0.36
Orange	-0.08	-0.04	-0.06	-0.03	-0.01	-0.15	-0.37
Proximus	-0.12	-0.09	0.00	-0.02	-0.03	-0.11	-0.37
Tele2	-0.17	-0.05	-0.04	-0.01	0.00	-0.15	-0.42
Telecom Italia	-0.05	-0.04	-0.03	-0.04	0.02	0.07	-0.07
Telefónica	-0.02	-0.07	-0.05	-0.03	-0.01	-0.1	-0.28
Telekom Austria	0.02	0.01	-0.01	0.01	0.02	-0.13	-0.08
Telia Company	-0.05	-0.05	-0.04	-0.03	-0.04	0	-0.21
Telenor		-0.07	-0.03	-0.01	0.01	-0.12	-0.22
Vodafone Group	0.03	-0.02	-0.07	-0.05	-0.02	-0.07	-0.2
WA (information only)		-0.05	-0.05	-0.02	0.00	-0.08	-0.2
AM (information only)	-0.06	-0.06	-0.03	-0.01	-0.01	-0.09	-0.26

6. ERP

6.1. Definition and data sources used

Like the RFR, the ERP is a parameter reflecting general macro-economic conditions. The ERP is the expected return on equities over and above the RFR, in other words, the expected additional reward (**premium**) for holding equities that entail a higher risk compared with the interest for holding risk-free assets. It compensates for the added risk of investing in equity rather than in a risk-free asset.[93]

The Commission follows a notional approach and considers it appropriate to calculate **a single EU-wide ERP using historical series** of market premiums in EU member states.[94] According to the Commission, estimating a single EU-wide ERP is consistent with empirical evidence suggesting that financial markets in the EU are increasingly integrated and therefore have convergent ERPs, which also is likely to ensure consistency with the CAPM assumption that investors hold an efficient portfolio and therefore should be rewarded only for non-diversifiable risks.[95]

Starting in 2021 BEREC also estimated a separate EU/EEA ERP including data for the exclusive use by Norway (Nkom) and Iceland (ECOI). In the 2023 and 2024 reports the DMS data for Switzerland were included in the country tables for information only for the National Office for Communication (AK) in Liechtenstein.[96] Due to the missing government bond market in Liechtenstein as well as the lack of an own country stock exchange this data is not included in the estimation of the notional EU-EEA ERP.

In the following part, the data used is described. Given that the calculation of the ERPs is based on the LBS data set, as updated for 2026[97], and the data derived from Bloomberg using

[93] Cf. Notice, para. 37, SWD, p. 46
[94] Cf. Notice, para. 38, SWD, p. 60 and section 5.2.3.2.
[95] Cf. Notice, para. 38, SWD, p. 60 and below 6.2.
[96] The DMS data for Switzerland can be used as a reference for Liechtenstein as Liechtenstein has a currency and a customs treaty with Switzerland, thus the Swiss Franc has been the currency of Liechtenstein since 1924 providing for a number of similarities with the Swiss economy. Hence, the DMS data for Switzerland can be regarded as a proxy for the national Liechtenstein ERP value and is provided for information for the NRA of Liechtenstein, the national Office for Communication (AK).
[97] The database in use by BEREC is the latest available through DMS London Business School (LBS) – March 2026. This version of DMS data updates the previous version dated March 2025. The estimations available in the 2026 UBS Global Investment Returns Yearbook 2026 are based on this new version of the raw data time series, since DMS continually updates and improves the series, including revising historical data series. Since 2021 DMS data series have been updated to the current year. In 2020 the relevant Bond Total Return time series of the following countries have been adjusted: Belgium (since 1991), Denmark (since 1991), Finland (since 1996), France (since 1985), Germany (1995), Ireland (since 1999), Italy (since 1994), Netherlands (1985), Portugal (1999), Spain (1995) and Sweden (1991). The main change in the 2022 data series distributed by Morningstar was the inclusion of Greek data with the Bond Total Return index starting from 1992 and the Equity Total Return index from 1953). In the 2024 Year book the Equity return time series of Finland from 1913 until 1981 in line with the new publication in 2024 from Vaihekoski have been updated. The database of March 2025 updates only the value used in the 2024 BEREC Report, without any other adjustments of the time series relevant for BEREC's parameter estimations. In the 2026 dataset, Total Equity Returns have been revised compared with the 2025 time series used for BEREC purposes for the following countries: AT (from 1990), BE (from 2012), and ES (from 1900–1963 and from 1990 onward).

the implied pricing method, the details of both the data used and the calculations based on it are described in this section (6.1). In section 6.3., the construction of the BEREC EU index with the BEREC weighting method based on the results of section 6.1. for each EU member state is explained. Finally, section 6.4 provides the detailed description of the "available years" weighting to "merge" data series of different lengths and its application. Section 6.5. displays and analyses the result.

For the calculation of a single EU-wide ERP and an EU/EEA ERP, BEREC retrieves data from the 2026 LBS data set, which contains the so-called DMS Global Returns Data (DMS in the following).[98] This dataset contains historical time series from 1900 – 2025 for the following 13 EU member states: Austria, Belgium, Denmark, Finland, France, Greece, Germany, Ireland, Italy, Netherlands, Portugal, Spain and Sweden and additionally for the EEA country Norway. For Iceland and other countries not included in the DMS data, the Implied Pricing Method has been applied with data retrieved from Bloomberg.

The DMS data consists of historical series of market premiums in the EU member states and Norway referred to above.[99] The DMS data is designed to measure the very long-run performance of equity (stocks) and bonds, and on this basis estimates the ERP an investor can expect to earn when investing in equity compared to holding risk-free assets. It is compiled by using best quality stock and bond indices and compiles long-run returns for each national market.[100]

The DMS database comprises annual returns for 35 countries in local currencies and USD of the following main quantities: i) Nominal Equity Total Return; ii) Nominal Bond Total return; iii) Nominal Bill Total return; iv) Nominal Equity Premium Vs Bond; v) Nominal Equity Premium Vs Bill.[101]

For Bond Total Returns, the following time series have been revised: the ES series has been adjusted (from 1900 to 1994). More specifically, the following updates have been implemented:
i) for AT, from 1990 onward, the yield on the VSE's ATX Prime Index has been replaced with the S&P Austria BMI Index;
ii) for BE, since 2012, the "Belgium All-Share Index" has been replaced with the "STOXX Belgium Index";
iii) for Spain, the equity returns previously based on the index reported in Valbuena (2000), sourced from Bolsa de Madrid, have been replaced with the H-IBEX equity index from Battilossi, Houpt, and Artola Blanco (2026), which uses hand-collected data from Bolsa de Madrid.
For ES bond returns from 1900 to 1994, earlier sources have been replaced with the bond series from Battilossi, Houpt, and Artola Blanco (2026).

[98] Dimson/Marsh/Staunton (DMS) data, as published in the *Global Investment Returns Yearbook 2026* UBS/London Business School; a *Summary Edition of the UBS Global Investment Returns Yearbook 2026* is available here: https://www.ubs.com/global/en/investment-bank/insights-and-data/articles/global-investment-returns-yearbook-2026.html. The data source is Dimson/Marsh/Staunton, Global Investment Returns Database 2026.

[99] as well as data for other countries namely UK, USA, Argentina, Australia, Brazil, Canada, Chile, China, Hong Kong, India, Japan, Malesia, Mexico, New Zealand, Russia, Singapore, South Africa, South Korea, Taiwan, Thailand, and Switzerland. Together they represent 98 % of world equity market capitalization at the beginning of 1900. Together, these 35 countries cover 98 % of the investable universe at the beginning of 2026.

[100] For more details on the data sources used and methods applied to construct the historical global investment returns series see Dimson/Marsh/Staunton, Triumph of the Optimists: 101 Years of Global Investment Returns (2002), Dimson/Marsh/Staunton, Equity Premia Around the World, LBS 2011, available here: https://ssrn.com/abstract=1940165. The indices are described in Dimson/Marsh/Staunton, UBS Investments Returns Yearbook 2026 (available from London Business School (LBS)).

[101] The time series also list for each country the Maturity premium, Equity Capital Gain, Inflation, Exchange rates with USD and Real evaluation.

For a better understanding of BEREC's calculation (see 6.3 and 6.4) based on the data series available it is relevant to explain three aspects of the DMS data:

i) General methodologies of the DMS data series;
ii) Equity Risk Premium evaluated for the "Europe Index" as provided in the UBS Yearbook[102];
iii) Equity Risk Premium of the relevant 13 EU member states plus Norway where time series are available.

i) The General methodologies of the DMS data series[103]

The DMS database includes annual returns and is based on the best-quality capital appreciation and income series available for each country, drawing on previous studies and other sources. To span the entire period from 1900, DMS has linked multiple index series. The best index is chosen for each period, switching, when feasible, to better alternatives, as they become available. Other conditions being equal, DMS has chosen equity indexes that provide the broadest possible coverage of market of each country. Virtually all DMS equity indexes are capitalisation weighted and are calculated from year-end stock prices, but in the early years, for a few countries, DMS was forced to use equally weighted indexes or indexes based on average- or mid-December prices. All the security returns include reinvested gross (pre-tax) income as well as capital gain.

The guiding principle of the index selection was to avoid survivorship[104], success, look-ahead[105], or any other form of ex post selection bias. The criterion was that each index should follow an investment policy that was specifiable in advance, so that an investor could have replicated the performance of the index (before trading costs) using information that would have been available at the time.[106] The conventional view of the historical equity premium is that, at the start of each period, investors make an unbiased, albeit inaccurate, appraisal of the end-of-period value of the stock market. Consequently, the ex-post premium, averaged over a sufficiently long interval, is expected to be a relatively accurate estimate of investors' expectations. At the same time the historical premium may nevertheless be materially biased as a proxy for expectations because the past was in some sense unrepresentative.

[102] The UBS Yearbook 2026 (which contains the DMS results in hard copy, the underlying DMS data is included in the LBS data set 2026 as a soft copy). The data source is Dimson/Marsh/Staunton, Global Investment Returns Database 2026 (distributed by LBS).
[103] The following explanations are mainly based on publicly available descriptions of the compilation of the DMS data, see Elroy Dimson, Paul Marsh, and Mike Staunton, "The Worldwide Equity Premium: A Smaller Puzzle"; Chapter 11 in "Handbook of the equity risk premium", editor Rajnish Mehra 2008, and Dimson/Marsh/Staunton Global Returns Data (DMS Global) Documentation; see also Dimson/Marsh/Staunton, Triumph of the Optimists: 101 Years of Global Investment Returns (2002), Dimson/Marsh/Staunton, Equity Premia Around the World, LBS 2011, available here: https://ssrn.com/abstract=1940165.
[104] Survivorship bias is the logical error of concentrating only on the capital that is related to the present, making it past, and using some selection process and overlooking the capital that didn't have effects on the present. This can lead to false conclusions in several different ways.
[105] Look-ahead bias occurs by using information or data in a study or simulation that would not have been known or available during the period being analysed.
[106] Elroy Dimson, Paul Marsh, and Mike Staunton "The Worldwide Equity Premium: A Smaller Puzzle" Chapter 11 in "Handbook of the equity risk premium" editor Rajnish Mehra 2008.

The DMS bond indexes are based on government bonds that can be of different maturity, characteristic depending on the emitted product available along the time series for each country. They are usually equally weighted and chosen to fall within the desired maturity range. Generally long-term bonds are targeted, but where these are not available, either perpetual (usually for earlier periods) or shorter maturity bonds are used.

The Equity Risk Premium provided in the year book is estimated from the arithmetic difference between the logarithmic return on equities and the logarithmic return on the riskless asset. Equivalently, DMS defines 1 + Equity Premium to be equal to 1 + Equity Return divided by 1 + Riskless Return. Defined in this way, the Equity Premium is a ratio and therefore has no units of measurement. It is identical if computed from nominal or real returns, or if computed from dollar or euro returns.[107]

Each index starts from 1899 with a base index 1 and comprises data from 1900 – 2025, i.e. 126 years.

ii) The Global indexes: "World Index" and "Europe Index" from DMS time series.

In the DMS data base four Global indexes are included: the "World Index",[108] the "Europe Index", the "Developed Market Index" and the "Emerging Markets Index".

All this composite index is in common currency (here taken as US dollars), so that, for each period, they take each market's local-currency return and convert it to US dollars.

The **"World Index"** comprises 23 countries (including Russia[109] and China) plus 9 countries that were added in the 2021 Yearbook and 3 new countries listed in the 2022 Yearbook[110]. It is evaluated in common currency (USD) for both equity and bond. This year, DMS assumes that at the beginning of each year the investor bought a portfolio of the 23+9+3+55[111] countries weighting each country by its size. The "World equity index" is obtained through a weight based on the market capitalization[112] of each of the 23+9+3+55 countries. The "World bond market index" is obtained through a weight based on country GDP of each of the 23+9+3[113] countries. The approach used in order to include a country is to avoid survivorship bias, in the sense that the index also includes this country when it registered a total loss (e.g. 1917 for Russia and 1949 for China), and re-enters the indexes when their market reopened in the early 1990ies.

For the **"Europe Index"** the approach is the same; it includes the 16 original countries, the equity index and the bond index are evaluated in a common currency (USD), so local currency

[107] The time series are provided in local currency and in USD.
[108] There is also a derived composite index World excluding US.
[109] In 2022, sanctions and capital controls linked to the Russian invasion of Ukraine meant that most global investors could no longer access their holdings in Russian stocks and bonds, Therefore, following the major index companies (MSCI, S&P and FTSE Russell) in removing Russia, DMS also removed Russia from the composite equity and bond indices from 2022 onwards.
[110] **Greece**, Chile and Argentina have been included since the 2022 Yearbook.
[111] The equity index includes new countries when the data become available. The 2022 World Equity index includes 55 other countries where data is available.
[112] The market capitalization is included considering a free float adjustment from 2001.
[113] The bond index includes also 9+3 new countries of 2021 and 2022, but doesn't include the 55 other countries since in this case the data is not available.

returns are converted to US dollars. In each period it is assumed that the investor bought 16 positions[114] portfolio composed of the following 16 countries: Austria, Belgium, Denmark, Finland, France, Germany, Ireland, Italy, The Netherlands, Norway, Portugal, Russia, Spain, Sweden, Switzerland and the UK.[115]

The equity risk premium is always evaluated as the ratio of the equity return and bond return, considering a logarithmic difference. In this way the equity risk premium is independent with respect to an evaluation done in nominal or real terms as the adjustment due to inflation to estimate real evaluation of each component, Equity and Bond, is netted off. The equity risk premium is independent also with respect to the currency as, also in this case, the adjustment applied through exchange rates to convert the Equity and Bond index to the desired currency is netted off.

Switzerland, Russia and the UK, in the "Europe Index" are not relevant for BEREC's calculation of an EU-wide ERP; moreover, Norway is now included in the calculation of an EU/EEA-ERP for EEA notification purposes only. The updated "Europe Index" is published in the UBS Investment Returns Yearbook 2026, but no longer appears in the free Summary edition.[116]

For the "Developed Market Index" and the "Emerging Market Index" DMS identify whether a market was developing or emerging at each year in the past based on GDP per capita. The "Developed Market Index" at the end of 2024 thus contains the following countries: Australia, Austria, Belgium, Canada, Denmark, Finland, France, Germany, Ireland, Italy, Japan, Netherlands, New Zealand, Norway, Portugal, Spain, Sweden, Switzerland, UK, US, Hong Kong, Singapore, Luxemburg and Israel while the "Emerging Market Index" contains China, South Korea, Taiwan, India, Brazil, South Africa, Russia, Saudi Arabia, Thailand, Mexico, Malaysia, Indonesia as well as 14 smaller markets.

iii) The Equity Risk Premium of the relevant 13 EU member states + Norway from DMS time series.

The UBS Global Investment Yearbook 2026 reports the following values in terms of arithmetic mean (AM) and geometric mean (GM): nominal annual Equity and Bond returns in local currency.[117]

[114] Greek data starts only in 1953.
[115] The European index starts from 1899 with 16 countries and increases to 35 countries over the years when data becomes available by 2022.
[116] See below for a comparison of the UBS "Europe Index" with the BEREC EU27-ERP.
[117] The data source of this table is Dimson/Marsh/Staunton, Global Investment Returns Database 2025 (distributed by LBS).

Table 12 Equity risk premium 13 EU member states plus Norway (DMS)[118]

Country	Equities		Bonds		Equities vs Bonds	
	GM	AM	GM	AM	GM	AM
Austria	13.2%	27.8%	7.5%	17.2%	3.6%	21.5%
Belgium	7.7%	10.1%	5.0%	5.5%	2.6%	4.7%
Denmark	9.4%	11.3%	5.5%	6.1%	3.7%	5.4%
Finland	12.5%	16.1%	6.4%	6.7%	5.7%	9.3%
France	10.3%	12.7%	6.4%	6.9%	3.6%	5.9%
Germany	8.3%	13.1%	2.8%	4.8%	5.4%	8.6%
Greece	13.1%	21.9%	7.6%	10.8%	-3.5%	2.9%
Ireland	8.7%	11.1%	5.2%	6.0%	3.3%	5.3%
Italy	10.4%	14.3%	6.7%	7.2%	3.5%	6.8%
The Netherlands	8.1%	10.2%	4.2%	4.5%	3.8%	6.0%
Portugal	10.9%	15.8%	5.3%	6.3%	5.4%	9.4%
Spain	9.4%	11.3%	6.5%	6.8%	2.7%	4.4%
Sweden	9.5%	11.6%	5.7%	6.2%	3.6%	5.8%
Norway	8.3%	11.0%	5.1%	5.5%	3.0%	5.8%
Liechtenstein (Switzerland)	6.8%	8.4%	4.2%	4.4%	2.4%	3.9%

The values reported in the UBS Yearbook refer to the time series from 1899 until 2025 for the index that is equal to 1 in 1899. The corresponding annual return for each year is evaluated from 1900 to 2025 as ((P_t/P_t-1)-1) with P_t the index value of the corresponding year "t" return.

The premium values Equity vs Bond are evaluated as averages (arithmetic/geometric) from the return evaluated as (1+Equity Annual return_t)/(1+Bond Return_t)-1.

The values reported in Table 12 are rounded from the first decimal place as in the UBS Yearbook and recalculated from the DMS data distributed by LBS acquired by BEREC Office for BEREC. For the 12 EU member states + Norway the time series for Equity and Bond annual return are complete from 1900-2025, the only exceptions are Austria, Germany and Greece[119].

[118] ERPs as notified by the NRAs may differ from the ones provided in the table.

[119] For Austria the Equity Risk Premium excludes the averages (AM and GM) for the hyperinflationary years 1921 and 1922, instead the values for the corresponding nominal Equity and Bond index are maintained. For Germany the nominal return and the corresponding Equity Risk Premium are evaluated excluding hyperinflation years 1922 and 1923. For Greece the return series index starts from 1954 for the Equities and from 1993 for Bonds and the corresponding Premium.

iv) The Equity Risk Premium of the 14 EU member states plus Iceland not included in the DMS data calculated with the implied pricing method

For Iceland and the 14 EU member states that are not contained in the LBS data set, i.e. Bulgaria, Croatia, Cyprus, Czechia, Estonia, Hungary, Latvia, Lithuania, Luxembourg, Malta, Poland, Romania, Slovakia, and Slovenia relevant data were retrieved from Bloomberg and calculated according to a method applied by the CFA Institute (Charted Financial Analysts, which is an association of investment professionals)[120]. The calculation, which could be referred to as an **Implied Pricing Method**, is based on the following three steps. First, the main equity index is identified for each market and with the annual P/E (ratio of the price of stock and a company's earnings per share) for each index retrieved from Bloomberg it provides a valuation of each equity market.[121] Secondly, the inverse of the P/E ratio (1/(P/E)) is calculated, which is the earnings yield. It is the percentage of how much a company earns per share, which in this case is how much all stocks in the index earn. This reflects the return on investing in equity. The third step is to subtract a total bond return index from the earnings yield, which gives the equity risk premium on an annual basis. As done for DMS time series the differences is calculated as difference between the logarithmic return on equities and the logarithmic return on the riskless asset through the following formula (1+Equity Annual return_t)/(1+Bond Return_t)-1.

The historical returns series thus assembled cover only a shorter period (see Table 13) due to missing long-term (liquid) financial markets because financial markets did not exist in most of the countries prior to joining the EU.[122] This lack of data is a consequence of the planned economy and can therefore not be remedied – where there is no market and consequently no data it cannot be "invented". BEREC therefore had to find a robust, transparent and not overly complicated way to "merge" historical data series with different lengths without however making a methodological mistake resulting in a systematic over- or underestimation of one or the other values, i.e. misrepresenting longer and shorter historic returns series. The solution (the so-called "available years"-weighting) is described in more detail in section 6.4.

In the following part the information about the other EU member states is given separately. In this case the source of data for Equity comes from the implied pricing method time series, about the P/E ratio[123] evaluated in relation to Equity relevant market index of each country. For

[120] Comparability and consistency with the Morningstar data has been assured (using the same definition to build the indices etc.). Source: Jason Voss, What the equity risk premium tells us today, Financial Times, FT, November 7, 2011.

[121] For the purpose of the Equity index the adjusted positive Price/Earnings ratio has been considered, calculated as the ratio of the last price divided by the positive Earnings per Share. The figure used is the ratio of an index's price (last price of the whole index of the country equity market) divided by Positive Earnings per share before extraordinary items. The Positive Earnings per share provides an index calculated as the sum of positive earnings before extraordinary items for member companies by the index divisor. Index member companies with negative earnings before extraordinary items are excluded from the calculation and the index divisor is adjusted to exclude those companies. For the Positive earnings per share the annual figure has been used and when missing the trailing 12M Earnings per Share value for each equity has been considered (i.e. 12M Earnings per Share is the sum of the most recent 12 months, four quarters, two semi-annuals information) as second best.

[122] This applies to Central and Eastern European countries. For the smallest EU member state, Malta and Luxembourg, data is still not available for other reasons.

[123] The price-to-earnings ratio or P/E is one of the most widely-used stock analysis tools used by investors and analysts for determining stock valuation. In essence, the price-to-earnings ratio indicates the amount of dollar an

the bond component a specific index of government bond for each country has been considered as reported in Annex 4. These time series, on average, span more than 15 years. All data has been derived from Bloomberg. The result is shown in Table 13.[124]

Table 13 Equity risk premium 12 EU member states plus Iceland (non DMS)

Country	Mean returns in % p. a.						Time series
	Nominal Equities		Nominal Bonds		Premium Equities vs Bonds		
	GM	AM	GM	AM	GM	AM	
Bulgaria	13.44%	13.63%	3.07%	3.40%	10.06%	10.73%	2006-2025
Croatia	7.92%	7.96%	3.02%	3.20%	4.76%	4.93%	2006-2025
Cyprus	21.51%	22.37%	0.97%	1.36%	20.34%	21.17%	2015-2025
Czechia.	8.67%	8.69%	3.32%	3.63%	5.17%	5.53%	2006-2025
Estonia	6.13%	6.14%	-0.28%	0.26%	6.43%	7.01%	2021-2025
Hungary	9.46%	9.52%	4.34%	4.77%	4.91%	5.56%	2001-2025
Latvia	10.54%	10.61%	1.27%	1.66%	9.16%	9.90%	2005-2025
Lithuania	8.82%	8.84%	3.32%	3.71%	5.32%	5.81%	2005-2025
Luxemburg[125]							No data available
Malta							No data available
Poland	8.75%	8.78%	5.41%	5.85%	3.16%	3.77%	2001-2025
Romania	11.79%	11.88%	2.11%	2.54%	9.48%	10.13%	2006-2025
Slovakia	7.89%	7.90%	3.47%	3.80%	4.27%	4.63%	2005-2025
Slovenia	9.07%	9.12%	3.11%	3.41%	5.78%	6.29%	2005-2025
Iceland	6.35%	6.35%	0.61%	1.53%	5.70%	7.00%	2009-2025

investor can expect to invest in a company in order to receive one dollar of that company's earnings. This is why the P/E is sometimes referred to as the price multiple because it shows how much investors are willing to pay per dollar of earnings. However, Bloomberg is adjusting the data series over time (also retroactively) which may lead to variations not rooted in "observed" variations. More specifically this is due to the fact that the P/E ratio is linked to an index (country Stock Exchange Index) and it is subject to periodic rebalancing, which can affect both the numerator and the denominator in different way. Structural changes such as adjustments to index constituents or corporate actions can shift the aggregate market value. BEREC always used the most recent available data at the time of the estimation, as Bloomberg applies a constant basket approach (based on the latest composition), meaning that the entire historical series may be revised when changes occur.

As in the case of the DMS/LBS data, BEREC does not make adjustments to the Bloomberg data.

[124] ERPs as notified by the NRAs may differ from the ones provided in the table. Among other things this is due to the fact that BEREC's estimation is based on a bottom-up approach where the outcome is affected by the fact that only limited data is available, i.e. the time series are relatively short compared to the long time series with data for 125 years for the 12 EU member states (123 for Germany) originally included in the DMS data.

[125] The information on earnings per share (ERP) is no longer supported on the Bloomberg platform for the Luxemburg equity index, so the implied pricing method cannot be applied with updated information. Due to the fact that the European ERP is not significantly affected whether Luxemburg data is included or excluded in the whole data set, the information has been removed from the aggregated index.

6.2. Methodology with reference to Notice

BEREC follows the methodology outlined in section 4.2 of the Notice and described in more detail in section 5.2.3.2 of the SWD[126], i.e. it uses historical returns series of DMS data for 13 EU member states (listed above, including Greece) plus Norway and shorter historical returns series assembled by using the implied pricing method with data from Bloomberg for 13[127] EU member states plus Iceland not included in the Morningstar data set (see above).

Therefore, BEREC cannot simply use an "off-the-shelf" European ERP as calculated by DMS, as the countries included in their (Old World) "Europe" Index[128] deviate from the EU member states that are relevant for BEREC's calculation of an EU-wide ERP. To our best knowledge, alternative off-the-shelf European ERP estimations are not available. Consequently, BEREC has estimated its own EU-wide ERP by applying a second weighting to reflect the limitation of data availability, which is different for the two groups of EU member states as outlined above. That also explains the difference to the "Europe" ERP shown in Table 21 of the SWD[129] and the result (an EU-wide ERP) estimated by BEREC exhibited in Table 16 in section 6.5.

The Notice provides guidance on how the ERP should be estimated. In line with general portfolio theory which makes the assumption that investors were perfectly diversified over the world, it would make sense to measure a "worldwide" ERP. The Commission approach to a single EU-wide ERP is based on the idea of a single EU capital market and assumes an investor with an EU perspective holding an efficient portfolio of assets in EU member states. Therefore, the single EU-wide ERP is to be estimated based on appropriate data from all EU member states (and from EU/EEA countries for the separate EU/EEA-wide ERP).

6.3. Assumptions and choices made

In order to calculate a single EU-wide ERP a sound approach of using longer (for 13 EU member states, including Greece plus Norway) and shorter (for 12 EU member states plus Iceland) historical data series in one calculation without a systematic bias. The solution is to apply a weighting reflecting the length of the available historical data series – the so-called **"available years"-weighting** as described below in section 6.4.

For 13 EU member states plus Norway (listed above in Table 12) the estimation of the EU-wide ERP (and EU/EEA-ERP resp.) is based on the DMS historical returns series acquired by BEREC for 2024. These series do not cover the remaining 14 EU member states plus Iceland (listed above in Table 13). For these member states the estimation has been carried out

[126] SWD, pp. 65.
[127] Greece has been included in the DMS data set since 2021.
[128] Which comprises the following 16 countries: Austria, Belgium, Finland, France, Germany, Ireland, Italy, the Netherlands, Portugal, Spain, Denmark, Sweden, Norway, Switzerland, UK and Russia. It is therefore not comparable with the EU-wide ERP calculated by BEREC.
[129] SWD, p. 66. Table 21 shows values for the period 1900 – 2010, i.e. is outdated. BEREC calculates the EU-wide ERP value using data until 2024.

considering for the equity return time series provided by the implied pricing method using Bloomberg, for the bond market compound index based on long term government bond has been used. In the index selection, inflation index linked bonds have been omitted where possible and using local currency indexes composed by long term bonds. The time series of these countries have been included in the estimation from 2001 at the earliest where available.[130] The relative weighting of these time series addresses a selection bias that may occur if countries with shorter data series are included.[131]

Following the Notice, BEREC provides an **EU-wide ERP** that is a weighted average of the ERP using DMS historical time series for 12 EU member states plus Norway from 1900 and using DMS historical time series for Greece with a time series of the equity return starting from 1954 and for the bond return from 1993. In line with the approach used by DMS, all relevant countries are fully included in the composite indexes once data becomes available and for 12 EU member states plus Iceland, where data is available, not included in the DMS time series available with the implied pricing method using Bloomberg starting from 2001 at the earliest up until 2025 at the latest.[132] The **equity component** of the new (BEREC) EU index will be derived considering **market capitalisation** of each country (market size) in line with the global indexes constructed by DMS and a **GDP** weight for deriving the **bond component**.[133]

Using a weight for equity that takes into account market capitalisation is in line with the efficient market hypothesis[134] and with the general assumption that the weighted average market capitalisation is the optimal method of asset allocation, as it reflects the actual behaviour of markets. In this way, larger equity markets tend to have a greater influence over the index, just as is the case of modern Index construction. This leads to a natural rebalancing mechanism where a growing equity market is more influential in the index.

Market capitalisation weighted indices reflect the available investment opportunity set in public equity markets. By design, they ignore any unlisted companies, whether privately held or state owned, since these are not accessible to the investing public.[135] However, all companies in a country contribute to the economy whether or not they are listed, available to local or foreign investors, private or public. Since the value of this larger universe of companies is not directly observable, the value of the economy, as measured by the GDP, is often used as a reference against which a country's current market capitalisation is contrasted. This is more effective to catch asset allocation probability in the bond market portfolio.

BEREC's approach of applying a **5-year averaging window (2021-2025)** when calculating the weights for equity (with market capitalisation) and for bonds (with GDP) instead of a "year-by-year" weighting (as done by DMS), leads to "fixed weightings along the years" instead of

[130] For more details see section 6.1. above
[131] E. Dimson, P. March, M. Staunton "Survivorship Bias Is Negligible", paragraph 5.4 Chapter 11 Handbook of Equity Risk premium.
[132] For more details see above section 6.1.
[133] The use of Market cap and GDP for the "World Index" and the "Europe Index" have been considered since 2012 by DMS.
[134] The efficient-market hypothesis (EMH) is a hypothesis in financial economics that states that asset prices reflect all available information. A direct implication is that it is impossible to "beat the market" consistently on a risk-adjusted basis since market prices should only react to new information.
[135] GDP Weighting in Asset Allocation 2010 MSCI Research bulletin.

the rebalancing used by DMS.[136] BEREC's method in this way appears to have an upward bias compared to the estimation followed by DMS for the calculation of a "Europe Index" calculated until 2025. However, the sensitivity analysis run by BEREC shows that the difference is not material.[137]

The annual market capitalisation data has been derived from Bloomberg using all outstanding shares that are actively traded, primary securities on the countries' exchanges to avoid double counting. The figure does not contain ETF (Exchange Traded Fund) and ADR (American Deposit Receipt) as they do not represent companies directly. It is evaluated in Euro in line with the GDP weight used for the bond index.[138] The same approach is applied in the UBS Yearbook where the World Equity Index is weighted using market capitalisation free float adjusted from 2001.

The GDP data has been derived from Eurostat in form of current prices in Euro[139].

Overall, these assumptions allow BEREC to calculate a single EU-wide ERP in a robust, transparent and comprehensible way taking into account the limitations with regards to data availability.

6.4. Calculation steps – description of how the result is derived

The first step of the analysis has been carried out considering the following.

As explained in section 6.3 above the weight for the market capitalisation and GDP has been considered as an average over a five-year time window (2021-2025), in line with the beta and RFR estimation. Using a five-year averaging window might slightly overestimate the result compared to using a year-by-year weighting which, for practical reasons (data constraints), was not possible.[140]

The evaluation of the ERP has been estimated using the following assumption.

For each year of the time series BEREC has obtained annual returns for Equity and Bonds in nominal terms:

Equity_EU_t = (Equity return_t_x* Market Capitalization_x+ Equity return_t_y* Market Capitalization_y+…)/(Sum of market capitalization_t) ;

Bond EU_t = (Average Bond_t_x*GDP_x+ AverageBond_y*GDP y_t+.)/(sum of GDP_t).

Along the time line the sum of the denominator takes into account the number of countries that are included in recent years. This is effected via applying a second weighting to compensate for incomplete historic values. This is the **"available years"-weighting** according to the length of the time period of data availability. For the 12 EU member states plus Norway listed in the

[136] i.e. BEREC uses the same weighting *factors* (market capitalisation, GDP), however a different weighting *method* (due to data constraints).
[137] See below section 6.5.
[138] Data is consistent with publicly available: https://data.worldbank.org/indicator/CM.MKT.LCAP.GD.ZS.
[139] https://ec.europa.eu/eurostat/databrowser/view/nama_10_gdp/default/table?lang=en
[140] See below section 6.5.

DMS historical series this would be 126 years[141] divided by the maximum time period available (126), while for Greece the Equity time series started from 1954 with a maximum time period available of 72 years, and the Bond time series started from 1993 with a maximum time period of 33 years; for the remaining 12 EU member states plus Iceland not included in the DMS data set the weight is the number of years for which data is available (2001 at the earliest – 2025) over the maximum time period available, i.e. 25/126). Thus, BEREC is able to incorporate data of different time lengths of all EU member states without over- or understating available data series with different lengths. The formula is shown hereafter:

Equity_EU = (Average Equity_x*Market Capitalization_x*(1)+Average Equity_y*Market Capitalization_y*(y/126)+...)/(market capitalization_x*1+ market capitalization_y*(y/126)+..);

Bond EU = (Average Bond_x*GDP_x*(1) + AverageBond_y*GDPy*(y/126)+...)/(sum for GDP_x*(1)+GDP_y*(y/126)+...).

After obtaining the values of equity and bond returns in nominal terms BEREC has estimated the ERP in coherence with the approach used in the UBS Yearbook, as the difference of logarithm like (1+ Equity_EU)/(1+ Bond_EU)-1 for each point in time. After that BEREC computed the arithmetic average and the geometric average of the new time series established. The ERP is independent from the nominal or real estimation as well as from the currency, due to the fact that BEREC used the ratio of the annual return instead of the difference of the annual return. In this way the adjustment due to nominal or real estimation as well as the currency are not relevant.

Through this approach the time series of the 12 EU member states plus Iceland (not contained in the DMS time series) are integrated in the final average only where data is available for both the bond and equity index.[142] The weights are adjusted year by year taking into account the relevant EU/EEA member states. In the table below, the year in which the time series are included, is also given. The date of inclusion depends on the availability of both equity and bond data. Data is available for all countries (except Malta and Luxembourg) and thus all EU member states (except two) are included.

[141] Or less, if individual years are taken out where the value is an outlier (this is the case for Germany for the two years 1922/1923 of hyperinflation, and the Austrian case for 1921/1922 is derived differently as the data for hyperinflation are excluded only for the premium at single country, not for estimating the Equity and Bond return (see above). Apart from these two exceptions, BEREC did not make adjustments to the historic returns series of DMS/LBS.

[142] The data availability is also a measure of liquidity of the market and so also an indicator of the relevance on representing a likely share in the portfolio.

Table 14 Time series and time weight of 12 EU member states plus Iceland

Country	First year of the time series	Time Weight
Bulgaria	2006	20/126
Croatia	2006	20/126
Cyprus	2015	11/126
Czechia	2006	20/126
Estonia	2021	5/126
Hungary	2001	25/126
Latvia	2005	21/126
Lithuania	2005	21/126
Luxembourg	No data available	
Malta	No data available	
Poland	2001	25/126
Romania	2006	20/126
Slovakia	2005	21/126
Slovenia	2005	21/126
Iceland	2009	17/126

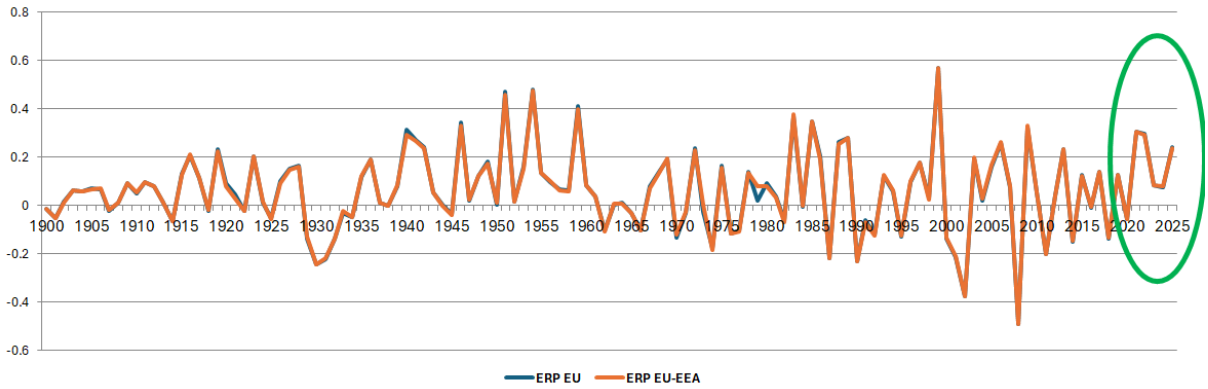
The limitation of the chosen approach is related to the fact that weights are dependent on when data is available for each country. This gives a sort of “look-ahead” bias, as the probability of investing along the years, as market capitalization/GDP has changed over the 100 years. However, this is a trade-off with respect to the data availability which is consistent with the general framework proposed by the Commission.

To estimate the single EU-wide ERP BEREC calculates the arithmetic mean (AM) and the geometric mean (GM). BEREC notes that the Notice and the SWD favour, for transparency reasons, the use of AM. With reference to the other regulatory objectives/principles the SWD is (at best) neutral and rightly points out – in line with financial theory – the drawbacks of an AM (upward bias), in particular with regard to predictability and efficiency.[143] To estimate the ERP on the basis of an AM or GM has been subject to unresolved discussions in financial literature. Blume (1974) has shown that for estimating the end value of longer-term capital investments the arithmetic mean is generally an upward-biased estimator, whereas the geometric mean is a downward-biased estimator.[144] It follows that the AM usually provides the upper boundary of the value, whereas the GM is the lower boundary. For transparency reasons BEREC provides both the GM and the AM.

[143] SWD, section 5.1.2, pp. 36-38.
[144] See also SWD, p. 37/38. For this reason, the USB Yearbook publishes both the AM and the GM.

In the following Figure 5 the time evolution (1900-2025) of the proposed annual returns of the new EU Equity risk premium is shown, including 13 EU member states with long time series and 12 EU member states with shorter time series as described before. In the figure the evolution over time including Norway and Iceland (EEA) is provided. The value has increased compared to last year's EU ERP, mainly due to the sustained rise in the average risk premium observed across most countries since 2021 and 2022. Data for 2024 indicated a stable premium within the historical series, although the level remained slightly above the average estimated in BoR (24) 102. For 2025, however, new data point to a renewed increase, reflecting weaker performance across most Member States' bond market indices. This trend appears to be driven by heightened uncertainty surrounding long-term inflation expectations, linked to geopolitical factors such as the ongoing wars and trade tensions.

Figure 5 Equity Risk Premium 1900-2025 time series



6.5. Results

The corresponding ERP averages are shown below.

Table 15 EU ERP (GM and AM) and EU/EEA-ERP (GM and AM)

	Geometric Mean (GM)	Arithmetic Mean (AM)
EU-ERP	4.80 %	6.15 %
EU/EEA-ERP	4.79 %	6.13 %

While the effect of the 12 EU member states plus Iceland (not included in the DMS data set) is currently moderate, the significance may increase in the future as markets become more mature and considering the fact that the level of GDP and Equity market is likely to increase.[145]

The result of the calculation is shown in Table 16. For each EU member state the GM and the AM is provided (unweighted).[146] BEREC considers that the result is robust based on the data available at this point in time. Only the EU-wide ERP with a value of **6.15 %** (AM) is relevant for NRAs' own estimations.

In addition, a separate EU/EEA-wide ERP average (GM and AM) is calculated. The EU/EEA-wide ERP with a value of **6.13 %** (AM) is a relevant reference only for the two EEA countries Norway and Iceland for EEA notification purposes.

[145] The difference in the arithmetic mean (AM), in absolute terms, is approximately -0.03%, representing a slight increase compared to last year. More specifically, in 2020 the GDP of the non-DMS countries accounted for 12.2% of the GDP of European DMS countries, while their equity market represented only about 3.2% of the European DMS equity market. By 2024, the GDP share of the non-DMS countries had risen to 14.8%, whereas their equity market accounted for approximately 3.7% of that of European DMS countries. This implies that bond returns in non EU-DMS countries have carried relatively greater weight over time compared to equity returns, contributing to a reduction in the corresponding equity risk premium. This finding is consistent with empirical evidence that larger and more developed markets tend to attract more equity capital, as highlighted by the European Central Bank. A similar pattern can be observed in global indices, such as those produced by Dimson Marsh Staunton, where indices excluding the United States typically exhibit a lower equity risk premium than those including it. This reflects the fact that the United States remains by far the largest and most liquid equity market in the world.

[146] Taken from Table 12 and Table 13. ERPs as notified by the NRAs may differ from the ones provided in the table. For the countries not included in the DMS (distributed by LBS) data set, the available years-weighting is taken from Table 14

Table 16 ERP (individual EU/EEA member states)

Country	Geometric Mean (%)	Arithmetic Mean (%)	Available years weight
Austria	3.6%	21.5%	100% (126\126)
Belgium	2.6%	4.7%	100% (126\126)
Bulgaria	4.5%	4.9%	16% (20\126)
Croatia	4.8%	4.9%	16% (20\126)
Cyprus	20.3%	21.2%	9% (11\126)
Czechia	5.2%	5.5%	16% (20\126)
Denmark	3.7%	5.4%	100% (126\126)
Estonia	6.4%	7.0%	4% (5\126)
Finland	5.7%	9.3%	100% (126\126)
France	3.6%	5.9%	100% (126\126)
Germany	5.4%	8.6%	100% (126\126)
Greece	-3.5%	2.9%	57% (72\126)
Hungary	4.9%	5.6%	20% (25\126)
Ireland	3.3%	5.3%	100% (126\126)
Italy	3.5%	6.8%	100% (126\126)
Latvia	9.2%	9.9%	17% (21\126)
Lithuania	5.3%	5.8%	17% (21\126)
Luxembourg	No data available	No data available	
Malta	No data available	No data available	
Netherlands	3.8%	6.0%	100% (126\126)
Poland	3.2%	3.8%	20% (25\126)
Portugal	5.4%	9.4%	100% (126\126)
Romania	9.5%	10.1%	16% (20\126)
Slovakia	4.3%	4.6%	17% (21\126)
Slovenia	5.8%	6.3%	17% (21\126)
Spain	2.7%	4.4%	100% (126\126)
Sweden	3.6%	5.8%	100% (126\126)
Norway	3.0%	5.8%	100% (126\126)
Iceland	5.7%	7.0%	13% (17\126)

Analysis of results

The result of BEREC's calculation presented in this chapter is broadly in line with likely expected findings.

In comparison to last year, the level of ERP is increased significantly with an increase by 0.19 points, in line with the "European ERP" evaluated by DMS with a difference of 0.20 points from 4.59 % (AM, 2025 Yearbook) to 4.79 % (AM, 2026 Yearbook). It should be noted that the increase is also partly due to revisions in the time series for equity returns in the DMS database

for Spain, Belgium, and Austria, as well as for government bond returns in Spain. These revisions had an impact of approximately +0.05 percentage points. A similar increase is observed when considering the DMS European index reported in the 2025 yearbook, which incorporates the updated time series.

Since most NRAs follow the method for estimating the ERP outlined in the Notice over the years, it is no longer relevant to compare the value estimated by NRAs with the single EU-ERP.

It should be noted that, contrary to the trend observed in recent years, the difference between equity and bond performance has first increased, then decreased, and has risen again significantly over the past year. This pattern is consistent with a temporary stabilization of economic conditions in 2023 and 2024 following the pandemic, compared to the more volatile period of 2021 and 2022, during which the equity risk premium (ERP) reached the 10th and 11th highest levels in its historical series.

After two years of declining premiums in 2023 and 2024—suggesting an expected stabilization of economic conditions—the ERP increased again in 2025, reaching the 17th highest level in the historical series. This rise is mainly driven by inflation expectations, exacerbated by geopolitical tensions, which have affected equity and bond returns in different ways, ultimately widening the difference between the equity and the bonds returns.[147]

To better understand the dynamics of the equity premium in the actual situation with an inflation rate that was very relevant in 2021 and 2022, and again with a trend that seems inverted for 2025, BEREC quotes the empirical relation between the Real Bond and Real Equity returns versus the inflation rate, using the DMS database. This analysis is also reported in Chapter 2 of the UBS Year Book[148] and provides information on the correlation between the evolution of the inflation rate and the corresponding real return of equity and bonds. This empirical analysis provides an insight into the question if equity can be a hedge against the Inflation rate.[149] BEREC replicated the DMS analysis for the 12 relevant EU countries, where data have been available since 1900 (Austria, Belgium, Denmark, Finland, France, Germany, Ireland, Italy, The Netherlands, Portugal, Spain, Sweden) and where DMS includes 21 world countries with a time series starting from 1900.

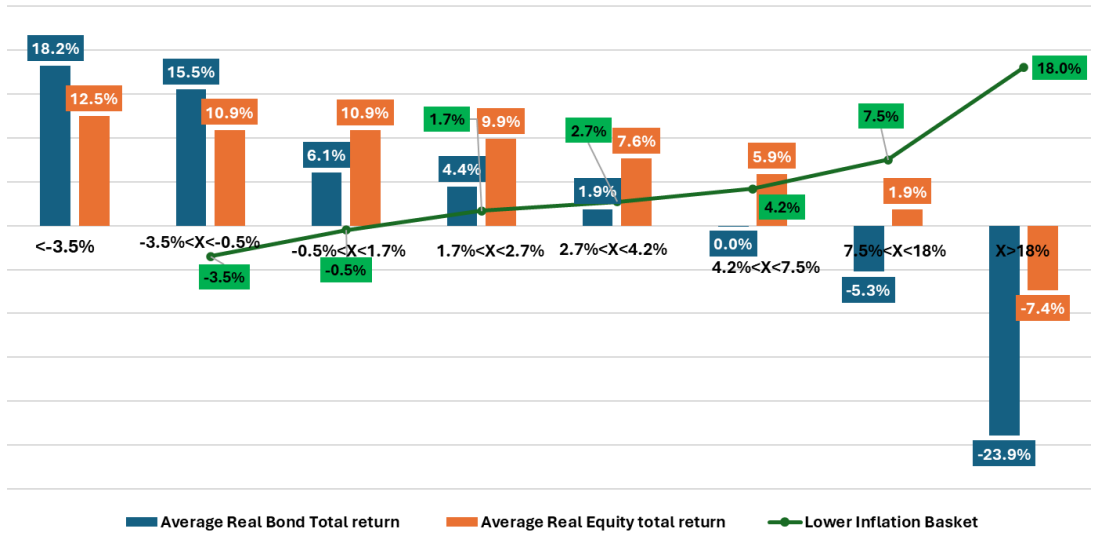
In the following Figure 6 the averages of Real Bond and Real Equity return are calculated classifying the 1,512 observations (126*12) excluding, as done by DMS, hyperinflation years for Austria (1921-1922) and Germany (1922-1923) in 8 baskets for inflation rate measured in

[147] As in previous years the impact of including data from Greece is not substantial (less than 0.01 point decrease). This is due to the fact that generally the Equity Risk Premium over Bonds for Greece was negative for part of the time series. It should be noted that for 2023 the DMS time series for Greece have been revised as reported in the previous paragraph, these modifications have been not material for the final result.
[148] Figure 16 Chapter 2 of Credit Swiss Global Investment Return Yearbook 2023.
[149] Tatom J. 2011, Inflation and Asset Prices, MPRA Paper 3460, https://papers.ssrn.com/sol3/papers.cfm?abstract_id=1957721

each country since the 1900 and available in the DMS database[150] (I<-3.5%;-3.5%<=I<-0.5%;-0.5%<=I<1.7%;1.7%<=I<2.7%;2.7%<=I<4.2%;4.2%<=I<7.5%;7.5%<=I<18%;I>18%).[151]

From this analysis it becomes clear that the level of correlation between the inflation rate and corresponding real returns on equity and bonds is different, depending on the period of inflation. In periods of high inflation, the level of the equity return is less affected than the corresponding bond return. As highlighted by DMS, the correlation coefficient between the inflation rate and equity return is still negative, posing questions about the possibility to hedge inflation with equity investment.[152]

Figure 6 Real bond and Equity returns vs inflation rates 1900-2025 (12 EU members)



At the same time, the correlation coefficient between the inflation rate measured over the 1,512 observations and the corresponding yearly real bond return is –0.42, in line with last year's report, whereas the correlation coefficient between the inflation rate and the corresponding yearly equity return is -0.16. This suggests that an equity premium over bonds may be higher in case of a higher inflation rate period on average.[153] During 2023 when the inflation rate had decreased by about 1/3 in comparison to 2022, the corresponding premium had also decreased by about 1/3. In Figure 7 a weighted average inflation rate (GDP weighted) of the 12 countries considered for this analysis is also reported showing that the level of inflation for 2025 stays more or less at the level of the two previous years, still remaining higher compared

[150] The DMS Global Inflation rates are derived from the consumer price indices for each country, although for one or two early sub periods in a couple of countries, the wholesale price index is employed.

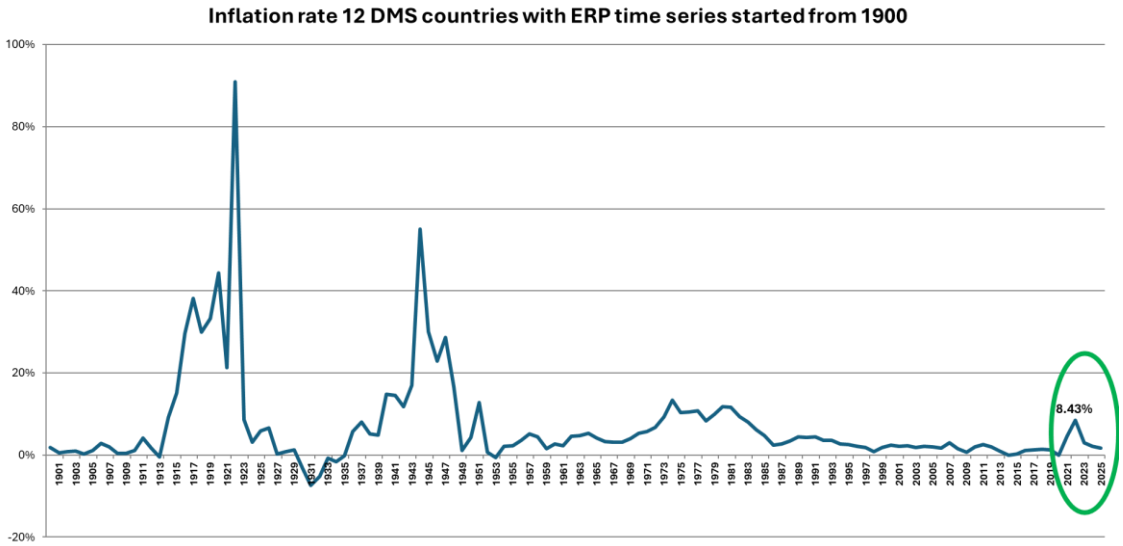
[151] The baskets are the same as reported in the 2024 Yearbook and are derived considering the first 5 % low inflation rate observations and increasing by the next 15 % for 6 baskets and including in the last basket the top 5 % in term of inflation rate measured (15 %*6+lower 5 %+ higher 5 %).

[152] Credit Suisse Global Investment returns Yearbook 2023, E, Dimson, P. Marsh M. Staunton (p. 32 Chapter 2)

[153] This argumentation provides support not to use the Total Market Return approach for ERP estimation in a long run investor perspective to overcome bias estimation.

to the values generally experienced since the 2000. This trend is consistent with an ERP that increases again for 2025.

Figure 7 Weighted average inflation rate



The 2025 Yearbook places greater emphasis than previous editions on geopolitics as a central concern for investors, highlighting that long-run indices of geopolitical risk have risen significantly in recent years, particularly in 2025. Shock events tend to have a material impact when they are extreme in nature and carry significant economic consequences for major economies. The following quote is explaining this evolution:

"As the risk premium can be viewed as the price per unit of risk, it should be higher at times when market prospects are more uncertain and/or when investors are more risk adverse.

Thankfully, these types of events are relatively rare, economic risk has historically been even more important to investors. Of the four largest peacetime bear markets, three of them were triggered by economic factors, while the 1973-74 stock market crash was activated by geopolitics, but played out as an economic crisis.

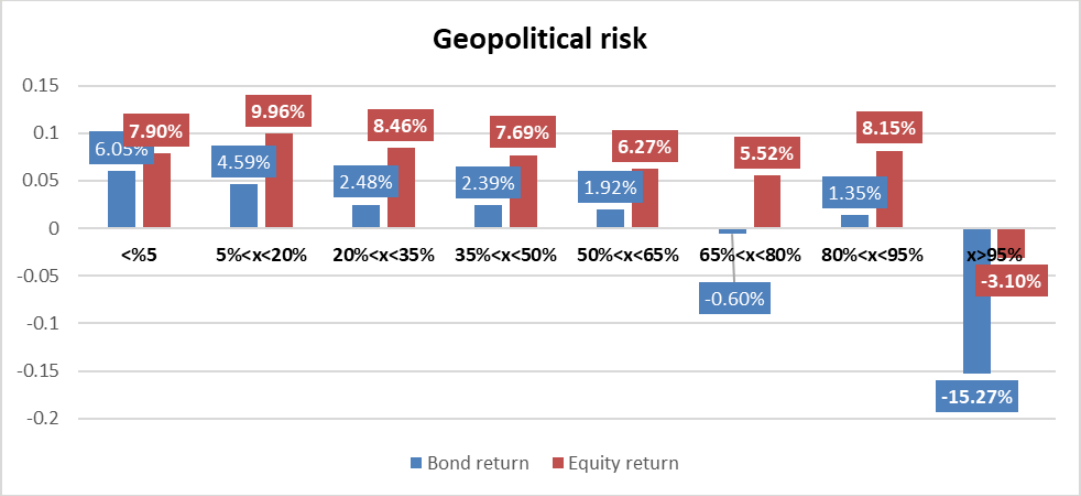
Generally, the dynamic of the Equity risk is that after sharp market fall, investors in aggregate will not only be poorer, but they will also be more risk averse. At such times, markets are typically more volatile and highly leveraged, and investors will demand a higher risk premium, driving market still lower. Stocks are then priced to give a higher future expected return. ***On average, we should find that achieved returns are higher after market falls****. The reverse logic applies following bull markets, when investors are wealthier and the anticipated equity premium becomes lower. We might expect equity markets to exhibit mean reversion, with higher returns typically following market falls, and lower returns on average, following market*

rises. If there is market mean reversion, then timing strategy based on, say, buying equities after large stock price falls and selling after significant rises should generate higher return."[154]

In Figure 8 below, geopolitical risk is also measured using the index provided in the public database accompanying "Measuring Geopolitical Risk"[155] by Dario Caldara and Matteo Iacoviello[156]. The index is available at Matteo Iacoviello – Geopolitical Risk Index Database.

The graph (Figure 8) reports the average bond returns and equity returns sorted by the lower and higher percentiles of the "geopolitical risk" index for the 10 countries for which historical series are available since 1900 (i.e., the previous 12 countries excluding AT and IE)[157]. Also in this case, equity risk premium (i.e. the difference between equity and bond returns) is strongly positively correlated with a higher geopolitical risk as for the case of the inflation rate.[158]

Figure 8 Geopolitical risk and its impact on bond and equity returns



Bearing in mind that the (inherent) upward bias[159] in the AM might be further amplified by the BEREC weighting method[160], BEREC does not consider it justified to *solely* show the AM of

[154] Global Investment returns Yearbook 2025 (published 3rd March 2026)
[155] https://www.matteoiacoviello.com/gpr_country.htm. The database is composed of monthly measurements of geopolitical risk from 1900 onward for a wide range of countries, including Denmark, Finland, Sweden, Belgium, France, Germany, Italy, the Netherlands, Portugal, and Spain, as relevant to this report.
[156] American Economic Review, 2022, 112(4): 1194–1225
(https://www.matteoiacoviello.com/gpr_files/GPR_PAPER.pdf)
[157] The monthly data available in the database are converted into annual data by taking the arithmetic mean of the monthly values for each year since 1900.
[158] This is consistent with the finding that Geopolitical risks are also associated with higher inflation uncertainty, and the risk of significant inflation increases.
(https://www.matteoiacoviello.com/research_files/GPR_INFLATION_PAPER.pdf)
[159] See above section 6.3.
[160] In comparison to the estimation followed by DMS for the "Europe Index" BEREC's weighting method appears to have an upward bias caused by the use of a fixed five year averaging window (2019-2024), which is due to lack of data. The UBS Yearbook 2026 provides an estimation of 4.79 % (AM) for its "Europe Index", which however also

the EU-wide ERP. Instead of making an arbitrary adjustment or using a combination of AM and GM, BEREC provides both the AM (the upper boundary) of the EU-wide ERP, which is displaying the result of the AM calculation transparently,[161] and the GM (the lower boundary). Otherwise, the AM value would be challengeable on the allegation of the (concealed but certain) upward bias.

BEREC considers that the appropriate value of the **single EU-wide ERP** for 2026 has a value of **6.15 %** which is the upper boundary of the margin given by the 4.80 % (GM as the lower boundary) and 6.15 % (AM). With this, BEREC unifies the calculation of the ERP in line with the Notice/SWD, thereby eliminating any methodological differences of NRAs' estimations while NRAs need to take into account the existing factual situation in their respective member states adequately in their decisions by setting the (other) parameters based on the BEREC parameter values. This implies that national ERPs will converge further when NRAs start applying the EU-wide ERP compared to the current situation[162] with the standard deviation expected to decrease considerably. Over time, WACC values would also converge.

Overall, the WACC methodology as provided for in the Notice and used in the BEREC WACC Report carefully balances consistency, transparency and continuity, i.e. aiming to reflect market realities of 27 EU member states as well as the convergence towards an EU-wide capital market not yet fully completed. The application of the historical data series for both the bond and equity index for the ERP estimation provides the best estimate in the long run based on empirical evidence of the equity premium over bonds compared to other methodologies available.

NRAs not using the AM would need to provide an explanation justifying their result, although within the margin.

In the following paragraphs the evolution of the ERP estimated by BEREC is reported for the different yearly updates. We recall that the comparison between the WACC Report 2020 (BoR (20) 116) and the next updated value is difficult to apply due to the fact that in the 2020 Report (BoR (20) 116) the ERP estimation included the UK. Had the WACC parameters Report 2021 (BoR (21) 86) included the UK at that time it would have resulted in a reduction in comparison to the 2020 estimation. So, the increase from 5.31 % to 5.50 % was mainly due to the exclusion of the UK ("Brexit effect") that had a significant impact on the weighted average of the EU-ERP rather than an increase of the ERP for structural economic reasons.

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includes Switzerland, Norway, Russia and the UK. In order to estimate the size of the upward bias BEREC conducted a sensitivity analysis also including Switzerland, Norway, Russia (for Russia data 2022, 2023 and 2024 – in line with DMS - have been excluded in light of the Russian invasion of Ukraine in estimating the European index) and the UK in a calculation applying its weighting method to be able to compare the AM value published in the UBS Yearbook 2026 (4.8 % with 4.6 % value in 2025) to the EU-ERP AM value estimated by BEREC (6.15 %). The result of this estimation is 5.33 %, i.e. a difference of +0.45 % points compared to 4.79 %. So, taking the 4.79 % value as the "unbiased" value, the difference of 0.45 % points can be considered as an indication of the upward bias. Including this in BEREC's method would provide a hypothetical (unbiased) EU-wide ERP of 5.7 % (AM). This shows that albeit the bias exists, it is relatively small and lower than the upward bias estimated in the 2025 BEREC WACC parameters Report (0.59 % points).

[161] Without adjustments, in order to avoid unnecessary complexity.

[162] As shown in the RA Report 2024 (BoR (24) 168), WACC chapter. Since last year's WACC parameters Report most of the NRAs that calculate the WACC had fully applied the WACC Notice/BEREC's parameters values, with few exceptions related to the time of update.

For the comparison of the years between 2021-2022 and 2022-2023 the effects are mainly due to the empirical evidence of an increase of the ERP on a historical basis due to a mix of effects that has increased the volatility of the market. In March 2020 the Covid-19 pandemic increased the volatility even further than levels seen during the Global Financial Crisis of 2008. Even if the market volatility had become more stable during 2021, the 2022 Russian aggression against the Ukraine in combination with the sudden increase of inflation since the end of 2021 and the after-effects of the Covid-19 pandemic have produced new instability in the market.[163] Higher volatility can produce "unusual" returns that are seen in the corresponding risk premium that generally presents more stable results over longer time series. The increase of the ERP is mainly due to a strong underperformance of the Bond market that decreased in 2022 by around -30 % with a corresponding reduction of the equity market of approximately -9 %.

In 2023 the equity premium decreased by about 70 % in comparison to the 2021 and 2022 values in homogenous terms, even if the value in absolute terms was still higher than the current average of the time series. This may be explained by the fact that economic conditions were returning to a "normal" situation with an equity market that was outperforming the corresponding bond market.

In 2024 the equity premium remains slightly higher than the average and the bond market underperformed in comparison to the previous year, resulting in a slightly higher value of the risk premium. This was consistent with a situation where economic conditions may be slowly returning to "normal", but inflation is still higher than in the past.

In 2025, new exogenous events reshaped the macroeconomic environment, which is now primarily characterized by heightened geopolitical risk. This has affected bond and equity markets in different ways.

More specifically, BEREC bond returns decreased by approximately 475% compared with the previous year (2024), resulting in an overall negative return. In contrast, equity returns increased by about 135% compared with 2024.

The negative effects of geopolitical instability have been more pronounced in the bond market, which is more sensitive than equities to expectations of rising inflation. This dynamic contributes to a decline in bond prices and, consequently, lower returns. As a result, the difference between equity and bond returns widened resulting in the significant increase of the ERP in 2025.

[163] Credit Suisse Global Investment returns Yearbook 2023, E, Dimson, P. Marsh M. Staunton (p. 20 Chapter 2)

Table 17 Evolution of EU ERP and EU/EEA ERP 2020 – 2026

	Ave-rage	BoR (20) 116	BoR (21) 86	BoR (22) 70	BoR (23) 90	BoR (24) 102	BoR (25) 64	BoR (26) 72	Delta 2020-2021	Delta 2021-2022	Delta 2022-2023	Delta 2023-2024	Delta 2024-2025	Delta 2025-2026
EU ERP	AM	5.31	5.50	5.70	5.92	5.95	5.96	6.15	0.19	0.2	0.22	0.03	0.01	0.19
	GM	4.18	4.18	4.37	4.56	4.59	4.62	4.80	0	0.19	0.19	0.03	0.03	0.18
EU/EEA ERP	AM	-	5.48	5.69	5.90	5.92	5.94	6.13		0.21	0.21	0.02	0.02	0.19
	GM	-	4.18	4.37	4.56	4.59	4.62	4.79		0.19	0.19	0.03	0.03	0.17

7. Summary of Results

7.1. Overview of Results

The following overview Table 18 summarises all results related to company specific parameters for the BEREC peer group. It has been compiled using the results of Ch. 2 to 6.

Table 18 BEREC peer group 2026 – Overview of results

Peer Group Company	SMP (legacy infrastruct.)	Company Credit Rating (S&P)	Country	Country Credit Rating (Moody's)	Debt Premium	RFR (domestic = national) of home country	Cost of Debt (=Debt Premium + RFR)	Equity beta	Gearing	Asset beta
Deutsche Telekom	Yes	BBB+	DE	AAA	122	179	301	0.58	54.08%	0.32
DIGI Communications	No	BB-	RO	BAA3	197	639	836	0.53	60.72%	0.27
Elisa	Yes	BBB+	FI	AA1	68	227	295	0.34	13.51%	0.31
KPN	No	BBB	NL	AAA	104	202	306	0.2	32.18%	0.17
NOS	No	BBB-	PT	A3		250	250	0.34	42.13%	0.24
Orange	Yes	BBB+	FR	AA3	52	239	291	0.21	56.46%	0.15
Proximus	Yes	BBB+	BE	A1	56	236	292	0.43	53.88%	0.25
Tele 2	No	BBB	SE	AAA	139	192	331	0.33	24.56%	0.27
Telecom Italia	No	BB	IT	BAA2	197	325	522	1.14	71.15%	0.40
Telefónica	No.	BBB-	ES	A3	52	263	315	0.63	62.02%	0.30
Telekom Austria	No	A-	AT	AA1		228	228	0.48	28.66%	0.37
Telenor	Yes	A-	NO	AAA	106	321	427	0.31	34.04%	0.24
Telia Company	Yes	BBB+	SE	AAA	110	192	302	0.27	40.39%	0.20
Vodafone Group	No	BBB	UK	AA3	111	337	448	0.66	64.40%	0.30

KPN committed to provide wholesale local fixed broadband to competitors and ACM, the Dutch telecoms regulator and competition authority, made these commitments binding until 2030.

Telecom Italia finalised a structural separation of its fixed access network; FiberCop being wholesale only operator

Table 19 Major EU/Peer Group Operators' Ownership[169]

Country	SMP/Other Operator	Included in Peer Group (directly or indirectly)	Publicly Traded (directly or indirectly)	Major owners
AT	Telekom Austria	Yes	Yes	America Movil 61%, Österreichische Beteiligungs AG 28%
BE	Proximus	Yes	Yes	The Federal Holding and Investment Company (Belgium's sovereign wealth fund and federal public holding) 56%, Vanguard 1.61%
BG	Vivacom A1	Yes	No	United Group Telekom Austria AG
HR	Hrvatski Telekom (T-HT)	Yes	Yes	Deutsche Telekom Europe B.V.54.6% Raiffeisen pension fund 10.4%
CY	CYTA	No	No	Semi-government organisation
CZ	CETIN	No	No	PPF Group
DK	TDC	No	No	Macquarie Asset Management.
EE	Telia Eesti	Yes	Yes	Telia Company AB
FI	DNA Elisa Telia Finland	Yes	Yes	DNA is owned by Telenor. Elisa is owned by institutional owners, of which Solidium Oy (holding company wholly owned by the Finnish state) 10.04%, BlackRock 6.49%, Elisa Oyj 4.04% Telia Finland is owned by Telia Company AB.
FR	Orange	Yes	Yes	French Republic 13.4%, BPI France Participations SA 9.57%, BlackRock 4.16%
DE	Deutsche Telekom	Yes	Yes	Kreditanstalt für Wiederaufbau 14,5%, Federal Republic of Germany 14.3%, Blackrock Inc 5.75%
EL	Hellenic Telecommunications Organization (OTE)	Yes	Yes	Deutsche Telekom 53%, Hellenic Republic 7.75%
HU	Magyar Telekom 4iG	Yes	Yes	Deutsche Telekom Europe BV 65.8% 4iG is owned by iKON Investment Management Zrt. 39.64%, Rheinmetall AG 25.58%
IE	Eir	No	No	Iliad SA and NJJ Telecom Europe fund
IT	Telecom Italia	Yes	Yes	Poste Italiane SpA 27.3%,. Dimensional fund Advisors;3.58%; BlackRock 3.21%. Vangard 3.17%
LV	Tet	Yes	Yes	Latvian Government 51% and Telia Company 49%
LT	Telia Lietuva AB	Yes	Yes	Telia Company AB 88.15%
LU	Entreprise des Postes et Télécommunications (Post Luxembourg)	No	No	Luxembourg state 100%
MT	Go	No	Yes	TT ML Limited 65.4% (owned by Telecom Tunisia), Institutional owners 34.6%
NL	Koninklijke KPN	Yes	Yes	BlackRock 8%, Capital Group Cos 5%, Vanguard 4.62%.
NO	Telenor	Yes	Yes	Government of Norway 53.97%, Folketrygdfondet (Norway pension fund) 4.76%, BlackRock Inc 2.90%

[169] Source: www.investing.com and BEREC survey (referring to publicly listed companies).

PL	Orange Polska	Yes	Yes	Orange SA 50.67%, Allianz Polska SA 8.2%, NN PTE 5.82%
PT	MEO NOS	Yes	Yes	MEO is SMP operator. It is not listed, owned by Altice. NOS is not a SMP operator, owned by Sonae SGPS SA 37.37%, Zopt SGPS SA 26.07%
RO	Orange Romania Digi Romania	Yes	Yes	Orange Group 80%, Romanian State 20% RCS Management SA, 57.87%, Fondul De Pensii NN 21.827%
SK	Slovak Telekom	Yes	Yes	Deutsche Telekom Europe B.V 100%
SI	Telekom Slovenije	No	Yes	Republic of Slovenia 62.54%, Erste Group Bank AG 5.60%, Kapitalska Družba 5.59%, Slovenian Sovereign Holding 4.25%
ES	Telefonica	Yes	Yes	Sociedad Estatal de Participacion Industriales 10%, Criteria Caixa SA 10%, Saudi Telecom Co 10%
SE	Telia Tele 2	Yes	Yes	state of Sweden 41.1%, BlackRock Inc 4.5%, Vanguard 2.6%

The result for the ERP is as follows. Based on the calculations described in Chapter 6 (and shown in Table 15 EU ERP (GM and AM) and EU/EEA-ERP (GM and AM)), BEREC considers that the appropriate value of the single EU-wide ERP is **6.15 %** (AM) and the single EU/EEA-wide ERP relevant only for the EEA countries Norway and Iceland is 6.13 % (AM).

7.2. Taxes and inflation

Section 6 of the Notice describes the taxes and inflation. Acc. to para. 60 it is appropriate to use the relevant domestic corporate tax rate.

Acc. to para. 63a of the Notice a Eurozone-wide inflation rate is appropriate for Eurozone Member States. For non-Eurozone Member States national inflation estimates may be justified. As a forecast the 5 year-ahead inflation forecast of the ECB is considered appropriate.

The latest available 5-year-ahead inflation forecast of the ECB is 2.0 % (as of Q2/2026).[170]

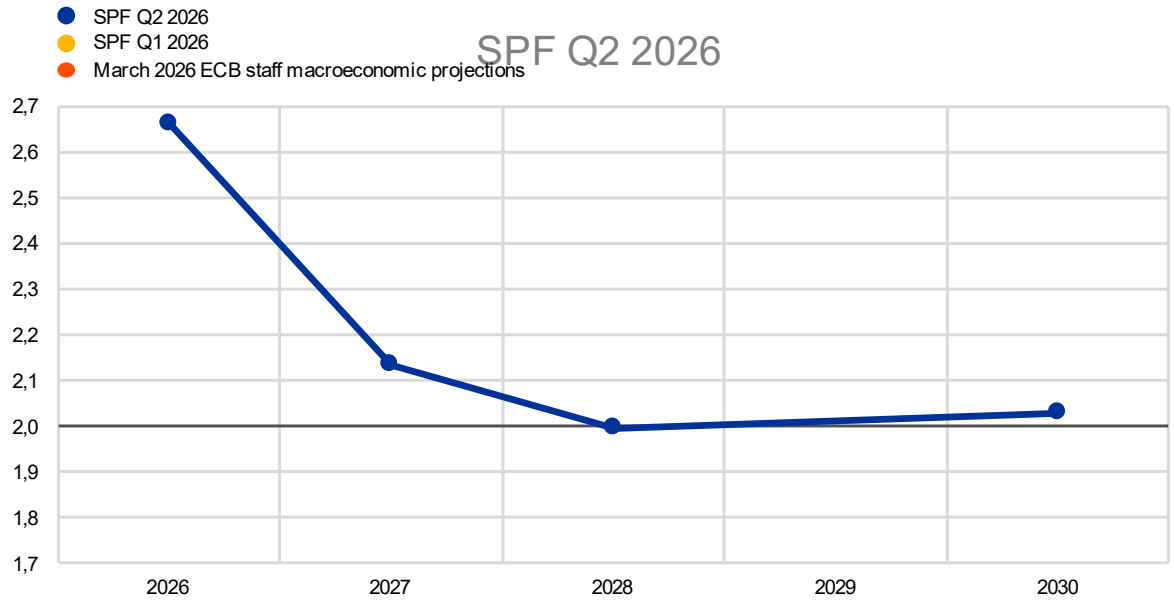
Market participants expect that inflation will be increasing from 2.1 % in 2025 to 2.7 % in 2026 before declining to 2.1 % in 2027 and 2.0 % in 2027. In comparison to the previous SPF (Q1) these expectations represent a higher short-term upward revision (0.9 percentage points) for 2026 but a minimal change for 2027 (plus 0.1 percentage points) and 2027 (-0.1 percentage

[170] The ECB inflation forecast is based on a survey of professional forecasters (SPF), which began in 1999, collects information on the expected rates of inflation, real GDP growth and unemployment in the euro area at several horizons, ranging from the current year to the longer term. Expectations are reported not only as point forecasts, but also as probability distributions, providing a quantitative assessment of risk and uncertainty. The aggregate results and microdata are published four times a year. The next update (Q3) will be on 25th July 2026 (provisional). Further information: https://www.ecb.europa.eu/stats/ecb_surveys/survey_of_professional_forecasters/html/ecb.spf2026q2.en.html

points). Longer term (for 2030) inflation expectations remain unchanged at the target level of 2.0 %[171]. A special question related to the war in the Middle East suggested limited expected indirect and second-round effects, which were concentrated in 2026 and 2027. For inflation, uncertainty increased and the balance of risks became slightly tilted to the upside.

> *"**SPF respondents' headline inflation expectations were markedly revised upwards for 2026 and, to a lesser extent, for 2027, while remaining close to 2.0% for the longer term.** HICP inflation was expected to stand at 2.7% in 2026 before decreasing to 2.1% in 2027 and further to 2.0% in 2028 and 2030. Compared with the previous round (conducted in the first quarter of 2026), revisions were concentrated in the near term, reflecting mainly the onset of the war in the Middle East and the associated energy price shock. Some respondents also mentioned possible indirect and second-round effects through wages, transport and food prices. At the same time, weak demand, the appreciation of the euro and the redirection of Chinese exports to the euro area were seen as dampening inflationary pressures. Compared with the March 2026 ECB staff macroeconomic projections, headline inflation expectations in this SPF round were in line for 2026, higher for 2027 and slightly lower for 2028 (*Figure 2.*"*

Figure 9 Inflation expectations: expectations for HICP inflation

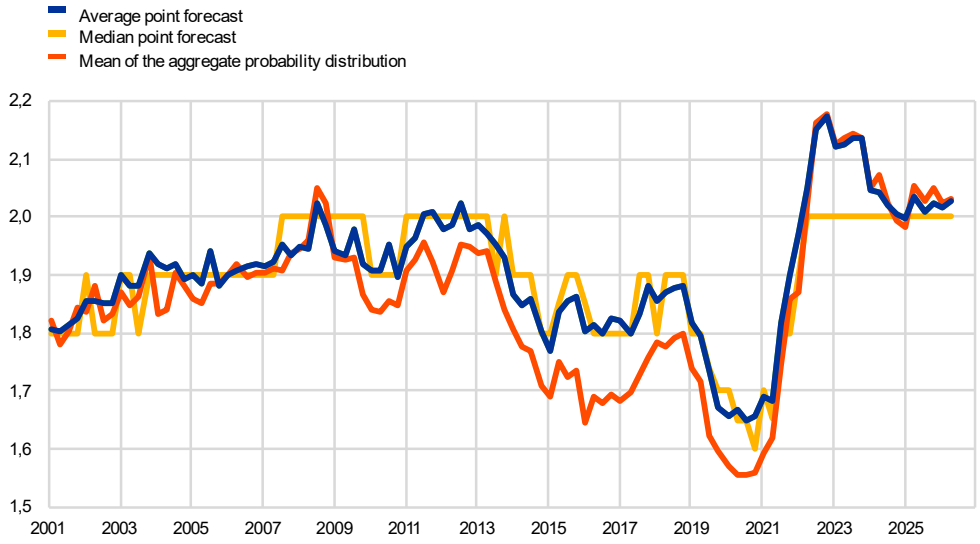


> ***"Longer-term inflation expectations were unchanged at 2.0% with most respondents continuing to see headline inflation at 2.0 % in 2030.**[4] The modal and median values of the distribution of individual point forecasts were also unchanged*

[171] Full report, ECB Survey of Professional Forecasters, Q2 2025: https://www.ecb.europa.eu/stats/ecb_surveys/survey_of_professional_forecasters/html/index.en.html

*at 2.0 % (*Figure 10*). For the tenth consecutive round, more than half of the respondents reported longer-term inflation expectations of 2.0 %".*[172]

Figure 10 Longer-term inflation expectations



BEREC wants to highlight that the inflation is dealt with in a forward-looking manner taking into account the ECB forecast for the future WACC in line with the Notice at the time of the regulatory decision. This cannot be adjusted retroactively.

7.3. Comparison to last year's Report

The 2026 WACC parameters Report is the seventh BEREC Report, therefore high-level comparisons can be drawn between the 2026 and the 2025 Reports. The WACC methodology as provided for in the Notice and the BEREC WACC parameters Report carefully balance consistency, transparency and continuity, i.e. aiming to reflect market realities of 27 EU Member States as well as the convergence towards an EU-wide capital market. The latter is accounted for by estimating an **EU-ERP** using the CAPM. The CAPM assumes a rational investor acting in an efficient capital market which is the state-of-the-art approach to estimate the cost of equity (as a fair reward for taking the risk to invest) and thus provides *objective* results of expected returns based on the comprehensive historic data series.

This year's report uses the same methodology as last year's report, so the difference in parameter values is attributable to factual developments. The results based on the application of the methodology of the WACC Notice reflect the fundamental factors driving the cost of capital. As shown above, the ERP is now estimated at **6.15 % (AM)** compared to 5.96 % (AM

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https://www.ecb.europa.eu/stats/ecb_surveys/survey_of_professional_forecasters/html/ecb.spf2026q2.en.html

last year). In comparison to last year, the level of ERP is significantly increased by 0.19 points, in line with the "European ERP" evaluated by DMS with a difference of 0.20 % from 4.59 % (AM, 2025 UBS Yearbook) to 4.79 % (AM, 2026 UBS Yearbook). This shows that in 2025 geopolitical risks became a growing concern for investors when the shock following the Russian aggression against the Ukraine and the subsequent increase in inflation (and consequently interest rate increases by Central Banks) had been largely absorbed and in 2024 an apparent stabilization of the economic conditions seemed to happen in comparison to previous years. The inflation rate continued to decrease in 2024, but at a much lower rate than in 2023 which explains that the ERP remains substantially constant. In 2025 the inflation rate stays more or less at the level of the two previous years, still remaining higher compared to the values generally experienced since the 2000.

The negative effects of geopolitical instability also contribute to widen the ERP as it impacts more the return in the bond market, which is more sensitive than equities to expectations of rising inflation[173]. This is also verified analysing the historical "geopolitical risk" at single country level with respect to the historical bond and Equity return through the DMS time series. As a result, the difference between equity and bond returns widened resulting in the significant increase of the ERP in 2025. This shows the preference of investors to hedging the inflation risk through Equity instead of Government Bonds.[174]

After two years of declining premiums in 2023 and 2024 - suggesting an expected stabilisation of economic conditions - the ERP increased again in 2025. This rise is mainly driven by inflation expectations, exacerbated by geopolitical tensions, which have affected equity and bond returns in different ways, ultimately widening the difference between the equity and the bonds returns.[175]

This situation reflects general market developments and investor expectations. In comparison, the 5-year inflation forecast in this report, which is used by some NRAs to determine the real WACC has, as in previous years, remained stable at the ECB's target rate of 2.0 %.

For the BEREC peer group the EU/EEA area is considered as a whole, no distinction must be made when the eligibility criteria are fulfilled. Thus, Telenor was included in 2021. In 2022 DIGI Communications was added as it fulfilled the eligibility criteria for the first time. In 2023 the peer group remained unchanged. In 2024 Telenet was excluded, as it was acquired by Global Liberty. In 2025 and 2026 the peer group remained unchanged as no new peers were eligible.

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[173] Global geopolitical risk is historically associated both with higher global inflation and with a larger share of countries experiencing higher-than-average inflation (Caldara, D. and M. Iacoviello (2022): "Measuring geopolitical risk," American Economic Review, 112, 1194–1225 and Dario Caldara, Sarah Conlisk, Matteo Iacoviello, Maddie Penn "Do geopolitical risks raise or lower inflation?" Journal of International Economics Volume 159 November 2026).

[174] Cf. for a more detailed analysis Ch. 6.5 below and the UBS Global Investment Returns Yearbook 2026 Summary Edition, published on 4th March 2026 at Global Investment Research & Insights | UBS Global, available here: https://www.ubs.com/global/en/investment-bank/insights-and-data/2025/global-investment-returns-yearbook-2025.html.

[175] Cf. for a more detailed analysis Ch. 6.5 above and UBS Global Investment Returns Yearbook 2026 Summary Edition, published on 3rd March 2026 at Global Investment Research & Insights | UBS Global, available here: https://www.ubs.com/de/en/wealthmanagement/insights/global-investment-returns-yearbook.html.

Another important point to highlight is the continued effort undertaken by BEREC to incorporate the longer time series available for non-DMS countries for the calculation of the EU-wide ERP and the fact that with Bloomberg a single data source can now be used, which improves the robustness of the results. Relying on long(er) time series of historical returns (such as the DMS data including e. g. also Greek data) is evidence based and contributes to the reliability of the results, as short-term volatilities are reduced. The application of the historical data series for both the bond and equity index for the ERP estimation provides the best estimate in the long run, based on empirical evidence on the equity premium over bonds compared to other methodologies available.

This approach is in line with the objectives of the WACC Commission Notice: i) to improve consistency in the methodology; ii) to enhance regulatory predictability by limiting unexpected variations in the methodology and the value over time; iii) to promote efficient investment and innovation by setting rates reflecting the appropriate level of risk; iv) to provide more transparency to all stakeholders on the way the calculations are done.

Comparisons with values reported in previous BEREC WACC parameters Reports (BoR (20) 116, BoR (21) 86, BoR (22) 70, BoR (23) 90, BoR (24) 102 and BoR (25) 64) are provided throughout. BEREC observes that over time most NRAs follow the Notice and use the BEREC parameter values in their national decisions, thus more and more convergence can be observed over time.

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Abbreviations

A

AM	Arithmetic mean

B

BEREC	Body of European Regulators for Electronic Communications
Bloomberg	Bloomberg financial system

C

CAPM	Capital Asset Pricing Model
CFA	Charted Financial Analysts Institute

D

DMS	Dimson/Marsh/Staunton dataset (distributed by LBS)

E

ECB	European Central Bank
ERP	Equity Risk Premium
EUR	Euro
Eurostat	European Statistical Office

G

GDP	Gross Domestic Product
GM	Geometric mean

H

HICP	Harmonised Index of Consumer Prices

M

M&A	Merger and Acquisitions

N

NGA	Next Generation Access network
NOK	Norwegian crowns
Notice	Commission Notice on the calculation of t. cost of capital of 6th Nov. 19
NRA	National Regulatory Authority

O

OAO	Other Authorised Operator
OLS	Ordinary least square

P

P/E ratio	Price-to-earnings ratio

R

RAB	Regulatory Asset Base
RA Report	BEREC Regulatory Accounting in Practice Report
RFR	Risk-free rate
RON	Romanian lei

S

S&P	Standard & Poor's
SEK	Swedish crowns
SMP	Significant Market Power
STOXX Europe TMI	STOXX Europe Total Market Index
SWD	Staff Working Document (of the European Commission)

U

UBS Yearbook	UBS Global Investment Returns Yearbook 2025 (formerly Credit Suisse Global Investment Returns Yearbook)

W

WACC	Weighted Average Cost of Capital

Annex 1: RFR

EMU convergence criterion series - monthly data[176]

	2021-04	2021-05	2021-06	2021-07	2021-08	2021-09	2021-10	2021-11	2021-12	2022-01	2022-02	2022-03	2022-04	2022-05
Austria	-0.04	0.08	0.02	-0.13	-0.23	-0.08	0.08	-0.01	-0.05	0.18	0.54	0.72	1.29	1.54
Belgium	0.04	0.18	0.12	-0.03	-0.14	0.01	0.16	0.07	0.03	0.26	0.59	0.79	1.30	1.58
Bulgaria	0.14	0.14	0.14	0.14	0.14	0.15	0.25	0.25	0.44	0.57	0.61	1.09	1.62	1.62
Croatia	0.50	0.50	0.49	0.45	0.43	0.37	0.32	0.32	0.38	0.70	1.23	2.08	2.44	2.96
Cyprus	0.41	0.54	0.36	0.25	0.15	0.23	0.39	0.55	0.64	0.86	1.59	1.92	2.26	2.69
Czechia	1.86	1.74	1.67	1.72	1.74	1.90	2.34	2.62	2.62	3.12	3.03	3.53	4.01	4.61
Denmark	0.00	0.11	0.11	-0.05	-0.16	-0.01	0.10	0.01	-0.08	0.11	0.46	0.57	1.04	1.30
Estonia	0.09	0.16	0.13	0.09	0.02	0.03	0.18	0.20	0.11	0.31	0.79	1.20	1.49	1.91
Finland	-0.08	0.05	-0.02	-0.10	-0.21	-0.07	0.08	0.00	-0.06	0.18	0.51	0.72	1.18	1.43
France	-0.01	0.21	0.15	-0.01	-0.12	0.04	0.20	0.10	0.05	0.31	0.68	0.78	1.28	1.52
Germany	-0.33	-0.22	-0.29	-0.45	-0.54	-0.36	-0.21	-0.31	-0.38	-0.12	0.15	0.28	0.75	0.95
Greece	0.88	0.99	0.81	0.70	0.59	0.80	0.96	1.22	1.29	1.62	2.46	2.61	2.89	3.54
Hungary	2.69	2.94	2.85	2.83	2.84	3.10	3.69	4.07	4.40	4.71	4.86	5.92	6.59	7.20
Ireland	0.08	0.24	0.18	0.03	-0.08	0.07	0.22	0.19	0.10	0.38	0.78	0.93	1.40	1.63
Italy	0.80	0.98	0.88	0.75	0.63	0.78	0.96	1.01	1.05	1.35	1.79	1.85	2.44	2.99
Latvia	-0.21	-0.06	0.14	0.09	0.00	0.02	0.17	0.26	0.30	0.38	0.79	1.20	1.59	1.99
Lithuania	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16
Luxembourg	-0.38	-0.31	-0.33	-0.40	-0.47	-0.37	-0.20	-0.21	-0.22	-0.04	0.40	0.55	1.39	1.66
Malta	0.44	0.53	0.50	0.49	0.44	0.57	0.67	0.64	0.59	0.80	1.21	1.26	1.71	1.98
Netherlands	-0.30	-0.19	-0.24	-0.38	-0.48	-0.34	-0.18	-0.27	-0.32	-0.10	0.24	0.34	0.85	1.05
Poland	1.55	1.82	1.78	1.61	1.60	1.87	2.63	3.12	3.35	4.00	3.95	4.83	5.96	6.64
Portugal	0.35	0.53	0.43	0.27	0.14	0.26	0.39	0.39	0.36	0.58	1.06	1.16	1.76	2.14
Romania	2.84	3.03	3.11	3.24	3.72	4.00	4.75	5.11	5.37	5.37	5.60	6.20	6.61	7.84
Slovakia	-0.06	0.07	0.03	-0.14	-0.25	-0.08	0.13	0.02	-0.02	0.25	0.71	0.99	1.53	1.87
Slovenia	0.02	0.21	0.15	0.14	-0.09	0.05	0.17	0.15	0.17	0.40	0.70	1.04	1.55	1.82
Spain	0.37	0.52	0.45	0.33	0.21	0.33	0.47	0.47	0.41	0.66	1.11	1.22	1.69	2.04
Sweden	0.37	0.42	0.36	0.18	0.11	0.27	0.38	0.27	0.14	0.36	0.61	0.82	1.47	1.77
Iceland	3.76	3.74	3.51	3.45	3.58	3.90	4.03	3.95	4.07	4.47	4.54	5.13	5.15	5.25
Norway	1.49	1.52	1.36	1.18	1.27	1.58	1.68	1.48	1.70	1.96	2.04	2.54	2.76	2.72
UK	0.78	0.82	0.76	0.62	0.57	0.81	1.10	0.93	0.83	1.17	1.45	1.51	1.82	1.90

	2022-06	2022-07	2022-08	2022-09	2022-10	2022-11	2022-12	2023-01	2023-02	2023-03	2023-04	2023-05	2023-06	2023-07	2023-08	2023-09	2023-10
Austria	2.07	1.70	1.68	2.46	2.92	2.70	2.74	2.81	3.04	3.06	3.03	3.03	3.05	3.12	3.18	3.29	3.49
Belgium	2.13	1.80	1.71	2.45	2.84	2.65	2.70	2.79	2.96	3.04	3.06	3.04	3.05	3.14	3.22	3.32	3.52
Bulgaria	1.77	1.85	1.85	1.85	1.85	1.85	1.85	1.85	2.73	4.21	4.03	4.03	4.03	4.03	4.03	4.03	4.03
Croatia	3.02	3.31	2.48	3.18	4.02	3.57	3.36	3.65	3.76	3.86	3.72	3.71	3.73	3.74	3.93	3.95	4.18
Cyprus	3.42	3.41	3.07	3.70	4.20	4.19	4.20	4.19	4.13	4.15	4.01	3.97	3.79	3.74	3.84	3.99	4.13
Czechia	5.12	4.40	4.11	4.72	5.52	5.11	4.71	4.47	4.61	4.67	4.65	4.50	4.35	4.15	4.26	4.49	4.72
Denmark	1.84	1.59	1.38	2.20	2.60	2.38	2.29	2.43	2.55	2.55	2.60	2.54	2.57	2.74	2.84	2.95	3.13
Estonia	2.48	2.66	2.38	2.93	4.07	3.75	3.46	3.79	3.83	3.96	3.89	3.94	3.94	4.09	4.15	4.25	4.09
Finland	2.06	1.72	1.63	2.53	2.90	2.69	2.71	2.77	2.94	2.98	2.96	2.98	3.00	3.07	3.15	3.25	3.47
France	2.06	1.71	1.69	2.41	2.77	2.58	2.62	2.69	2.87	2.92	2.90	2.94	2.93	3.04	3.11	3.24	3.45
Germany	1.45	1.08	1.03	1.80	2.19	2.07	2.09	2.19	2.37	2.38	2.36	2.34	2.38	2.46	2.55	2.66	2.82
Greece	3.93	3.38	3.46	4.44	4.87	4.42	4.22	4.29	4.26	4.29	4.22	3.98	3.71	3.85	3.88	4.08	4.30
Hungary	7.95	8.51	8.19	9.23	10.25	8.81	8.63	7.76	8.23	8.54	8.35	7.78	7.20	7.10	7.40	7.08	7.53
Ireland	2.13	1.74	1.71	2.42	2.71	2.53	2.59	2.65	2.86	2.86	2.77	2.79	2.78	2.90	2.96	3.09	3.27
Italy	3.64	3.36	3.30	4.14	4.53	4.24	4.26	4.24	4.27	4.24	4.23	4.31	4.07	4.16	4.22	4.51	4.89
Latvia	2.55	2.47	2.29	2.96	3.81	3.74	3.50	3.70	3.68	3.91	3.88	3.83	3.79	3.81	3.85	3.88	4.14
Lithuania	0.16	0.16	0.16	0.16	0.16	2.88	2.88	2.88	2.88	2.88	2.88	2.88	2.88	2.88	2.88	2.88	2.88
Luxembourg	2.16	1.85	1.84	2.55	2.99	2.70	2.68	2.70	2.89	2.99	2.96	2.95	2.95	3.03	3.08	3.16	3.32
Malta	2.59	2.61	2.61	3.30	3.80	3.44	3.59	3.55	3.61	3.58	3.60	3.64	3.68	3.78	3.79	3.93	4.18
Netherlands	1.82	1.47	1.41	2.14	2.52	2.35	2.43	2.50	2.68	2.76	2.72	2.73	2.75	2.84	2.92	3.04	3.21
Poland	7.14	6.37	5.80	6.28	7.82	7.24	6.61	6.02	6.18	6.14	6.07	5.93	5.91	5.54	5.59	5.68	5.84
Portugal	2.65	2.26	2.16	2.89	3.26	3.02	3.10	3.13	3.27	3.27	3.20	3.16	3.09	3.23	3.31	3.45	3.59
Romania	8.74	9.26	8.14	8.07	9.13	7.65	7.17	6.80	7.46	7.10	7.00	6.30	6.11	6.20	6.34	7.48	6.81
Slovakia	2.38	2.14	2.03	2.87	3.55	3.37	3.20	3.25	3.40	3.58	3.66	3.59	3.62	3.69	3.80	3.91	4.12
Slovenia	2.09	2.10	1.71	1.70	2.51	3.56	3.52	3.25	3.38	3.54	3.34	3.15	3.38	3.40	3.48	3.47	3.67
Spain	2.63	2.31	2.15	2.92	3.29	3.07	3.09	3.20	3.39	3.43	3.40	3.41	3.40	3.49	3.57	3.71	3.95
Sweden	1.86	1.53	1.61	2.08	2.27	2.05	1.97	2.08	2.37	2.35	2.37	2.32	2.46	2.52	2.75	2.87	3.02
Iceland	5.67	5.56	5.69	5.94	6.17	6.27	6.29	6.46	7.32	6.51	6.51	6.53	6.51	6.65	6.89	7.51	7.57
Norway	3.01	2.78	3.35	3.30	3.50	3.13	3.19	2.93	3.51	3.02	3.14	3.31	3.63	3.82	3.76	3.94	4.06
UK	2.38	2.06	2.25	3.40	3.97	3.29	3.38	3.40	3.45	3.54	3.62	3.95	4.32	4.41	4.49	4.39	4.54

	2023-11	2023-12	2024-01	2024-02	2024-03	2024-04	2024-05	2024-06	2024-07	2024-08	2024-09	2024-10	2024-11	2024-12
Austria	3.21	2.68	2.76	2.89	2.85	2.99	3.02	3.04	2.98	2.76	2.69	2.74	2.77	2.62
Belgium	3.23	2.70	2.81	2.95	2.91	3.01	3.06	3.12	3.06	2.83	2.79	2.84	2.92	2.80
Bulgaria	4.03	4.01	3.94	3.93	3.93	3.93	3.93	3.93	3.93	3.93	3.93	3.93	3.93	3.93
Croatia	3.93	3.39	3.29	3.30	3.29	3.34	3.41	3.38	3.37	3.40	3.33	3.32	3.20	3.09
Cyprus	3.79	3.23	3.27	3.32	3.21	3.30	3.31	3.34	3.24	3.02	2.91	2.91	2.94	2.81
Czechia	4.42	3.97	3.88	3.76	3.82	4.20	4.16	4.21	3.95	3.78	3.77	3.98	4.10	4.13
Denmark	2.87	2.36	2.40	2.48	2.39	2.48	2.52	2.52	2.45	2.20	2.11	2.10	2.07	1.91
Estonia	3.67	3.21	3.31	3.49	3.49	3.64	3.71	3.77	3.80	3.56	3.44	3.41	3.51	3.43
Finland	3.20	2.68	2.80	2.88	2.85	2.94	3.00	3.05	3.00	2.78	2.72	2.75	2.81	2.65
France	3.19	2.65	2.74	2.85	2.82	2.97	3.03	3.15	3.14	2.94	2.90	2.99	3.09	3.01
Germany	2.60	2.10	2.18	2.33	2.35	2.45	2.52	2.48	2.46	2.21	2.17	2.23	2.31	2.18
Greece	3.88	3.28	3.29	3.45	3.37	3.49	3.55	3.65	3.50	3.31	3.19	3.16	3.19	3.05
Hungary	7.01	6.17	5.98	6.22	6.49	6.97	6.79	6.80	6.61	6.30	6.22	6.57	6.63	6.44
Ireland	3.01	2.46	2.60	2.78	2.75	2.89	2.91	2.93	2.86	2.64	2.55	2.59	2.63	2.49
Italy	4.43	3.82	3.81	3.87	3.70	3.86	3.84	3.94	3.83	3.68	3.57	3.50	3.57	3.32
Latvia	3.98	3.49	3.38	3.41	3.40	3.47	3.43	3.44	3.39	3.18	3.12	3.10	3.09	3.04
Lithuania	2.88	2.88	2.88	2.88	2.88	2.88	2.88	2.88	2.88	2.88	2.88	2.88	2.88	2.88
Luxembourg	3.03	2.53	2.61	2.82	2.79	2.90	2.94	2.94	2.90	2.66	2.59	2.65	2.72	2.64
Malta	3.86	3.31	3.38	3.48	3.40	3.47	3.53	3.55	3.50	3.38	3.24	3.21	3.25	3.07
Netherlands	2.95	2.42	2.51	2.64	2.62	2.72	2.83	2.82	2.77	2.53	2.47	2.53	2.57	2.45
Poland	5.54	5.21	5.24	5.36	5.40	5.67	5.67	5.73	5.65	5.28	5.31	5.60	5.66	5.73
Portugal	3.30	2.86	2.97	3.06	3.02	3.14	3.16	3.19	3.10	2.88	2.78	2.73	2.79	2.68
Romania	6.75	6.19	6.14	6.06	5.96	6.25	6.29	5.99	6.50	6.42	6.42	6.36	6.60	6.81
Slovakia	3.86	3.31	3.39	3.51	3.51	3.68	3.69	3.69	3.59	3.38	3.36	3.33	3.33	3.22
Slovenia	3.53	3.26	3.06	3.22	3.20	3.22	3.23	3.32	3.21	2.99	2.94	2.97	3.06	2.89
Spain	3.65	3.12	3.18	3.27	3.19	3.27	3.30	3.35	3.28	3.07	2.99	2.96	3.05	2.89
Sweden	2.75	2.21	2.23	2.43	2.40	2.51	2.38	2.26	2.12	1.93	1.93	2.04	2.07	2.10
Iceland	7.28	6.93	6.81	6.48	6.86	6.90	6.78	6.75	6.88	6.62	6.39	6.50	6.38	6.53
Norway	3.57	3.26	3.52	3.80	3.54	3.83	3.73	3.62	3.44	3.32	3.31	3.82	3.50	3.85
UK	4.24	3.76	3.83	4.06	4.01	4.19	4.22	4.14	4.12	3.93	3.89	4.18	4.43	4.44

	2025-01	2025-02	2025-03	2025-04	2025-05	2025-06	2025-07	2025-08	2025-09	2025-10	2025-11	2025-12	2026-01	2026-02	2026-03	5 Y Avg.
Austria	2.91	2.86	3.15	2.98	2.98	2.94	3.01	3.03	3.02	2.94	2.97	3.10	3.08	3.07	3.24	2.28
Belgium	3.10	3.01	3.32	3.14	3.14	3.09	3.21	3.23	3.26	3.19	3.20	3.32	3.36	3.30	3.51	2.36
Bulgaria	3.93	3.93	3.93	3.93	3.93	3.93	3.93	3.93	3.93	3.93	3.93	3.93	3.93	3.93	3.93	2.86
Croatia	2.98	2.99	3.05	3.05	3.04	3.04	3.05	2.98	2.88	2.92	2.94	3.14	2.94	3.09	3.19	2.78
Cyprus	3.05	2.89	3.10	2.90	2.88	2.86	2.90	2.92	2.95	2.86	2.87	3.00	3.09	3.17	3.45	2.81
Czechia	4.20	4.06	4.26	4.09	4.16	4.23	4.30	4.35	4.42	4.46	4.61	4.65	4.46	4.37	4.72	3.94
Denmark	2.21	2.17	2.45	2.31	2.31	2.34	2.37	2.37	2.36	2.32	2.37	2.71	2.73	2.63	2.79	1.90
Estonia	3.50	3.25	3.51	3.41	3.32	3.20	3.23	3.22	3.27	3.24	3.30	3.38	3.26	3.11	3.28	2.79
Finland	2.95	2.82	3.12	2.94	2.95	2.90	3.05	3.09	3.09	3.01	3.04	3.17	3.25	3.16	3.32	2.27
France	3.32	3.15	3.43	3.26	3.26	3.24	3.36	3.42	3.51	3.44	3.44	3.56	3.53	3.40	3.64	2.39
Germany	2.48	2.41	2.74	2.51	2.56	2.52	2.63	2.67	2.69	2.62	2.66	2.81	2.81	2.74	2.91	1.79
Greece	3.35	3.29	3.60	3.44	3.37	3.29	3.36	3.37	3.39	3.30	3.30	3.44	3.43	3.39	3.71	3.16
Hungary	6.82	6.67	7.04	6.99	6.95	7.08	7.02	7.03	6.96	6.79	6.97	6.90	6.67	6.48	7.13	6.53
Ireland	2.79	2.72	3.05	2.90	2.89	2.85	2.92	2.94	2.95	2.87	2.90	3.01	3.06	3.03	3.20	2.22
Italy	3.68	3.58	3.89	3.71	3.63	3.50	3.54	3.54	3.56	3.44	3.46	3.55	3.49	3.39	3.73	3.25
Latvia	3.21	3.14	3.37	3.36	3.30	3.25	3.17	3.17	3.18	3.29	3.53	3.66	3.66	3.53	3.70	2.73
Lithuania	2.88	2.88	2.88	2.88	2.88	2.88	2.88	2.88	2.88	2.88	2.88	2.88	2.88	2.88	2.88	2.02
Luxembourg	2.90	2.76	3.04	2.87	2.88	2.88	2.92	2.89	2.93	2.89	2.95	3.10	3.05	2.93	3.12	2.18
Malta	3.35	3.26	3.53	3.37	3.43	3.37	3.50	3.54	3.55	3.44	3.45	3.72	3.67	3.57	3.80	2.85
Netherlands	2.73	2.63	2.94	2.71	2.80	2.76	2.84	2.88	2.88	2.79	2.83	2.97	2.94	2.85	3.02	2.02
Poland	5.94	5.83	5.86	5.30	5.41	5.53	5.34	5.40	5.47	5.41	5.28	5.21	5.10	4.99	5.58	5.16
Portugal	2.96	2.95	3.29	3.11	3.08	3.02	3.11	3.12	3.13	3.02	3.03	3.15	3.19	3.13	3.37	2.50
Romania	7.07	6.83	6.33	6.63	6.83	7.37	7.13	7.17	7.29	7.07	6.82	6.72	6.59	5.99	6.33	6.39
Slovakia	3.43	3.22	3.51	3.49	3.49	3.43	3.43	3.45	3.48	3.39	3.37	3.47	3.41	3.27	3.50	2.69
Slovenia	3.10	2.93	3.28	3.10	3.06	3.02	3.04	3.17	3.19	3.11	3.11	3.25	3.19	3.09	3.25	2.48
Spain	3.17	3.10	3.39	3.23	3.20	3.16	3.24	3.26	3.26	3.15	3.17	3.27	3.27	3.17	3.39	2.63
Sweden	2.32	2.26	2.60	2.42	2.40	2.31	2.36	2.43	2.56	2.58	2.66	2.82	2.80	2.64	2.76	1.92
Iceland	6.60	6.76	6.67	6.71	6.73	6.97	7.01	6.89	6.77	6.55	6.24	6.44	6.58	6.61	7.06	6.05
Norway	3.83	3.79	4.06	3.86	3.98	3.81	3.93	3.94	4.04	4.00	4.05	4.16	4.20	4.11	4.35	3.21
UK	4.67	4.52	4.67	4.58	4.65	4.49	4.57	4.72	4.70	4.41	4.44	4.48	4.52	4.23	4.92	3.37

[176] Maastricht criterion bond yields (mcby) are long-term interest rates, used as a convergence criterion for the European Monetary Union, based on the Maastricht Treaty. Data Source: Eurostat IRT_LT_MXBY_M “Long-term government bond yields”, 2021M04 to 2026M03, last updated by Eurostat on 15.04.2026. Estonia: Data has only become available via Eurostat from 06-2022, therefore prior data was derived by BEREC via Bloomberg. Iceland, Norway and UK (UK starting from 05/2025, where it ceased to be available via Eurostat) derived by BEREC via Bloomberg. For Iceland only two bonds match the relevant maturity over the five-year time window: "ICEGB 6,5 01/24/31" and "ICEGB 7 09/17/35". Norwegian data refer to "GTKNOK10YR" and UK data refer to "GTGBP10YR" (generic 10 Year government bond curves). Bloomberg data select the mid yield to maturity based on the benchmark government bond that best matches the 10-year residual maturity.

Annex 2: Debt premium and cost of debt

Company and government bond pairs

CORPORATE		GOVERNEMENT	
Deutsche Telekom	Maturity	Government bond	Maturity
DT 3 12/21/2032 Corp	21/12/2032	DBR 2 ½ 11/15/2032 REGS Corp	15/11/2032
		ZK351273 Corp	15/02/2033
		BX334302@BGN Corp	15/08/2032
		ZF145153@BGN Corp	15/02/2034
		EC830062@BGN Corp	04/07/2034
EJ545801@BGN Corp	11/02/2033	ZK351273 Corp	15/02/2033
		DBR 2 ½ 11/15/2032 REGS Corp	15/11/2032
		BX334302@BGN Corp	15/08/2032
		ZF145153@BGN Corp	15/02/2034
		EC830062@BGN Corp	04/07/2034
EJ746711@BGN Corp	15/07/2033	ZK351273 Corp	15/02/2033
		ZF145153@BGN Corp	15/02/2034
		DBR 2 ½ 11/15/2032 REGS Corp	15/11/2032
		BX334302@BGN Corp	15/08/2032
		EC830062@BGN Corp	04/07/2034
EJ514687@BGN Corp	17/01/2033	ZK351273 Corp	15/02/2033
		DBR 2 ½ 11/15/2032 REGS Corp	15/11/2032
		BX334302@BGN Corp	15/08/2032
EC826182@BGN Corp	24/01/2033	ZK351273 Corp	15/02/2033
		DBR 2 ½ 11/15/2032 REGS Corp	15/11/2032
		BX334302@BGN Corp	15/08/2032
		ZF145153@BGN Corp	15/02/2034
		EC830062@BGN Corp	04/07/2034
AT612774@BGN Corp	25/07/2033	ZK351273 Corp	15/02/2033
		ZF145153@BGN Corp	15/02/2034
		DBR 2 ½ 11/15/2032 REGS Corp	15/11/2032
		EC830062@BGN Corp	04/07/2034
AZ460839@BGN Corp	05/07/2034	EC830062@BGN Corp	04/07/2034
YT413430@BGN Corp	04/06/2035	BJ305561@BGN Corp	15/05/2035

ZD726080@BGN Corp	20/03/2036	DC624417@BGN Corp	15/02/2036
		BO221256@BGN Corp	15/05/2036
AX781466@BGN Corp	29/03/2039	EG120904@BGN Corp	04/07/2039
Digi	**MATURITY**	**Government bond**	**MATURITY**
TITIM 7 ¾ 01/24/2033 Corp	24/01/2033	EC534684@BGN Corp	01/02/2033
Elisa (corporate bond)	**MATURITY**	**Government bond**	**MATURITY**
DT 3 12/21/2032 Corp	21/12/2032	BW793577@BGN Corp	15/09/2032
		YL441562@BGN Corp	15/04/2032
		ZK372958@BGN Corp	15/09/2033
		AR111282@BGN Corp	15/04/2034
EJ545801@BGN Corp	11/02/2033	BW793577@BGN Corp	15/09/2032
		ZK372958@BGN Corp	15/09/2033
		YL441562@BGN Corp	15/04/2032
		AR111282@BGN Corp	15/04/2034
EJ746711@BGN Corp	15/07/2033	ZK372958@BGN Corp	15/09/2033
		AR111282@BGN Corp	15/04/2034
EJ514687@BGN Corp	17/01/2033	BW793577@BGN Corp	15/09/2032
EC826182@BGN Corp	24/01/2033	BW793577@BGN Corp	15/09/2032
		ZK372958@BGN Corp	15/09/2033
		YL441562@BGN Corp	15/04/2032
		AR111282@BGN Corp	15/04/2034
AT612774@BGN Corp	25/07/2033	ZK372958@BGN Corp	15/09/2033
		AR111282@BGN Corp	15/04/2034
AZ460839@BGN Corp	05/07/2034	ZB628316@BGN Corp	15/09/2034
		AR111282@BGN Corp	15/04/2034
YT413430@BGN Corp	04/06/2035	RFGB 3 09/15/2035 Corp	15/09/2035
		ZB628316@BGN Corp	15/09/2034
ZD726080@BGN Corp	20/03/2036	ZP870311@BGN Corp	15/04/2036
AX781466@BGN Corp	29/03/2039	ZM657628@BGN Corp	15/04/2038
		ZP870311@BGN Corp	15/04/2036
PROXBB 3 ¾ 04/08/2035 REGS Corp	08/04/2035	RFGB 3 09/15/2035 Corp	15/09/2035
		ZB628316@BGN Corp	15/09/2034

BS356368@BGN Corp	17/11/2036	ZP870311@BGN Corp	15/04/2036
ZD891365@BGN Corp	27/03/2034	AR111282@BGN Corp	15/04/2034
ZG030804@BGN Corp	17/11/2033	ZK372958@BGN Corp	15/09/2033
ORAFP 3 ¼ 01/17/2035 REGS Corp	17/01/2035	ZB628316@BGN Corp	15/09/2034
YO425419@BGN Corp	19/05/2035	RFGB 3 09/15/2035 Corp	15/09/2035
BQ216006@BGN Corp	29/06/2034	AR111282@BGN Corp	15/04/2034
BS895338@BGN Corp	16/12/2033	ZK372958@BGN Corp	15/09/2033
		AR111282@BGN Corp	15/04/2034
ZI729185@BGN Corp	11/09/2035	RFGB 3 09/15/2035 Corp	15/09/2035
		ZP870311@BGN Corp	15/04/2036
EC822743@BGN Corp	28/01/2033	BW793577@BGN Corp	15/09/2032
		ZK372958@BGN Corp	15/09/2033
		YL441562@BGN Corp	15/04/2032
		AR111282@BGN Corp	15/04/2034
ZR363790@BGN Corp	04/09/2032	BW793577@BGN Corp	15/09/2032
		YL441562@BGN Corp	15/04/2032
		ZK372958@BGN Corp	15/09/2033
		AR111282@BGN Corp	15/04/2034
BH472600@BGN Corp	07/04/2032	YL441562@BGN Corp	15/04/2032
		BW793577@BGN Corp	15/09/2032
		ZK372958@BGN Corp	15/09/2033
		AR111282@BGN Corp (R2)	15/04/2034
BW487187@BGN Corp	18/05/2032	YL441562@BGN Corp	15/04/2032
		BW793577@BGN Corp	15/09/2032
		ZK372958@BGN Corp	15/09/2033
		AR111282@BGN Corp	15/04/2034
AZ540895@BGN Corp	11/07/2034	ZB628316@BGN Corp	15/09/2034
		AR111282@BGN Corp	15/04/2034
EJ903924@BGN Corp	30/09/2033	ZK372958@BGN Corp	15/09/2033
		AR111282@BGN Corp	15/04/2034

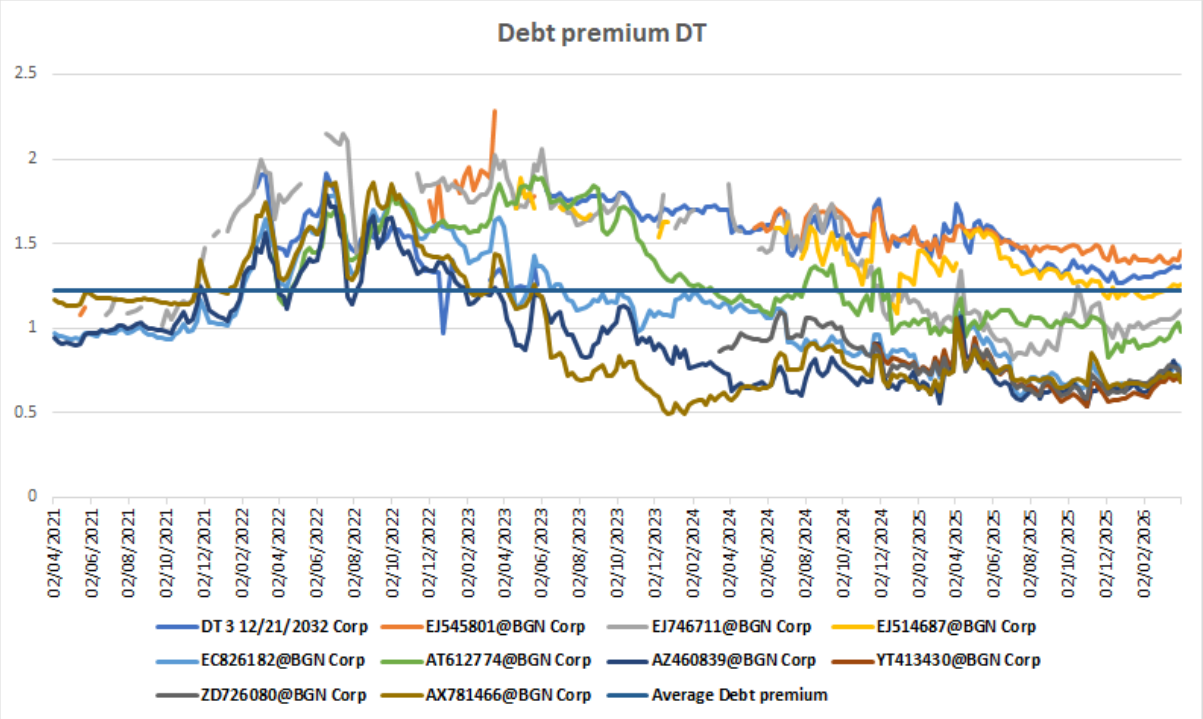
DA086121@BGN Corp	13/11/2034	ZB628316@BGN Corp	15/09/2034
DA086128@BGN Corp	13/05/2038	ZM657628@BGN Corp	15/04/2038
YL708095@BGN Corp	04/09/2037	ZM657628@BGN Corp	15/04/2038
TELIAS 2 ⅛ 02/20/2034 REGS Corp	20/02/2034	AR111282@BGN Corp	15/04/2034
EJ811675@BGN Corp	05/09/2033	ZK372958@BGN Corp	15/09/2033
		AR111282@BGN Corp	15/04/2034
EK757380@BGN Corp	23/02/2035	ZB628316@BGN Corp	15/09/2034
		RFGB 3 09/15/2035 Corp	15/09/2035
		AR111282@BGN Corp	15/04/2034
KPN	**MATURITY**	**Government bond**	**MATURITY**
KPN 3 ⅞ 02/16/2036 REGS Corp	16/02/2036	DF978070@BGN Corp	15/07/2036
		YR968956@BGN Corp	15/07/2035
		ED908354@BGN Corp	15/01/2037
YR409111@BGN Corp	17/02/2035	YR968956@BGN Corp	15/07/2035
ZO366662@BGN Corp	14/12/2032	EJ051067@BGN Corp	15/01/2033
BS308019@BGN Corp	15/11/2033	EJ051067@BGN Corp	15/01/2033
YI684143@BGN Corp	12/05/2034	ZF793713@BGN Corp	15/07/2034
orange	**MATURITY**	**Government bond**	**MATURITY**
ORAFP 3 ¼ 01/17/2035 REGS Corp	17/01/2035	FRTR 3 11/25/2034 Corp	25/11/2034
YO425419@BGN Corp	19/05/2035	YR156127@BGN Corp	25/05/2035
		ED387159@BGN Corp	25/04/2035
BQ216006@BGN Corp	29/06/2034	AQ942148@BGN Corp	25/05/2034
BS895338@BGN Corp	16/12/2033	ZH211111@BGN Corp	25/11/2033
		AQ942148@BGN Corp	25/05/2034
ZI729185@BGN Corp	11/09/2035	YL748982@BGN Corp	25/11/2035
		YR156127@BGN Corp	25/05/2035
		ED387159@BGN Corp	25/04/2035
EC822743@BGN Corp	28/01/2033	BX568156@BGN Corp	25/11/2032
		EC395400@BGN Corp	25/10/2032

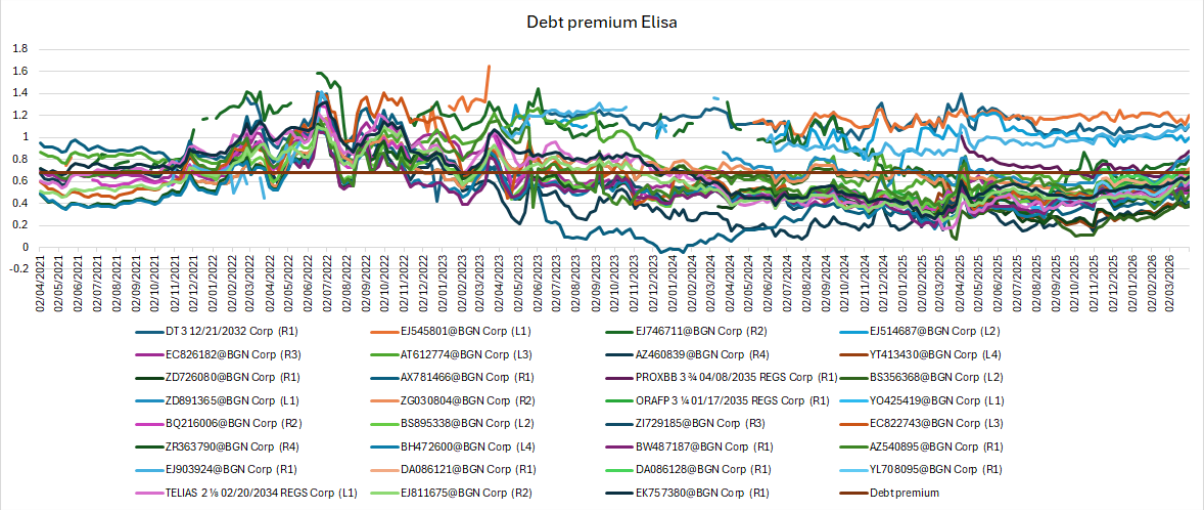
ZR363790@BGN Corp	04/09/2032	EC395400@BGN Corp	25/10/2032
		BX568156@BGN Corp	25/11/2032
BH472600@BGN Corp	07/04/2032	BT271836@BGN Corp	25/05/2032
		EC395400@BGN Corp	25/10/2032
BW487187@BGN Corp	18/05/2032	BT271836@BGN Corp	25/05/2032
AZ540895@BGN Corp	11/07/2034	AQ942148@BGN Corp	25/05/2034
EJ903924@BGN Corp	30/09/2033	ZH211111@BGN Corp	25/11/2033
		ZL984408@BGN Corp	25/05/2033
		AQ942148@BGN Corp	25/05/2034
DA086121@BGN Corp	13/11/2034	FRTR 3 11/25/2034 Corp	25/11/2034
DA086128@BGN Corp	13/05/2038	BV688282@BGN Corp	25/05/2038
YL708095@BGN Corp	04/09/2037	BV688282@BGN Corp	25/05/2038
Proximus	**MATURITY**	**Government bond**	**MATURITY**
PROXBB 3 ¾ 04/08/2035 REGS Corp	08/04/2035	ED465131@BGN Corp	28/03/2035
BS356368@BGN Corp	17/11/2036	DC800443@BGN Corp	22/06/2036
		AN711039@BGN Corp	22/06/2037
ZD891365@BGN Corp	27/03/2034	EK119298@BGN Corp	22/06/2034
ZG030804@BGN Corp	17/11/2033	ZM326915@BGN Corp	22/06/2033
Tele2	**MATURITY**	**Government bond**	**MATURITY**
VOD 3 ⅜ 07/03/2033 REGS Corp	03/07/2033	ZK351273 Corp	15/02/2033
YN871528@BGN Corp	02/08/2038	BV982438@BGN Corp	15/05/2038
ZN680178@BGN Corp	02/12/2034	EC830062@BGN Corp	04/07/2034
YW729119@BGN Corp	01/08/2033	ZK351273 Corp	15/02/2033
EK613198@BGN Corp	01/12/2034	EC830062@BGN Corp	04/07/2034
ZS775945@BGN Corp	24/05/2039	EG120904@BGN Corp	04/07/2039
AQ049903@BGN Corp	20/11/2037	BV982438@BGN Corp	15/05/2038
		BO221256@BGN Corp	15/05/2036
DF816894@BGN Corp	27/04/2035	BJ305561@BGN Corp	15/05/2035

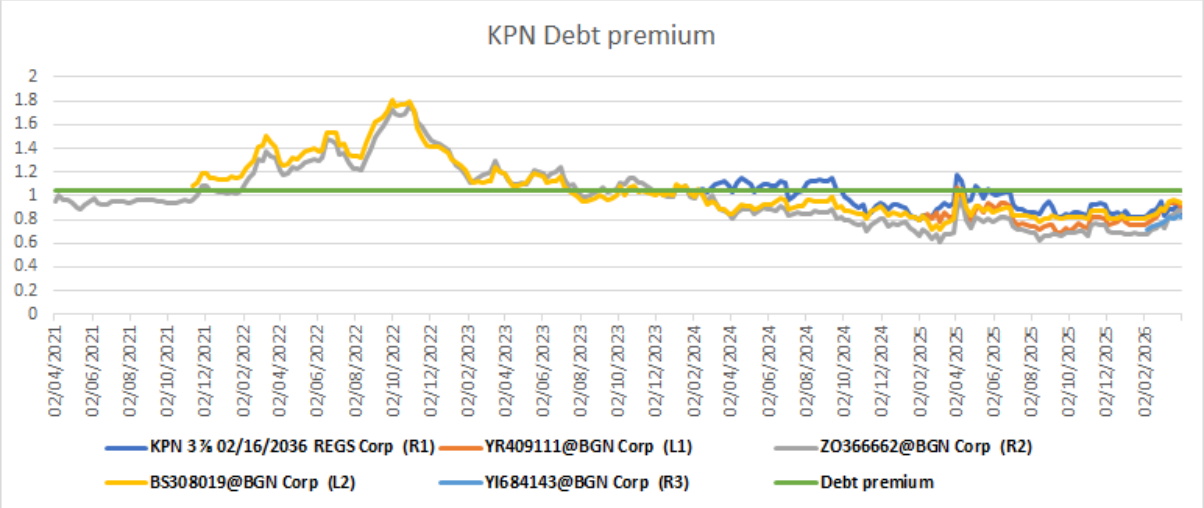
KPN 3 ⅞ 02/16/2036 REGS Corp	16/02/2036	DC624417@BGN Corp	15/02/2036
		BO221256@BGN Corp	15/05/2036
YR409111@BGN Corp	17/02/2035	BJ305561@BGN Corp	15/05/2035
ZO366662@BGN Corp	14/12/2032	ZK351273 Corp	15/02/2033
		BX334302@BGN Corp	15/08/2032
		ZF145153@BGN Corp	15/02/2034
		EC830062@BGN Corp	04/07/2034
BS308019@BGN Corp	15/11/2033	ZF145153@BGN Corp	15/02/2034
		EC830062@BGN Corp	04/07/2034
YI684143@BGN Corp	12/05/2034	EC830062@BGN Corp	04/07/2034
Telecom Italia	**MATURITY**	**Government bond**	**MATURITY**
TITIM 7 ¾ 01/24/2033 Corp	24/01/2033	EC534684@BGN Corp	01/02/2033
Telefonica	**MATURITY**	**Government bond**	**MATURITY**
TELEFO 3.724 01/23/2034 REGS Corp	23/01/2034	ZK907819@BGN Corp	31/10/2033
ZG135734@BGN Corp	21/11/2033	ZK907819@BGN Corp	31/10/2033
YN538407@BGN Corp	25/06/2035	AX414755@BGN Corp	30/07/2035
ZF395315@BGN Corp	24/01/2036	YO920148@BGN Corp	31/10/2035
		YI170144@BGN Corp	30/04/2036
		AX414755@BGN Corp	30/07/2035
EC851195@BGN Corp	14/02/2033	YK483980@BGN Corp	31/01/2033
		ZM635445@BGN Corp	30/04/2033
		BX027537@BGN Corp	31/10/2032
		AM606745@BGN Corp	30/07/2033
BJ468454@BGN Corp	21/05/2032	BT435302@BGN Corp	30/04/2032
		EC330163@BGN Corp	30/07/2032
AZ304848@BGN Corp	01/07/2039	ZL184548@BGN Corp	30/07/2039
		BP054564@BGN Corp	30/07/2037
		ED773772@BGN Corp	31/01/2037
YI399659@BGN Corp	02/05/2033	ZM635445@BGN Corp	30/04/2033
Telenor	**MATURITY**	**Government bond**	**MATURITY**
TELNO 3 ⅜ 04/01/2032 REGS Corp	01/04/2032	BX334302@BGN Corp	15/08/2032
ZH098268@BGN Corp	03/10/2035	DC624417@BGN Corp	15/02/2036

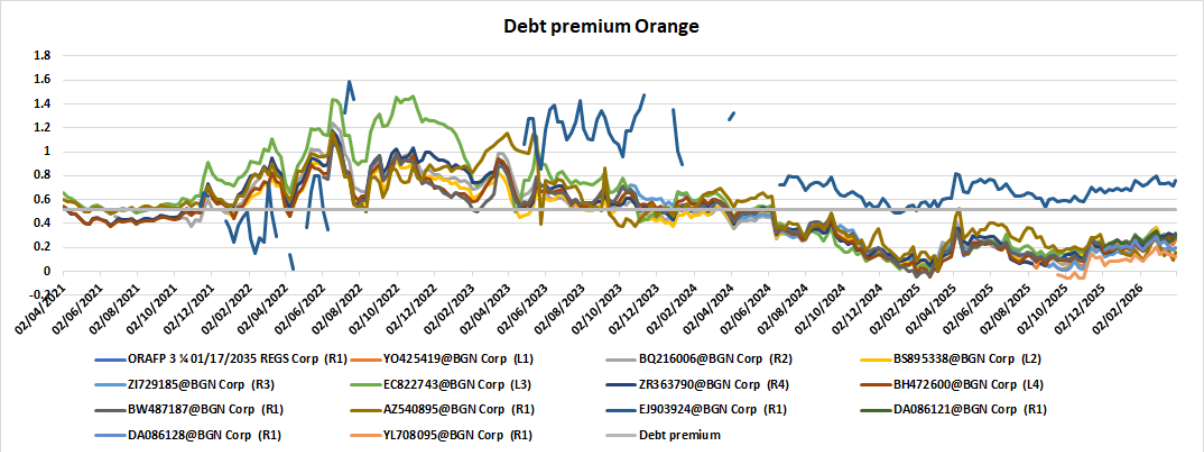
		BJ305561@BGN Corp	15/05/2035
ZS824445@BGN Corp	31/05/2034	EC830062@BGN Corp	04/07/2034
ZP935488@BGN Corp	14/02/2035	BJ305561@BGN Corp	15/05/2035
Telia	**MATURITY**	**Government bond**	**MATURITY**
TELIAS 2 ⅛ 02/20/2034 REGS Corp	20/02/2034	ZF145153@BGN Corp	15/02/2034
		EC830062@BGN Corp	04/07/2034
EJ811675@BGN Corp	05/09/2033	ZF145153@BGN Corp	15/02/2034
		ZK351273 Corp	15/02/2033
		YL520080@BGN Corp	15/11/2032
		EC830062@BGN Corp	04/07/2034
EK757380@BGN Corp	23/02/2035	BJ305561@BGN Corp	15/05/2035
Vodafone	**MATURITY**	**Government bond**	**MATURITY**
EC766795@BGN Corp	26/11/2032	UKT 4 ¼ 06/07/2032 REGS Corp	07/06/2032

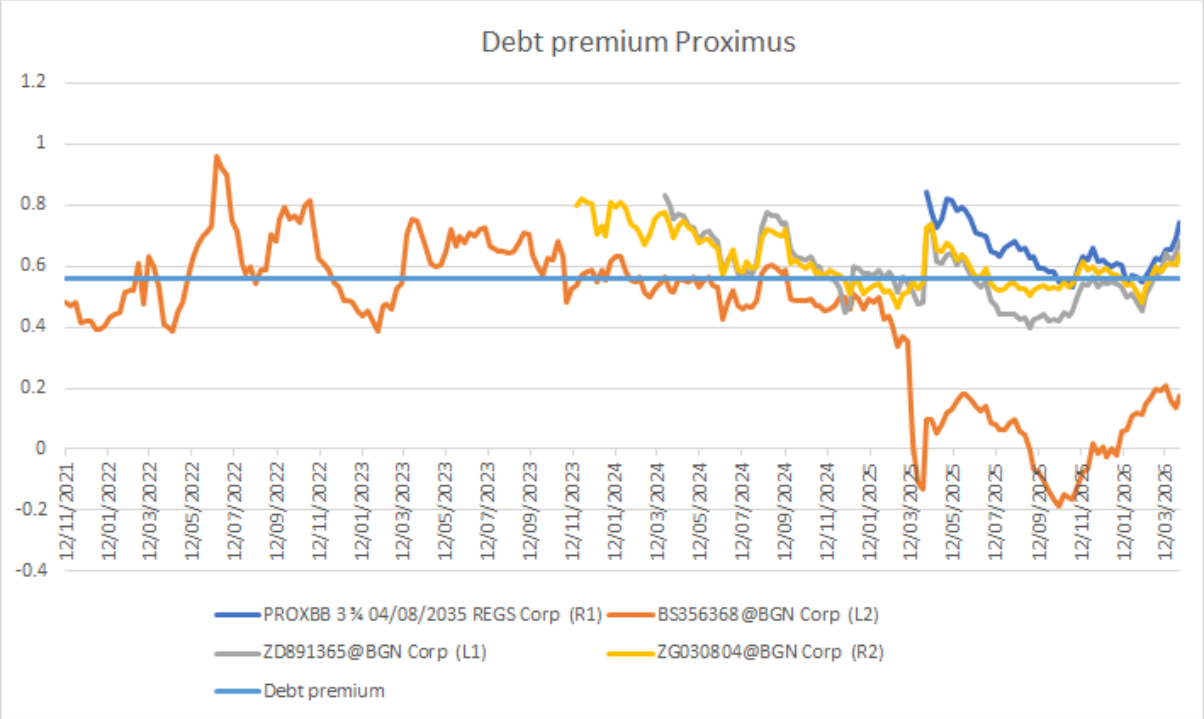
Below, a graphical representation for each company, with an evolution over the 5-years averaging window, the **debt premium of their different bond pairs**:

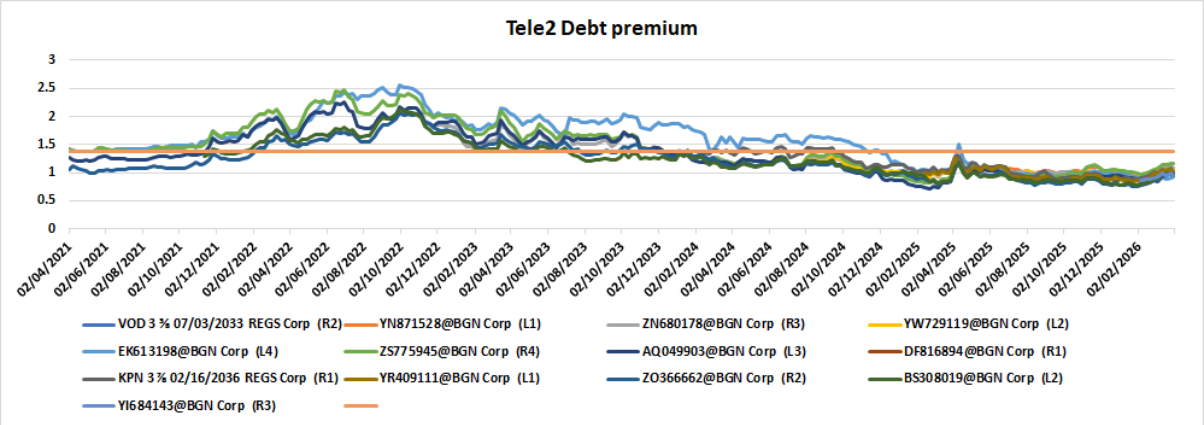


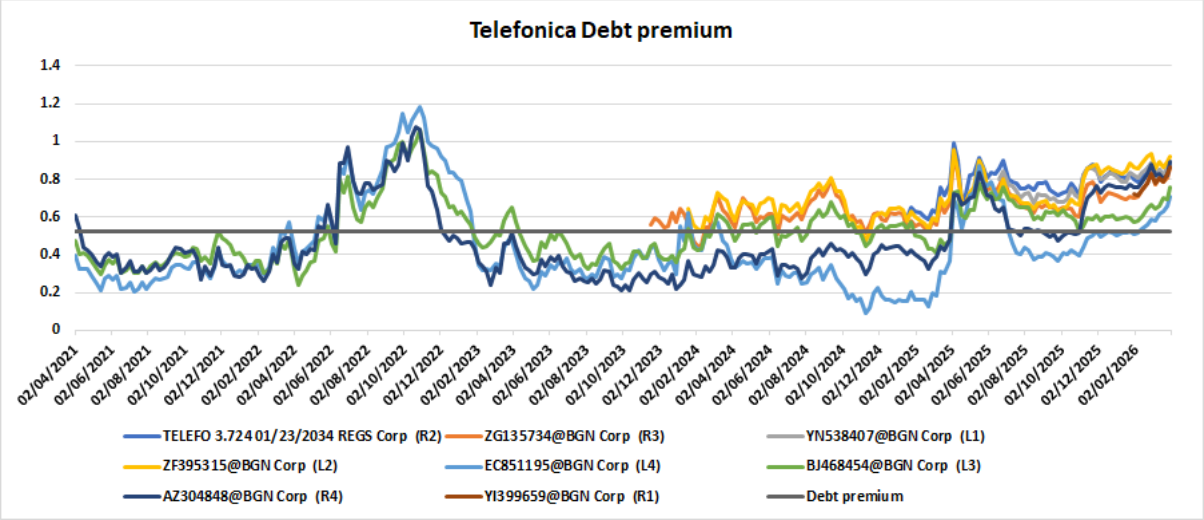

Debt premium Elisa
DT 3 12/21/2032 Corp (R1)
EJ545801@BGN Corp (L1)
EJ746711@BGN Corp (R2)
EJ514687@BGN Corp (L2)
EC826182@BGN Corp (R3)
AT612774@BGN Corp (L3)
AZ460839@BGN Corp (R4)
YT413430@BGN Corp (L4)
ZD726080@BGN Corp (R1)
AX781466@BGN Corp (R1)
PROXBB 3 ¾ 04/08/2035 REGS Corp (R1)
BS356368@BGN Corp (L2)
ZD891365@BGN Corp (L1)
ZG030804@BGN Corp (R2)
ORAFP 3 ¼ 01/17/2035 REGS Corp (R1)
YO425419@BGN Corp (L1)
BQ216006@BGN Corp (R2)
BS895338@BGN Corp (L2)
ZI729185@BGN Corp (R3)
EC822743@BGN Corp (L3)
ZR363790@BGN Corp (R4)
BH472600@BGN Corp (L4)
BW487187@BGN Corp (R1)
AZ540895@BGN Corp (R1)
EJ903924@BGN Corp (R1)
DA086121@BGN Corp (R1)
DA086128@BGN Corp (R1)
YL708095@BGN Corp (R1)
TELIAS 2 ⅛ 02/20/2034 REGS Corp (L1)
EJ811675@BGN Corp (R2)
EK757380@BGN Corp (R1)
Debt premium

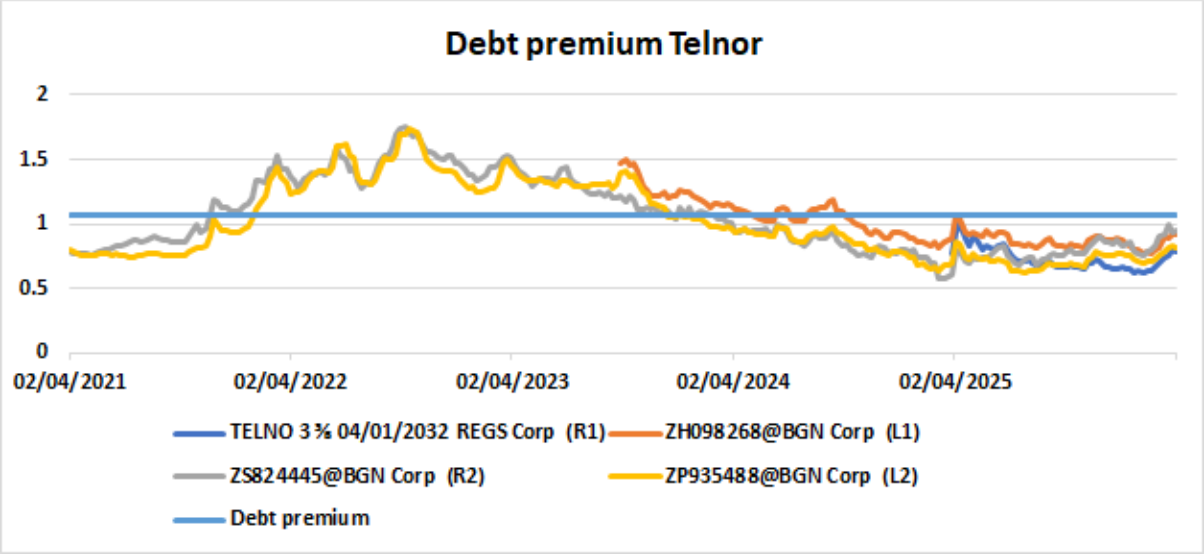

KPN Debt premium
KPN 3 ⅞ 02/16/2036 REGS Corp (R1)
YR409111@BGN Corp (L1)
ZO366662@BGN Corp (R2)
BS308019@BGN Corp (L2)
YI684143@BGN Corp (R3)
Debt premium

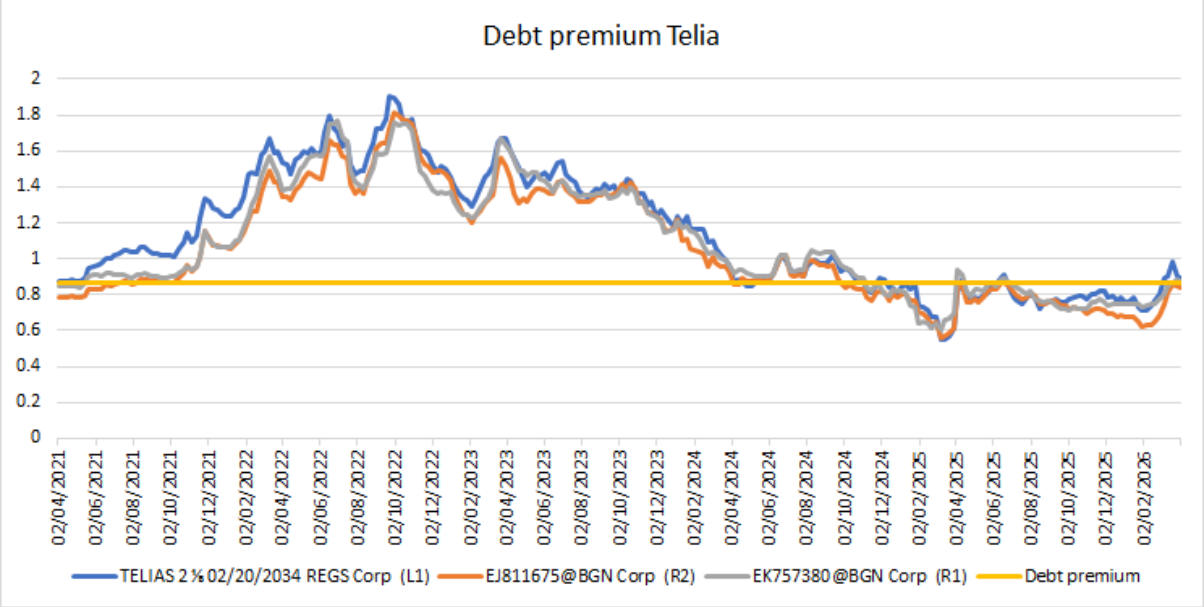

Debt premium Orange
ORAFP 3 ¼ 01/17/2035 REGS Corp (R1)
YO425419@BGN Corp (L1)
BQ216006@BGN Corp (R2)
BS895338@BGN Corp (L2)
ZI729185@BGN Corp (R3)
EC822743@BGN Corp (L3)
ZR363790@BGN Corp (R4)
BH472600@BGN Corp (L4)
BW487187@BGN Corp (R1)
AZ540895@BGN Corp (R1)
EJ903924@BGN Corp (R1)
DA086121@BGN Corp (R1)
DA086128@BGN Corp (R1)
YL708095@BGN Corp (R1)
Debt premium


Debt premium Proximus
PROXBB 3 ¾ 04/08/2035 REGS Corp (R1)
BS356368@BGN Corp (L2)
ZD891365@BGN Corp (L1)
ZG030804@BGN Corp (R2)
Debt premium


Tele2 Debt premium
VOD 3 ⅜ 07/03/2033 REGS Corp (R2)
YN871528@BGN Corp (L1)
ZN680178@BGN Corp (R3)
YW729119@BGN Corp (L2)
EK613198@BGN Corp (L4)
ZS775945@BGN Corp (R4)
AQ049903@BGN Corp (L3)
DF816894@BGN Corp (R1)
KPN 3 ⅜ 02/16/2036 REGS Corp (R1)
YR409111@BGN Corp (L1)
ZO366662@BGN Corp (R2)
BS308019@BGN Corp (L2)
YI684143@BGN Corp (R3)


Telefonica Debt premium
TELEFO 3.724 01/23/2034 REGS Corp (R2)
ZG135734@BGN Corp (R3)
YN538407@BGN Corp (L1)
ZF395315@BGN Corp (L2)
EC851195@BGN Corp (L4)
BJ468454@BGN Corp (L3)
AZ304848@BGN Corp (R4)
YI399659@BGN Corp (R1)
Debt premium


Debt premium Telnor
2
1.5
1
0.5
0
02/04/2021
02/04/2022
02/04/2023
02/04/2024
02/04/2025
TELNO 3 ¾ 04/01/2032 REGS Corp (R1)
ZH098268@BGN Corp (L1)
ZS824445@BGN Corp (R2)
ZP935488@BGN Corp (L2)
Debt premium


Debt premium Telia
2
1.8
1.6
1.4
1.2
1
0.8
0.6
0.4
0.2
0
02/04/2021
02/06/2021
02/08/2021
02/10/2021
02/12/2021
02/02/2022
02/04/2022
02/06/2022
02/08/2022
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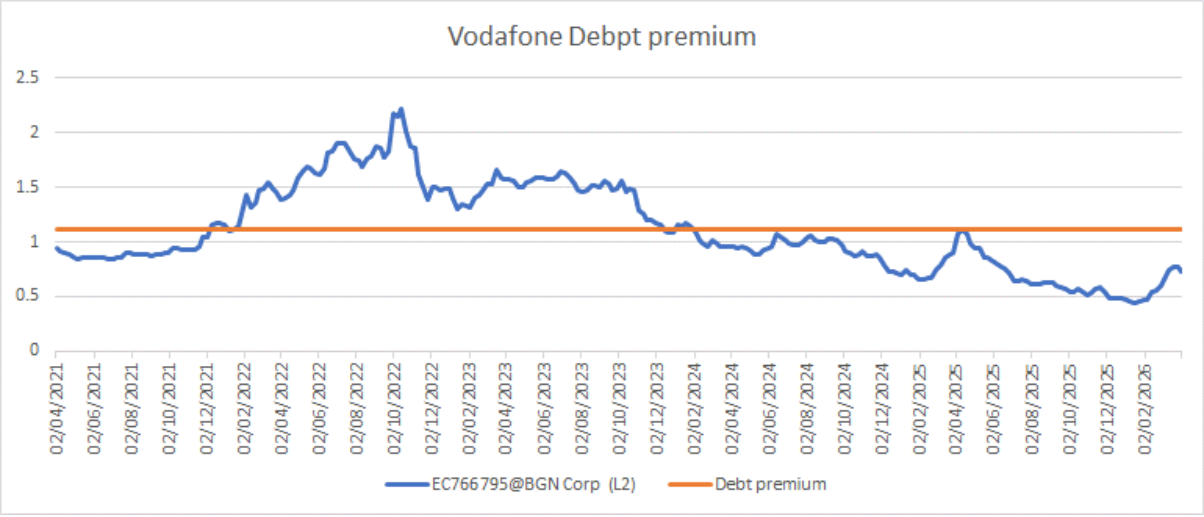
02/10/2024
02/12/2024
02/02/2025
02/04/2025
02/06/2025
02/08/2025
02/10/2025
02/12/2025
02/02/2026
TELIAS 2 ¼ 02/20/2034 REGS Corp (L1)
EJ811675@BGN Corp (R2)
EK757380@BGN Corp (R1)
Debt premium


Vodafone Debpt premium
2.5
2
1.5
1
0.5
0
02/04/2021
02/06/2021
02/08/2021
02/10/2021
02/12/2021
02/02/2022
02/04/2022
02/06/2022
02/08/2022
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02/02/2025
02/04/2025
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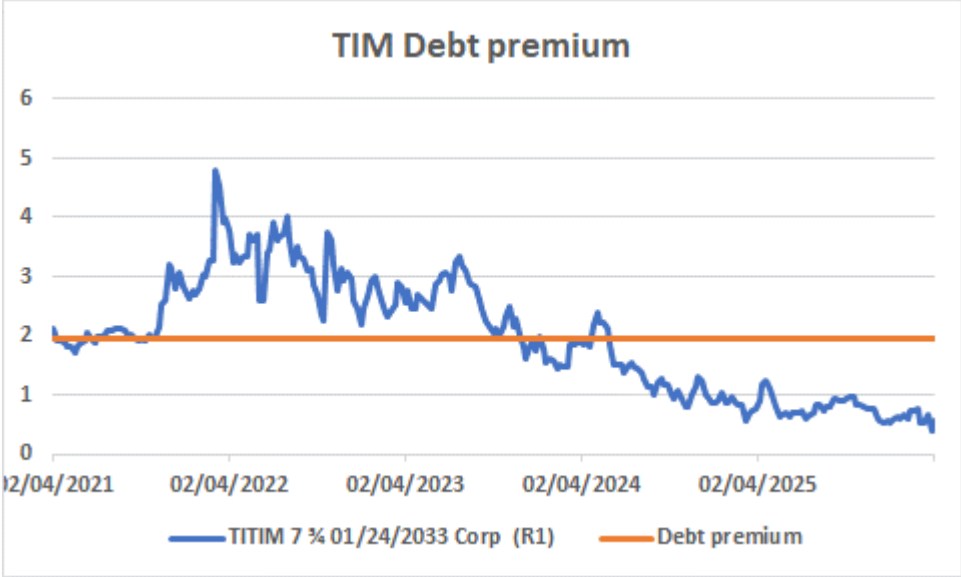
02/10/2025
02/12/2025
02/02/2026
EC766795@BGN Corp (L2)
Debt premium



Annex 3: Beta and Gearing

In this annex the process and the results of the estimation for the 14 peers analysed will be reported.

The information for each peer about the estimation of the equity beta, the spot gearing and its components (Equity and Debt) are provided. For each comparable a statistic analysis is also reported to get information on the consistency, in term of bias and efficiency of the estimation.

In the table below we report some information about the 14 peer-operators. Specifically, information about where i) the shares have been traded; ii) the revenues have been achieved since last financial, reports public available, in the EU countries; iii) the free float percentage of the traded share (spot value);[177] iv) the sensitivity analysis as reported in chapter 5 considering an estimation of the gearing including pension liabilities in the debt component and the corresponding asset beta evaluated with this new gearing.

[177] April 2026 calculated as number of not stagnat shares divided by number of share emitted from balance sheet publication (Bloomberg Source)

Peer group companies

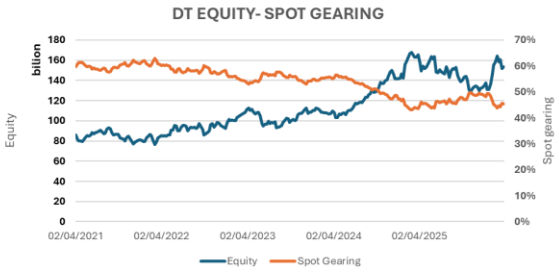
No.	Peer Group operator	Country	Fitch	Moody's	S&P	Free Float	Market Cap (5Years time window weekly sampling period in EURO)	Weight (market cap)	Equity beta	Gearing	Gearing including pension fund	Asset beta	Asset beta with gearing including pension fund	Debt premium	% of revenues in European countries
1	Deutsche Telekom AG	Germany	BBB+	A3	BBB+	70.29%	112.3	41.73%	0.58	54.08%	54.76%	0.32	0.32	122	32%
2	Elisa Oyj	Finland		Baa2	BBB+	82.01%	7.6	2.82%	0.35	13.51%	13.60%	0.31	0.31	68	98%
3	Koninklijke KPN N.V.	Netherlands	BBB		BBB	99.84%	13.3	4.94%	0.2	32.18%	32.31%	0.17	0.17	104	100%
4	NOS	Portugal	BBB		BBB-	36.32%	1.87	0.69%	0.34	42.13%	42.13%	0.24	0.24		100%
5	Orange S.A.	France	BBB+	Baa1	BBB+	66.94%	29.55	10.98%	0.21	56.46%	58.16%	0.15	0.15	52	58%
6	Proximus S.A.	Belgium		A3	BBB+	41.89%	3.32	1.23%	0.41	53.88%	56.07%	0.25	0.24	56	100%
7	Tele2 AB	Sweden			BBB	80.50%	7.45	2.77%	0.33	24.56%	24.56%	0.27	0.27	139	100%
8	Telecom Italia	Italy	BB	Ba2	BB	70.17%	6.9	2.56%	1.09	71.15%	71.54%	0.4	0.4	197	69%
9	Telefónica S.A.	Spain	BBB	Baa3	BBB-	69.42%	23	8.55%	0.62	62.02%	64.80%	0.3	0.28	52	59%
10	Telecom Austria AG	Austria	A-	A3	A-	10.99%	4.79	1.78%	0.48	28.66%	30.54%	0.37	0.36		82%
11	Telenor	Norway		Baa1	A-	46.03%	16.63	6.18%	0.31	34.04%	34.52%	0.24	0.23	106	77%
12	Telia Company AB	Sweden		Baa1	BBB+	58.83%	11.88	4.41%	0.27	40.39%	41.31%	0.2	0.2	110	100%
13	Vodafone Group plc	UK	BBB	Baa2	BBB	63.29%	29.51	10.97%	0.66	64.40%	64.52%	0.3	0.3	111	66%
14	DIGI	Romania	BB		BB-	94.69%	1	0.37%	0.52	60.72%	60.72%	0.27	0.27	197	100%

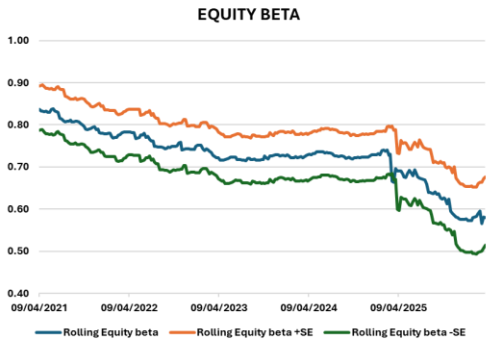
More detailed information for the selected parameters for each company are reported in the following. Specifically, the balance sheet data which are needed for the debt component of the gearing are reported including ten years data (2016-2025) due to the fact that a rolling beta estimation over a time windows of five years is reported for information only to show the trend over the years. The values that are reported in the pictures on the rolling Equity beta refer:

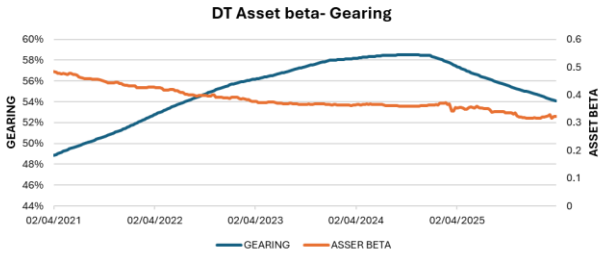
i) to the equity beta estimated through the standard OLS estimator along the time windows (5 years) and on a weekly basis;
ii) the equity beta +/- one Standard error[178] (population corrected and homoscedasticity assumption of the error);
iii) the simple average of the three values over a five year time windows and using a weekly sampling period. The corresponding rolling asset beta is provided as well, based on the corresponding equity beta which is reported, and gearing used for estimating the corresponding asset beta in the same graph.

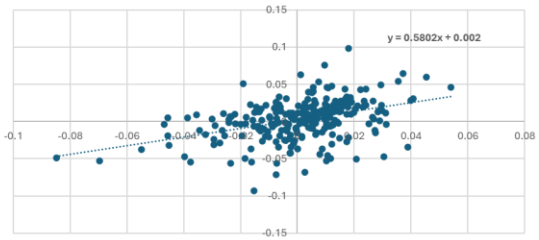
Deutsche Telekom Group

	Long term debt (milion EURO)	Capital leases (milion EURO)	Cash and Cash Equivalent (milion EURO)	Pension liability (milion EURO)	Short debt/Current portion of long term debt-capital lease (milion EURO)	Out standing shares (milion)
2025	97,090	30,640	7,818	1,883	17,027	4,838
2024	99,787	34,574	8,472	3,209	15,390	4,900
2023	92,419	35,144	7,274	4,060	15,188	4,979
2022	95,861	33,666	5,767	4,150	19,407	4,973
2021	98,566	28,094	7,617	6,134	17,236	4,972
2020	93,678	27,607	12,939	7,684	17,675	4,743
2019	57,327	15,848	5,393	5,831	14,344	4,743
2018	49,485	1,622	3,679	6,307	10,093	4,742
2017	46,436	1,884	3,312	9,211	8,263	4,742
2016	47,810	1,962	7,747	9,734	13,144	4,657





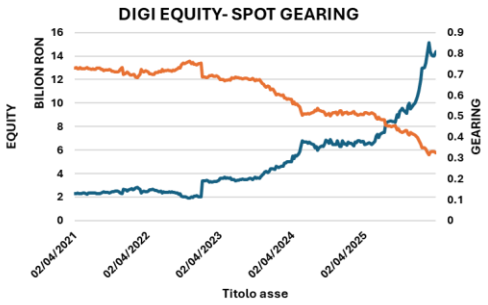


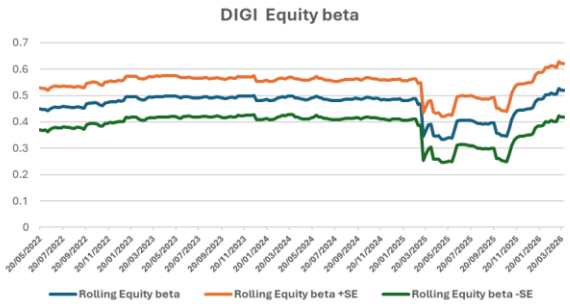


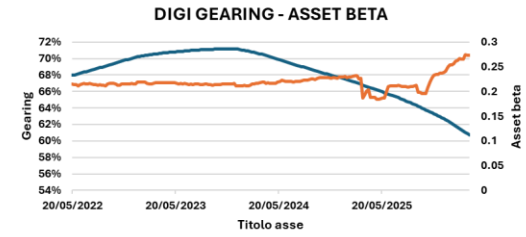
[178] The standard error of the estimate represents the average distance that the observed values fall from the regression line.

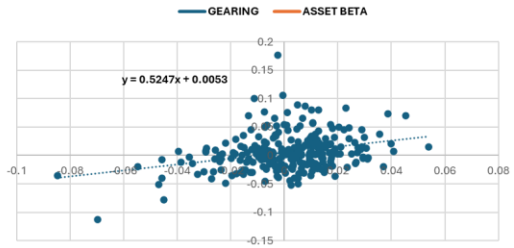
DIGI Communications

	Long term debt (milion RON)	Capital leases (milion RON)	Cash and Cash Equivalent (milion RON)	Pension liability (milion RON)	Short debt/Current portion of long term debt-capital lease (milion RON)	Out standing shares (milion)
2025	5,072	1,873	331	0	2,026	100
2024	5,072	1,873	331	0	2,026	100
2023	5,888	1,555	1,101	0	1,377	100
2022	5,084	1,070	1,293	0	861	64
2021	5,580	619	97	0	1,141	64
2020	4,583	835	32	0	766	64
2019	3,885	639	53	0	935	64
2018	3,317	17	64	0	785	63
2017	3,014	11	75	0	383	63



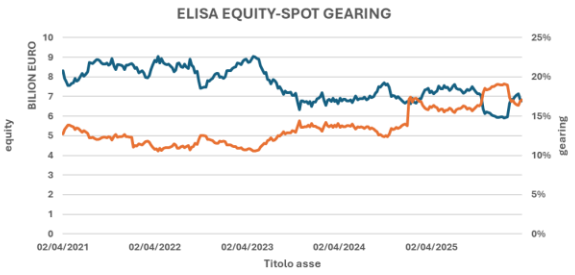


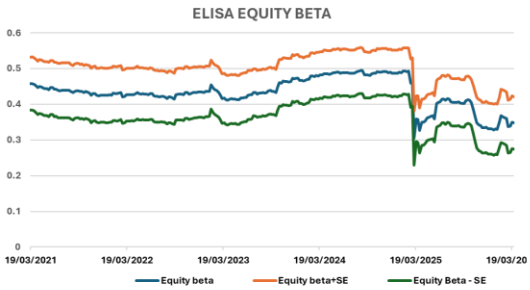


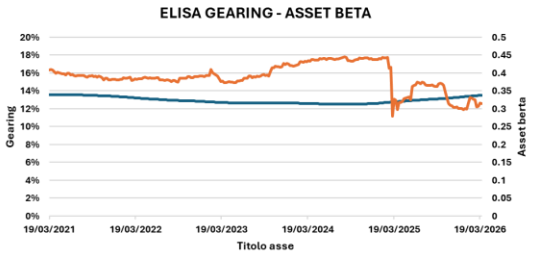


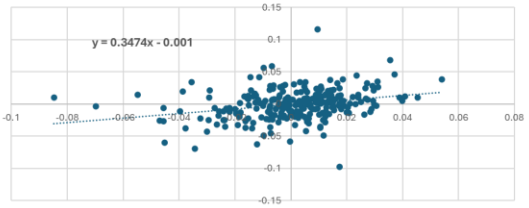
Elisa

	Long term debt (milion EURO)	Capital leases (milion EURO)	Cash and Cash Equivalent (milion EURO)	Pension liability (milion EURO)	Short debt/Current portion of long term debt-capital lease (milion EURO)	Out standing shares (milion)
2025	1,302	93	190	6	118	161
2024	1,008	76	90	6	480	160
2023	997	68	63	9	303	160
2022	995	71	86	13	295	160
2021	1,141	73	114	14	118	160
2020	1,137	79	220	11	211	160
2019	1,008	78	52	17	151	160
2018	840	22	81	15	287	160
2017	917	22	44	16	178	167
2016	805	23	45	17	341	160



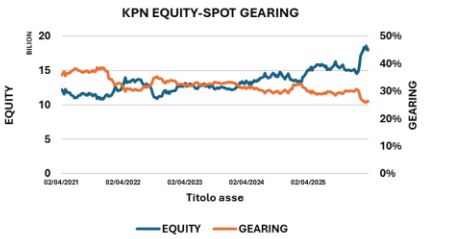


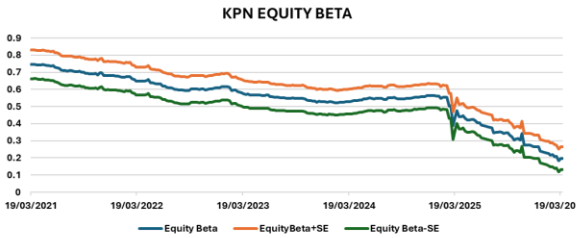


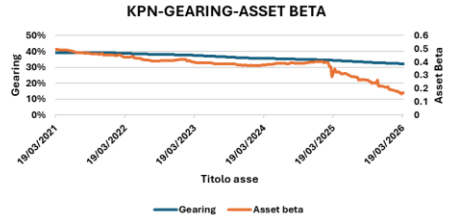


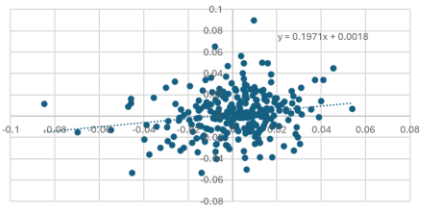
KPN

	Long term debt (milion EURO)	Capital leases (milion EURO)	Cash and Cash Equivalent (milion EURO)	Pension liability (milion EURO)	Short debt/Current portion of long term debt-capital lease (milion EURO)	Out standing shares (milion)
2025	5,881	575	405	7	528	3,827
2024	5,379	656	662	17	1,062	3,889
2023	5,397	733	608	35	659	3,947
2022	5,171	770	399	49	349	4,037
2021	6,067	736	793	92	814	4,203
2020	5,821	787	597	152	829	4,203
2019	5,722	785	766	188	1,082	4,203
2018	6,939	827	594	206	729	4,203
2017	7,578	0	856	218	18	4,203
2016	7,897	0	1,179	262	735	4,270



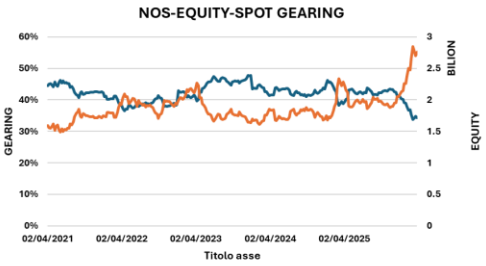


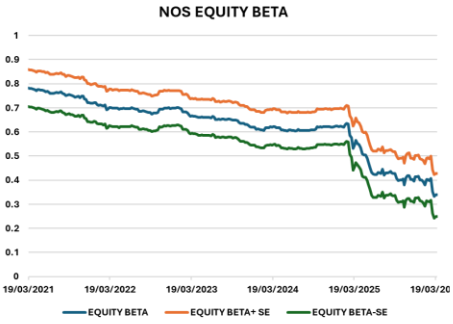


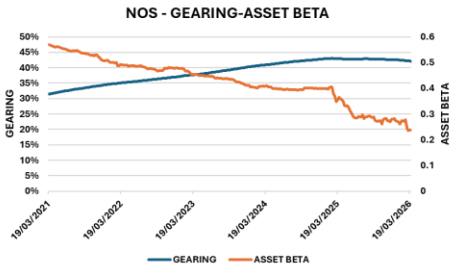


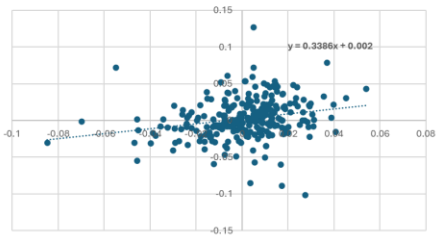
NOS

	Long term debt (milion EURO)	Capital leases (milion EURO)	Cash and Cash Equivalent (milion EURO)	Pension liability (milion EURO)	Short debt/Current portion of long term debt-capital lease (milion EURO)	Out standing shares (milion)
2025	807	639	15	0	230	515
2024	758	549	9	0	242	511
2023	950	547	18	0	162	511
2022	654	556	15	0	127	511
2021	807	469	11	0	87	512
2020	855	509	153	0	90	512
2019	1,022	195	13	0	88	513
2018	825	189	2	0	254	513
2017	870	84	3	0	87	513
2016	872	100	2	0	225	512



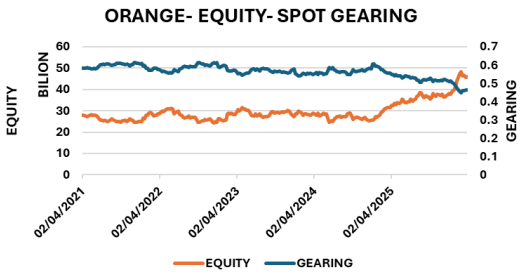


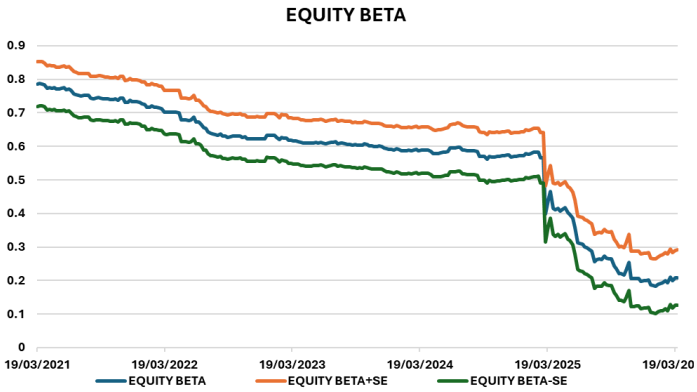


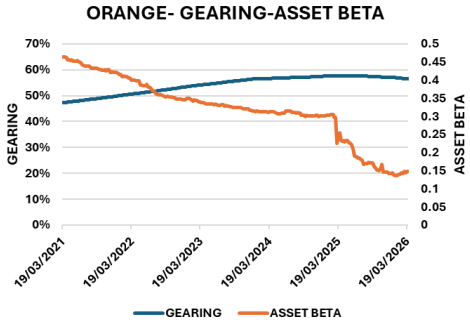


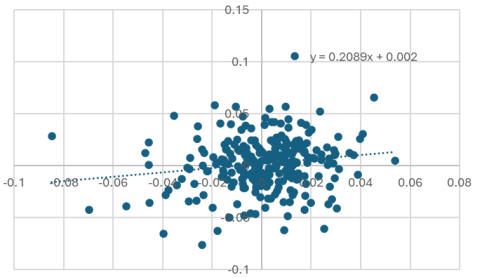
Orange

	Long term debt (milion EURO)	Capital leases (milion EURO)	Cash and Cash Equivalent (milion EURO)	Pension liability (milion EURO)	Short debt/Current portion of long term debt-capital lease (milion EURO)	Out standing shares (milion)
2025	33,457	6,089	12,167	3,424	5,971	2,659
2024	28,981	5,990	8,766	2,274	7,407	2,658
2023	30,535	7,099	5,618	2,551	6,920	2,658
2022	31,930	6,901	6,004	2,567	6,211	2,658
2021	31,922	6,696	8,621	2,798	4,790	2,658
2020	30,089	5,875	8,145	1,984	6,666	2,659
2019	33,148	5,593	6,481	2,554	5,264	2,650
2018	26,323	426	5,634	2,823	7,270	2,653
2017	25,839	454	5,810	2,674	6,030	2,660
2016	28,404	505	6,355	3,029	4,759	2,660



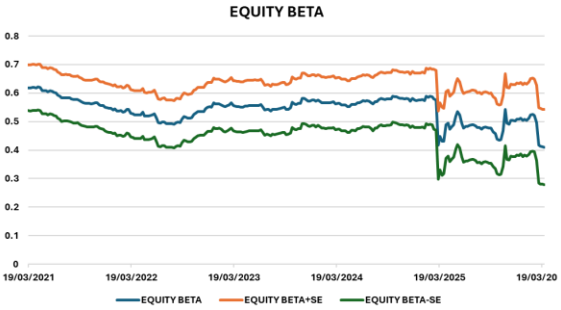


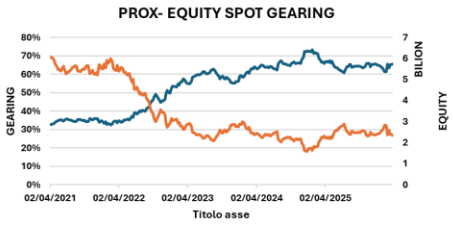


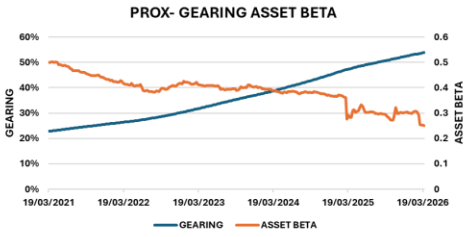


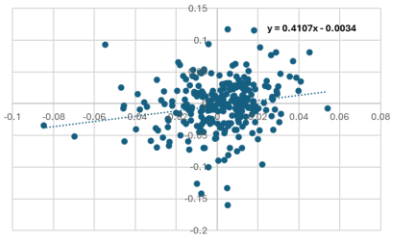
Proximus

	Long term debt (milion EURO)	Capital leases (milion EURO)	Cash and Cash Equivalent (milion EURO)	Pension liability (milion EURO)	Short debt/Current portion of long term debt-capital lease (milion EURO)	Out standing shares (milion)
2025	4,222	261	565	287	126	338
2024	3,979	199	497	324	622	322
2023	3,305	210	715	337	699	323
2022	2,676	199	298	361	183	322
2021	2,738	205	249	447	222	323
2020	2,506	216	310	559	81	338
2019	2,355	243	323	639	221	323
2018	2,255	4	340	553	234	323
2017	1,850	6	333	515	570	323
2016	1,755	2	297	544	407	323



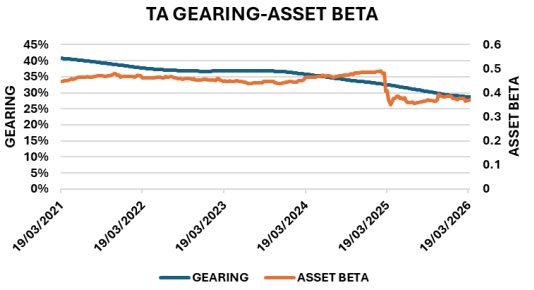


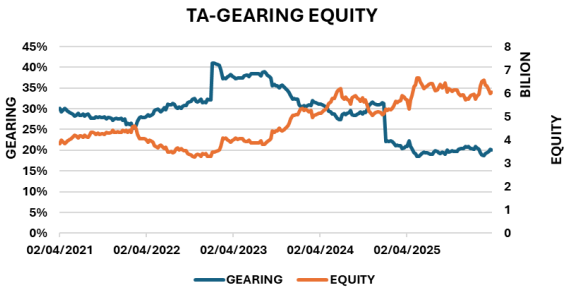


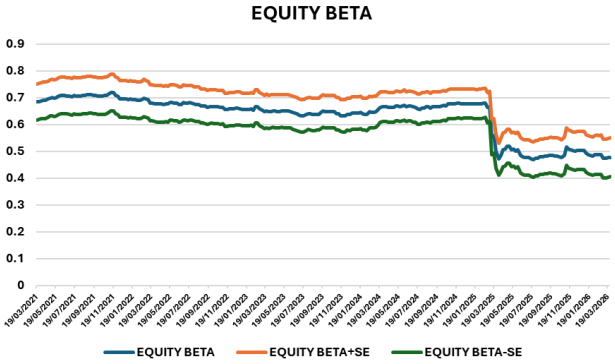


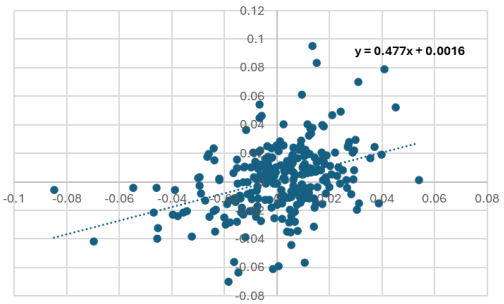
Telekom Austria

	Long term debt (milion EURO)	Capital leases (milion EURO)	Cash and Cash Equivalent (milion EURO)	Pension liability (milion EURO)	Short debt/Current portion of long term debt-capital lease (milion EURO)	Out standing shares (milion)
2025	0	1,513	362	155	1,096	664
2024	749	1,585	367	166	316	664
2023	748	1,672	169	187	344	664
2022	1,047	522	150	172	981	664
2021	1,046	606	534	222	1,714	664
2020	1,794	701	211	232	903	664
2019	2,540	788	140	220	276	664
2018	2,536	0	64	204	245	664
2017	2,533	0	202	197	1	664
2016	2,303	0	457	206	500	664



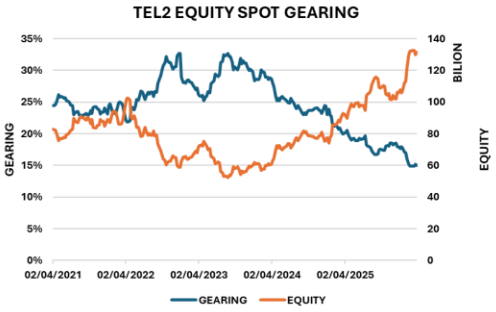


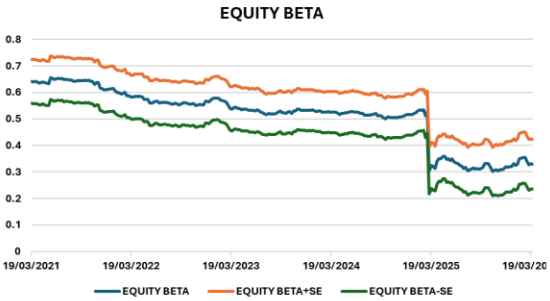


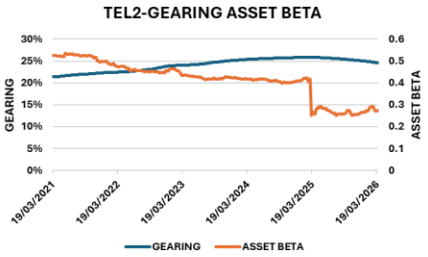


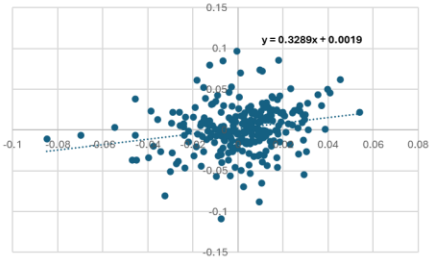
Tele 2

	Long term debt (milion SEK)	Capital leases (milion SEK)	Cash and Cash Equivalent (milion SEK)	Pension liability (milion SEK)	Short debt/Current portion of long term debt-capital lease (milion SEK)	Out standing shares (milion)
2025	19,962	3,210	249	0	5,945	694
2024	21,593	2,829	317	0	6,252	692
2023	22,333	3,111	1,634	0	5,531	692
2022	24,273	4,289	1,116	0	3,889	691
2021	22,512	4,289	880	0	4,016	690
2020	21,406	4,209	970	0	4,712	689
2019	21,572	4,501	448	0	4,836	688
2018	21,664	15	404	0	6,427	687
2017	10,567	15	802	0	567	503
2016	7,746	32	257	0	3,037	502



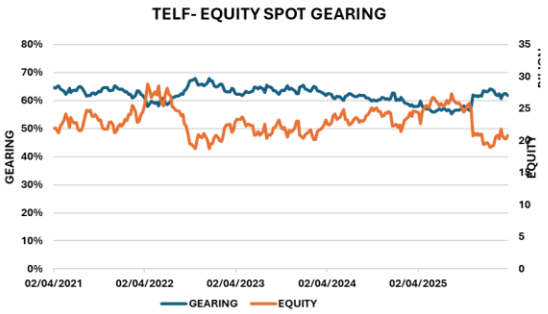


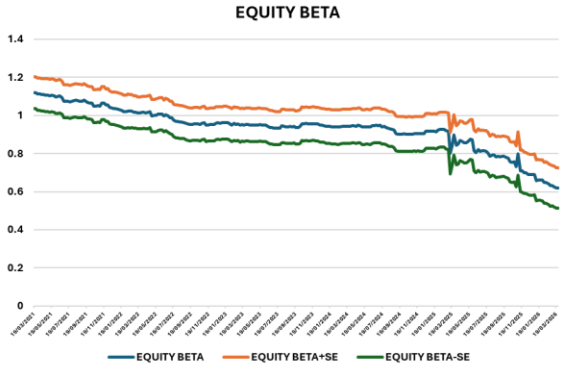


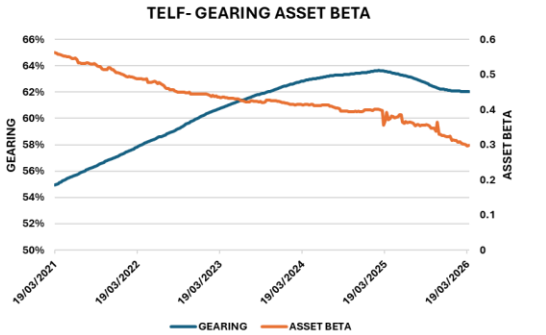


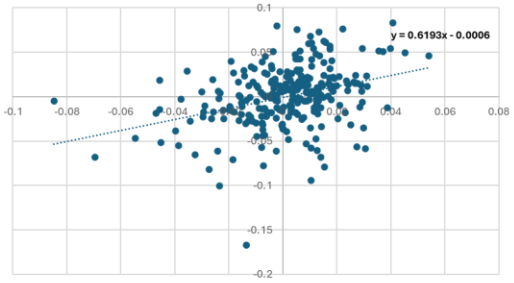
Telefonica

	Long term debt (milion EURO)	Capital leases (milion EURO)	Cash and Cash Equivalent (milion EURO)	Pension liability (milion EURO)	Short debt/Current portion of long term debt-capital lease (milion EURO)	Out standing shares (milion)
2025	28,125	5,644	6,564	5,359	5,884	5,670
2024	31,327	6,077	8,062	4,020	7,617	5,670
2023	31,703	6,708	7,151	4,949	5,704	5,750
2022	33,035	6,657	7,245	4,093	5,696	5,775
2021	33,453	6,391	8,580	5,395	8,327	5,779
2020	38,129	4,039	5,604	4,960	8,683	5,526
2019	42,378	5,626	6,042	5,789	10,152	5,192
2018	43,805	0	5,692	4,499	9,138	5,192
2017	44,120	0	5,192	5,666	9,134	5,192
2016	43,562	0	3,736	6,147	13,977	5,038



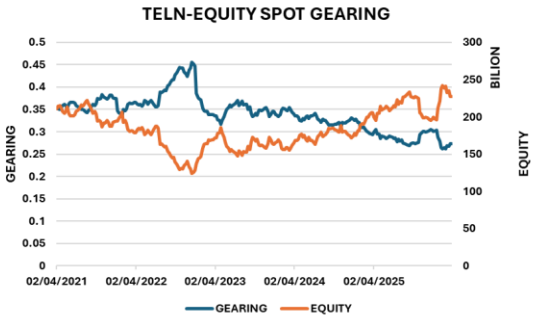


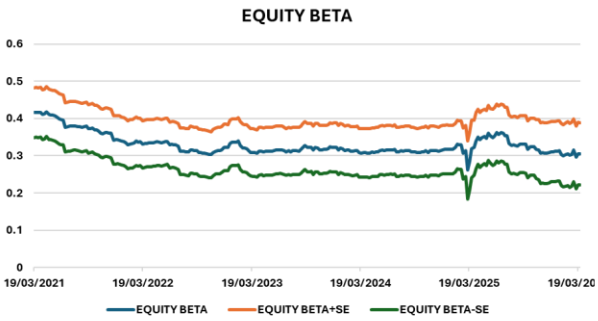


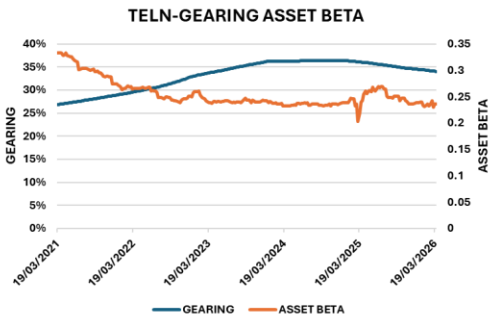


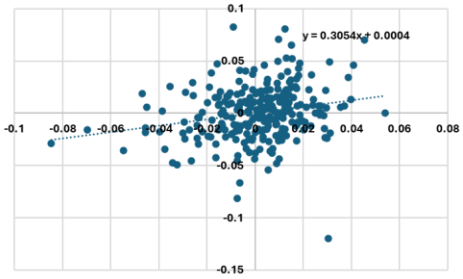
Telenor

	Long term debt (milion NOK)	Capital leases (milion NOK)	Cash and Cash Equivalent (milion NOK)	Pension liability (milion NOK)	Short debt/Current portion of long term debt-capital lease (milion NOK)	Out standing shares (milion)
2025	74,187	11,399	16,335	1,966	16,267	1,368
2024	71,083	13,697	10,380	2,068	15,194	1,368
2023	73,238	13,201	19,556	1,821	15,853	1,399
2022	79,072	24,417	9,929	1,919	15,833	1,399
2021	87,810	28,101	15,223	2,429	16,253	1,399
2020	98,627	35,584	20,577	2,747	16,596	1,399
2019	83,987	32,002	13,867	2,386	24,056	1,423
2018	55,120	805	18,492	2,819	15,740	1,458
2017	50,745	842	22,546	2,565	22,710	1,493
2016	59,467	924	23,085	2,585	25,968	1,501



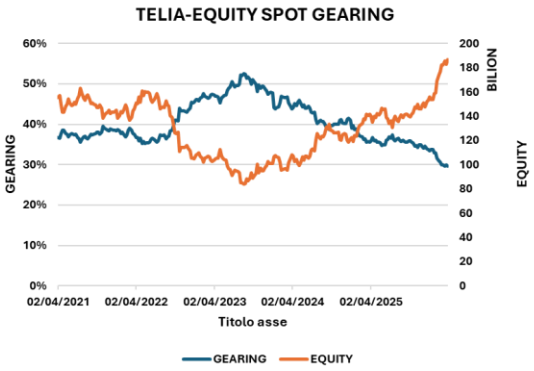


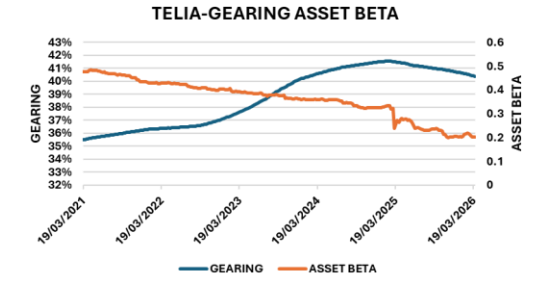


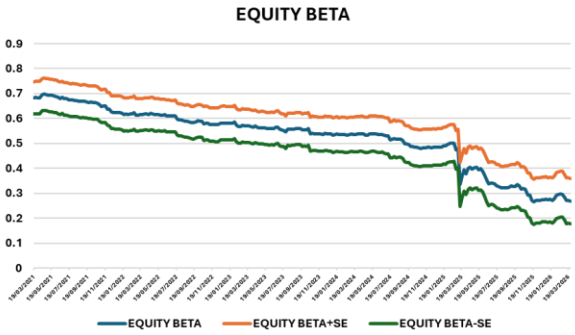


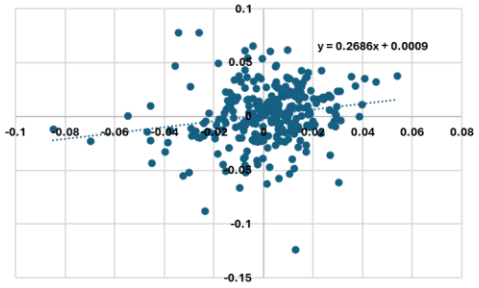
Telia Company

	Long term debt (milion SEK)	Capital leases (milion SEK)	Cash and Cash Equivalent (milion SEK)	Pension liability (milion SEK)	Short debt/Current portion of long term debt-capital lease (milion SEK)	Out standing shares (milion)
2025	63,629	14,500	11,527	8,566	5,140	3,932
2024	69,320	14,870	9,812	1,346	9,991	3,932
2023	78,233	14,511	11,646	1,364	13,636	3,932
2022	73,336	13,971	6,871	1,279	6,778	3,932
2021	77,206	12,859	14,358	2,682	3,701	4,090
2020	84,016	12,183	8,133	7,428	3,063	4,090
2019	84,929	12,046	6,116	3,334	12,951	4,113
2018	83,673	1,363	18,765	2,519	6,197	4,231
2017	85,375	171	15,617	2,377	3,471	4,330
2016	80,256	221	14,510	2,109	11,113	4,330



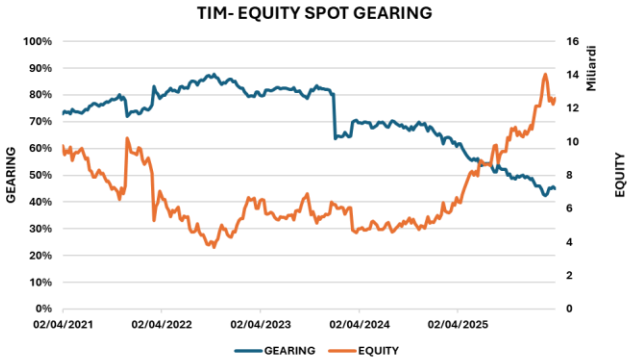


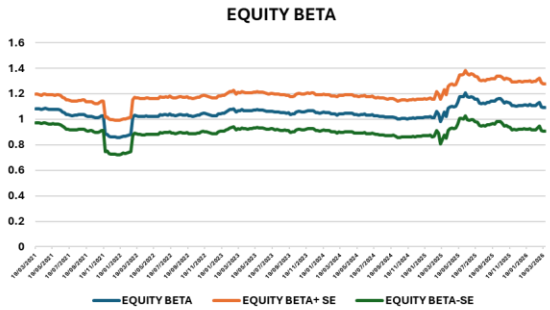


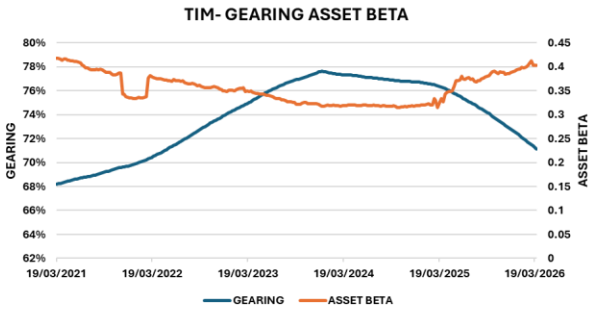


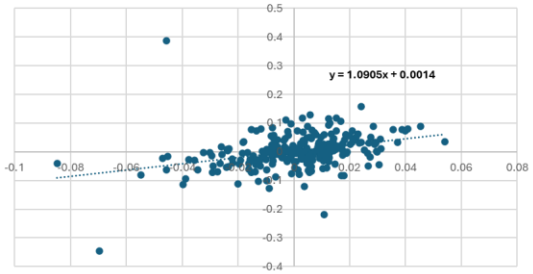
Telecom Italia

	Long term debt (milion EURO)	Capital leases (milion EURO)	Cash and Cash Equivalent (milion EURO)	Pension liability (milion EURO)	Short debt/Current portion of long term debt-capital lease (milion EURO)	Out standing shares (milion)
2025	7,804	2,476	2,048	188	3,488	21,268
2024	8,532	2,421	2,924	200	4,326	21,252
2023	20,872	4,743	2,912	511	6,492	21,252
2022	21,462	4,597	3,555	684	5,630	21,241
2021	22,083	4,064	6,904	699	6,498	21,241
2020	21,813	4,199	4,829	724	4,244	21,196
2019	23,945	4,576	3,138	1,182	3,759	21,067
2018	21,894	1,740	1,917	1,567	5,575	21,067
2017	23,940	2,249	3,675	1,736	4,681	21,067
2016	26,136	2,444	4,064	1,355	3,976	19,364



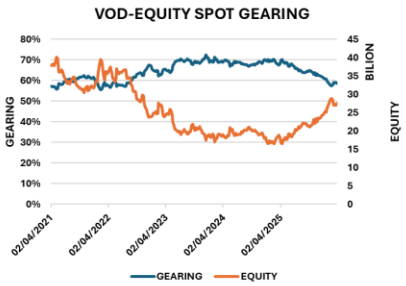


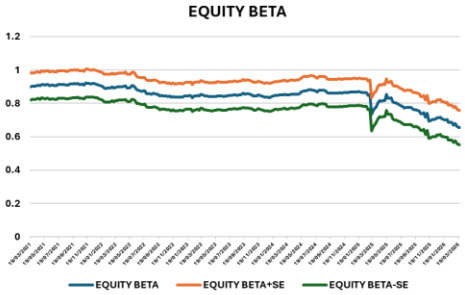


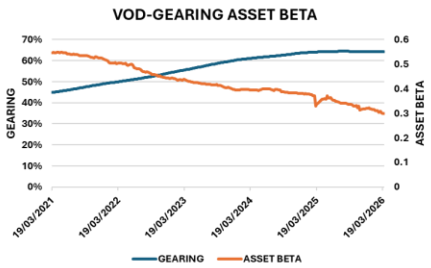


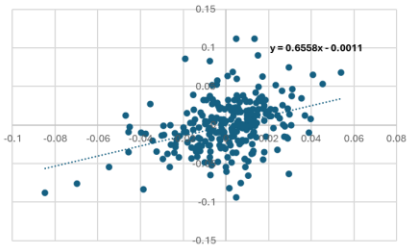
Vodafone

	Long term debt (milion GBP)	Capital leases (milion GBP)	Cash and Cash Equivalent (milion GBP)	Pension liability (milion GBP)	Short debt/Current portion of long term debt-capital lease (milion GBP)	Out standing shares (milion)
2025	31,759	7,104	9,215	157	5,903	24,971
2024	35,772	6,340	5,286	155	6,607	27,080
2023	36,398	9,082	10,303	227	12,958	26,992
2022	40,756	8,274	6,322	237	10,088	28,370
2021	42,030	8,437	4,956	437	7,227	28,224
2020	47,621	8,083	11,997	388	10,598	26,772
2019	41,824	221	11,777	476	3,688	27,230
2018	28,672	234	4,105	457	6,454	26,676
2017	28,981	203	7,535	555	6,328	26,622
2016	28,932	159	10,217	447	11,691	26,559









Statistical Analysis

The estimation of the asset betas is subject to the consistency of the OLS (Ordinary Least Square) in terms of bias[179] (affecting the beta estimation) and efficiency[180] (affecting the significance of the level of the estimation).

The following elements should be taken into account to address the consistency of the OLS estimation:

- The Error terms of the regression are normally distributed around a zero mean;
- The Error terms are homoscedastic that means that the error terms have constant variance across the sample.
- The Error terms are not autocorrelated, i.e. there is no systematic dependence across the error terms.

[179] In statistics, an unbiased estimate refers to the property that the sample statistic converges to its true "population" value in repeated samples.

[180] In statistics, an efficient estimate is an estimate/sample statistic that has the minimum variance, i.e. lowest uncertainty surrounding that estimate/sample statistic.

The failure of normality can question the validity of the single factor CAPM method. The presence of heteroscedasticity in the meaning of failing the general hypothesis of constant variance, generally does not bias the beta estimate, but it affects the confidence interval and therefore statistical inferences around those estimates.[181] When error terms are "autocorrelated", this means that the validity of a time independent model can be questionable.[182]

In the following we present visual inspections and statistical tests - where relevant - of the residual component of the regression model presented in the previous section for each comparable to test the three main issues (normality, heteroscedasticity, autocorrelation) previously addressed. The subsequent analysis focusses on last five year time series spot beta as general 1 of April 2026 and, where relevant, rolling beta data estimations are also taken into account.[183]

Normality

To test the normality only a visual approach[184] through the Box-plot, density plot, and Q-Q plot[185] have been used.

In the following picture, the Box-plot of the residual distribution is provided. The box-plot shows the median as a horizontal line inside the box and the interquartile range (range between the 25th to 75th percentiles) as the length of the box. The whiskers (line extending from the top and bottom of the box) represent the minimum and maximum values when they are within 1.5 times the interquartile range from either end of the box. Scores greater than 1.5 times the interquartile range are out of the box plot and are considered as outliers, and those greater than 3 times the interquartile range are extreme outliers. A box plot that is symmetric with the median line at approximately the centre of the box and with symmetric whiskers that are slightly longer than the subsections of the centre box suggests that the data may have come from a normal distribution.

[181] Armitage, S & Brzeszczynski 2011 "Heteroscedasticity and interval effects in estimating beta: UK evidence" Applied Financial Economics, Vol. 21, no. 20, pp. 1525-1538.

[182] The presence of autocorrelation in the residual for the beta estimation is generally attributable to significantly variation of the beta in the time windows considered due to the fact that the beta evolution is not a stationary process. The presence of autocorrelation can be more evident when daily observation are used on longer time windows. In this case the beta estimation using the OLS can be biased. When this happens dynamic models for beta estimation, generally, can be taken into account, such as ARCH model (AutoRegressive Conditional Heteroskedasticity) or GARCH (Generalized Autoregressive Conditional Heteroskedasticity). https://www.ofgem.gov.uk/ofgem-publications/145143

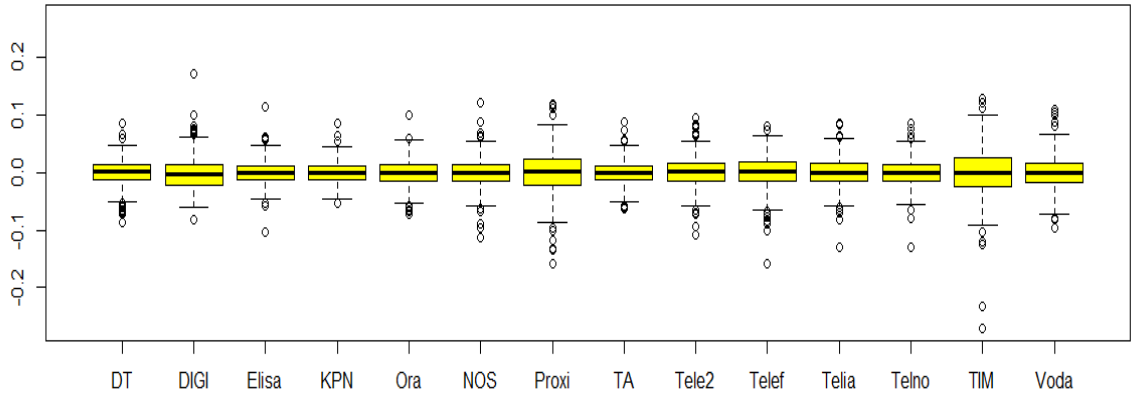
[183] In case of DIGI the rolling estimation has taken into account data from May 2017, as before the operator had not traded shares, so the rolling estimation for DIGI refers to values between May 2022 and April 2025. For the other comparable the time series has started since March 2015 with a rolling estimation from April 2020 until April 2025.

[184] Parametric test for larger samples (i.e. more than one hundred), as in the cases under consideration, are not suitable as the assumption of normality might be rejected too easily due to high sensitivity to outlier. So, for large samples Q-Q plot, histogram is the best solution. https://www.sheffield.ac.uk/polopoly_fs/1.579191!/file/stcp-karadimitriou-normalR.pdf. Non parametric test are generally less powerful to test normality of the sample https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3693611/.

[185] In statistics, a Q–Q (quantile-quantile) plot is a probability plot, which is a graphical method for comparing two probability distribution by plotting their quantiles against each other. First, the set of intervals for the quantiles is chosen. A point (x, y) on the plot corresponds to one of the quantiles of the second distribution (y-coordinate) plotted against the same quantile of the first distribution (x-coordinate). Thus, the line is a parametric curve with the parameters which is the number of the interval for the quantile.

The Kernel plot of the distribution of the residual is also included in comparison with the corresponding theoretical normal distribution with same mean and standard deviation is provided.

Figure A1 Box plot of residual distribution of the beta equity estimation



A more accurate picture of the distribution of the residual with respect to the theoretical normal distribution is provided in the Q-Q plot below. A Q-Q plot represents the quantiles (values that split a data set into equal portions) of the data on the y-axis with respect to the quantile of the theoretical normal distribution reported on the x-axis; the red line provides the theoretical line if the residual data comes from a normal distribution with same average and standard deviation of the residual data under inspection.

Figure A2 Q-Q plot of residual distribution of the beta equity estimation

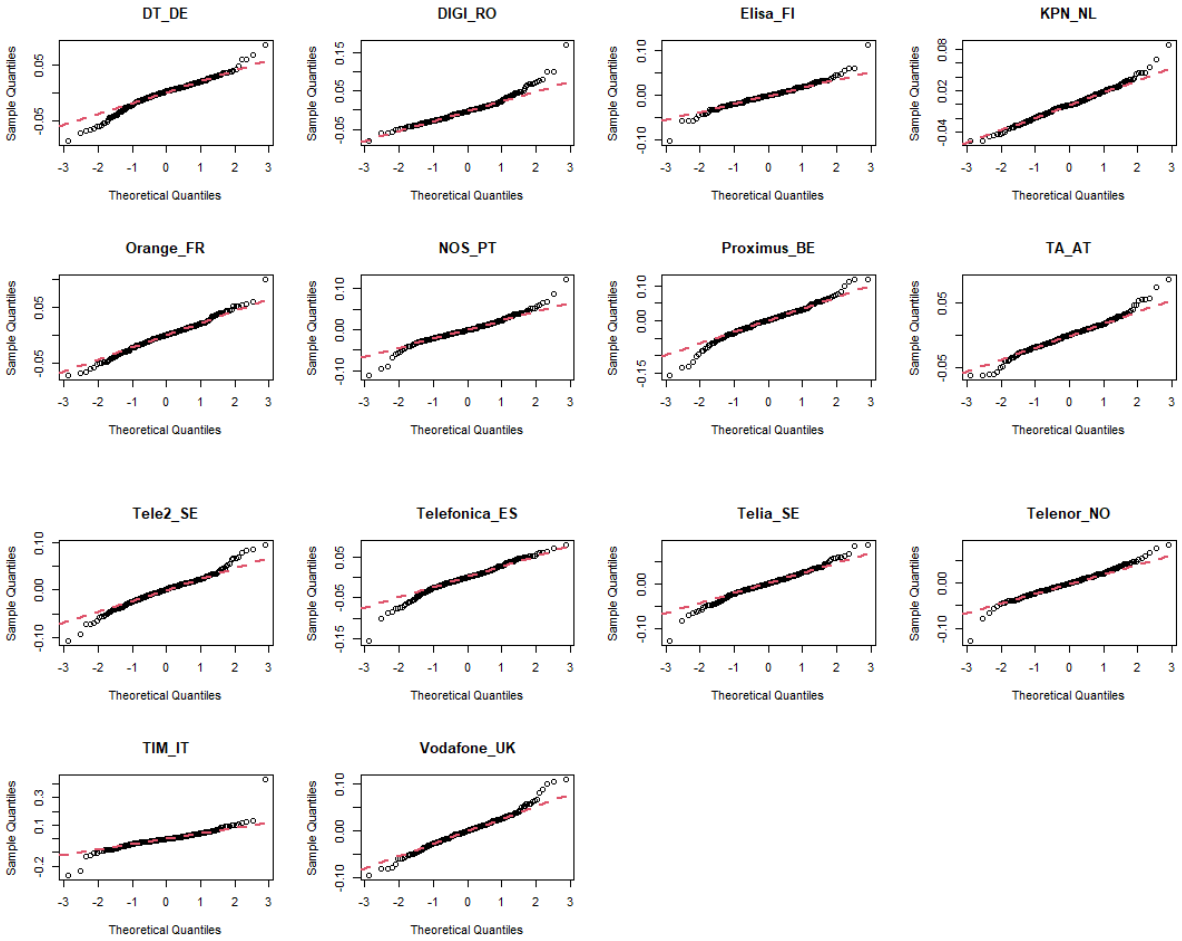
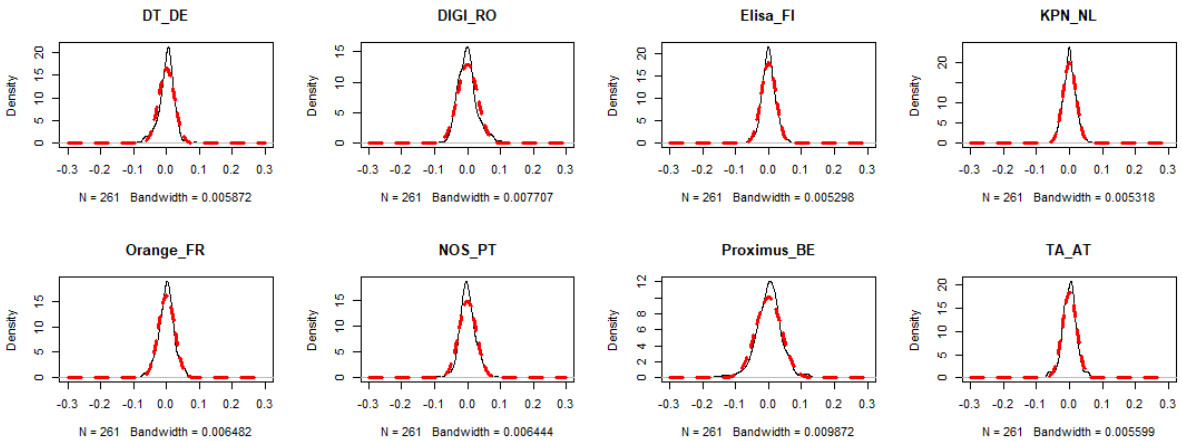
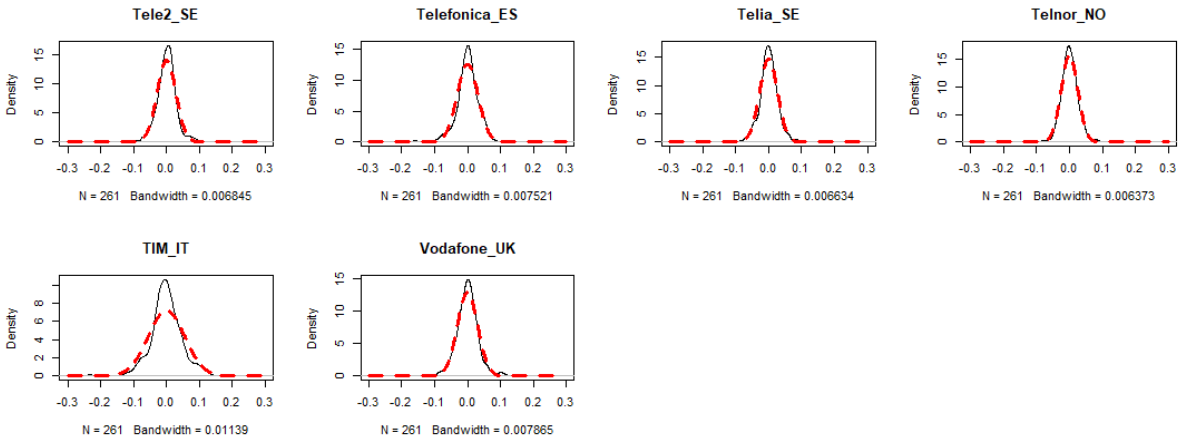


Figure A3 – Density plot of the residual of the distribution





From the graphical analysis of the box plot, density plot and Q-Q plot it can be observed that the normal distribution assumption is generally violated only due to the presence of outliers' values in the residual. In that sense, a general approximation of normal distribution can be accepted.

Table A2 focuses on each comparable and on: i) the beta spot at "1 of April 2026", ii) the rolling beta estimated over a five year time window. It provides the number of relevant outliers[186] as well as the p-values of the Shapiro Wilk normality test[187]. For the rolling beta the averages on the number of outliers as well as the p-values for each comparable over a five year time window and a weekly sampling period are reported. In figure A4 and A5 the corresponding values of the number of outliers, and the p-values of the Statistical tests are shown for visual inspection and transparency reasons over the five years time window from which the corresponding averages for the rolling beta have been derived (blue lines of figures A4 and A5).

This analysis shows that the normality assumption can be generally accepted for all the peers, and eventual the failure of the normality test is not due to systematic failure of the model assumption, but due the presence of some outliers that are between 3 to 7 % of the whole number of observations.

[186] The number of outliers has been evaluated considering influential observations in the residual that have a combination of high leverage and large error. The leverage coefficient is a measure of the effect of a particular observation on the regression predictions due to the position of that observation in the space of the inputs. A common measure of influence is Cook's distance. The Cook's distance of each observation has been considered high if it is larger than 4/n with n the number of observations.

[187] The Shapiro-Wilk test is one of the most used normality test generally used for small sample (<50), as all the parametric normality tests. In this case the objective is to find a measure between comparable to detect outliers of the level of "non-normality". Only two operators pass the normality test highlighted in blue. For the others where the alpha level is 0.05 and the p-value is less than 0.05, the null hypothesis that the data are normally distributed is rejected.

Table A2 –Relevant outlier and normality test of spot beta and rolling beta for each peer

	Spot beta		Rolling beta (average values)	
	Number of outliers	P-value shapiro test	Number of outliers	P-value shapiro test
DT	14	1.19455800E-05	12.98	2.21805200E-02
Digi	11	9.24668700E-09	15.62	3.70100100E-08
Elisa	15	1.62857500E-06	12.40	2.29911500E-02
KPN	14	1.05564200E-02	13.73	3.92332300E-04
NOS	9	7.53745900E-07	16.18	4.28623700E-06
Orange	19	2.11447900E-02	15.88	1.96655100E-03
Prox	15	4.95531600E-05	14.66	2.00726300E-02
Tele2	13	4.03447300E-04	15.13	5.21289800E-04
TIM	6	5.07566400E-15	10.72	3.15574800E-03
Telef	16	1.32218900E-05	13.32	2.93403200E-04
TA	15	2.68166200E-04	15.63	4.40611600E-05
Telenor	13	6.92297300E-05	11.37	3.12852200E-03
Telia	10	2.55882700E-04	11.81	1.39066500E-04
Vodafone	15	1.75530400E-03	15.62	4.58172600E-04

Figure A4 –Number of outlier along the rolling beta time window (the blue line is the average value reported in table A2)

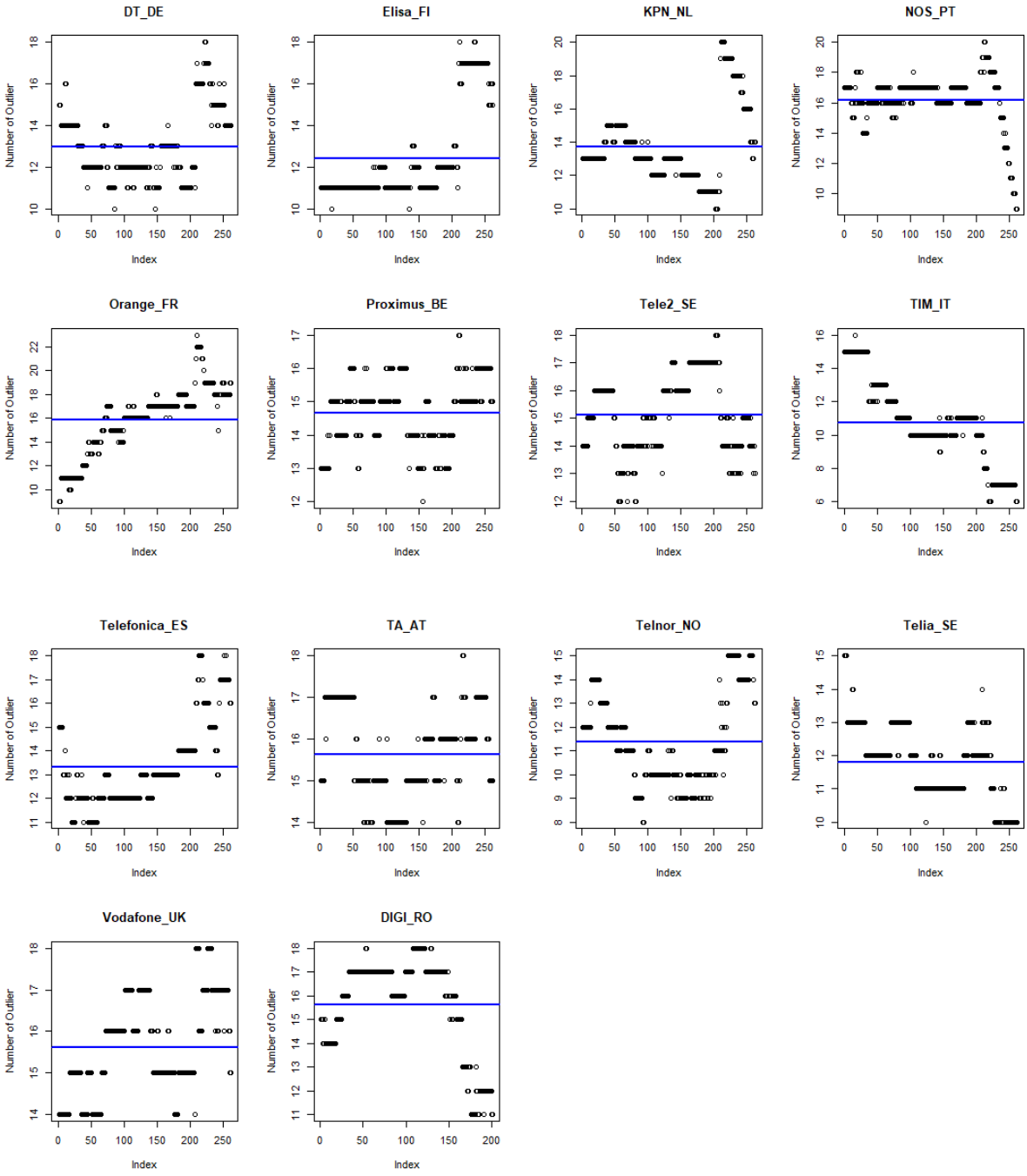
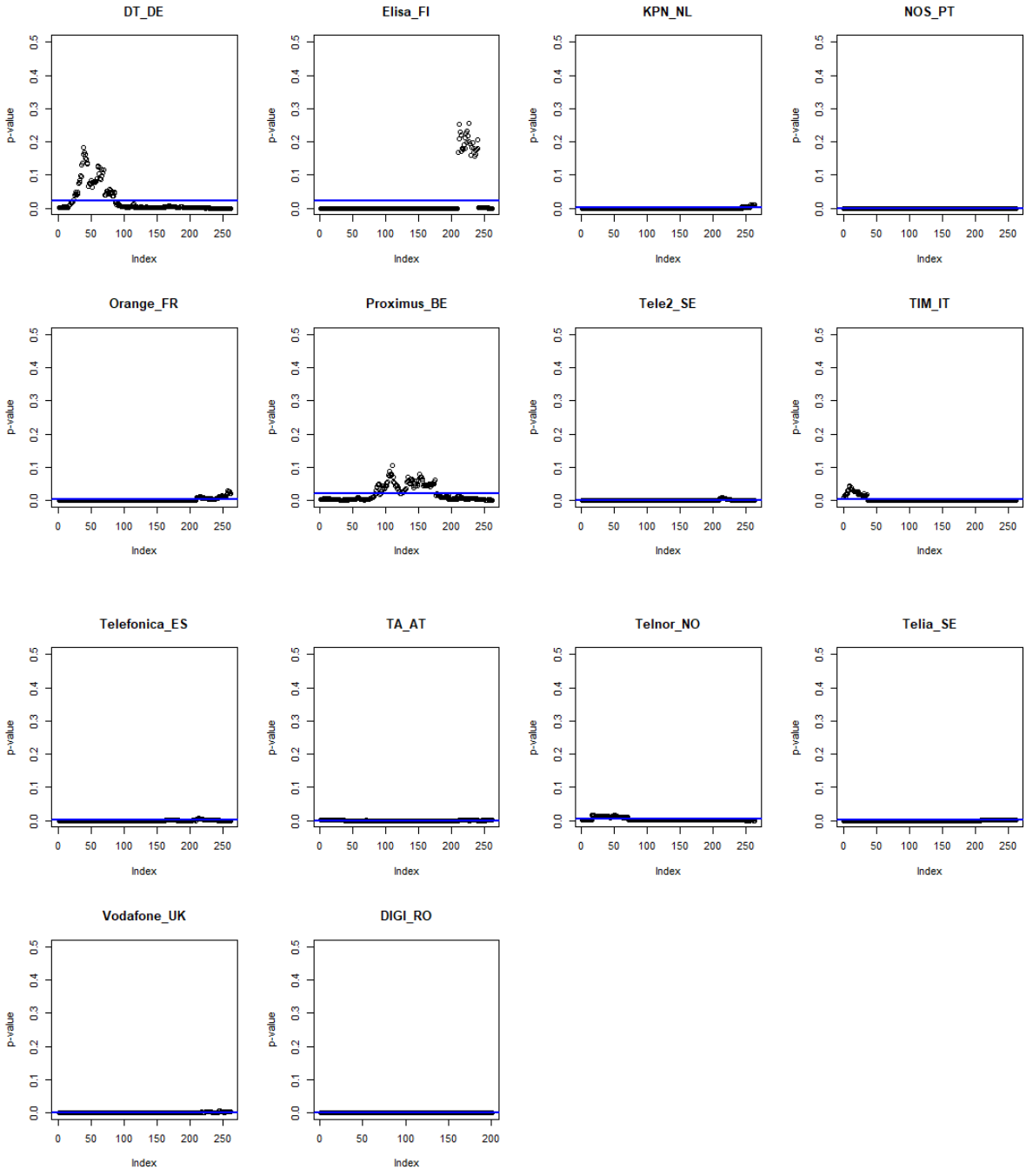


Figure A5 –P-value of Shapiro-Will Normality test along the rolling beta time window (the blue line is the average value reported in table A2)

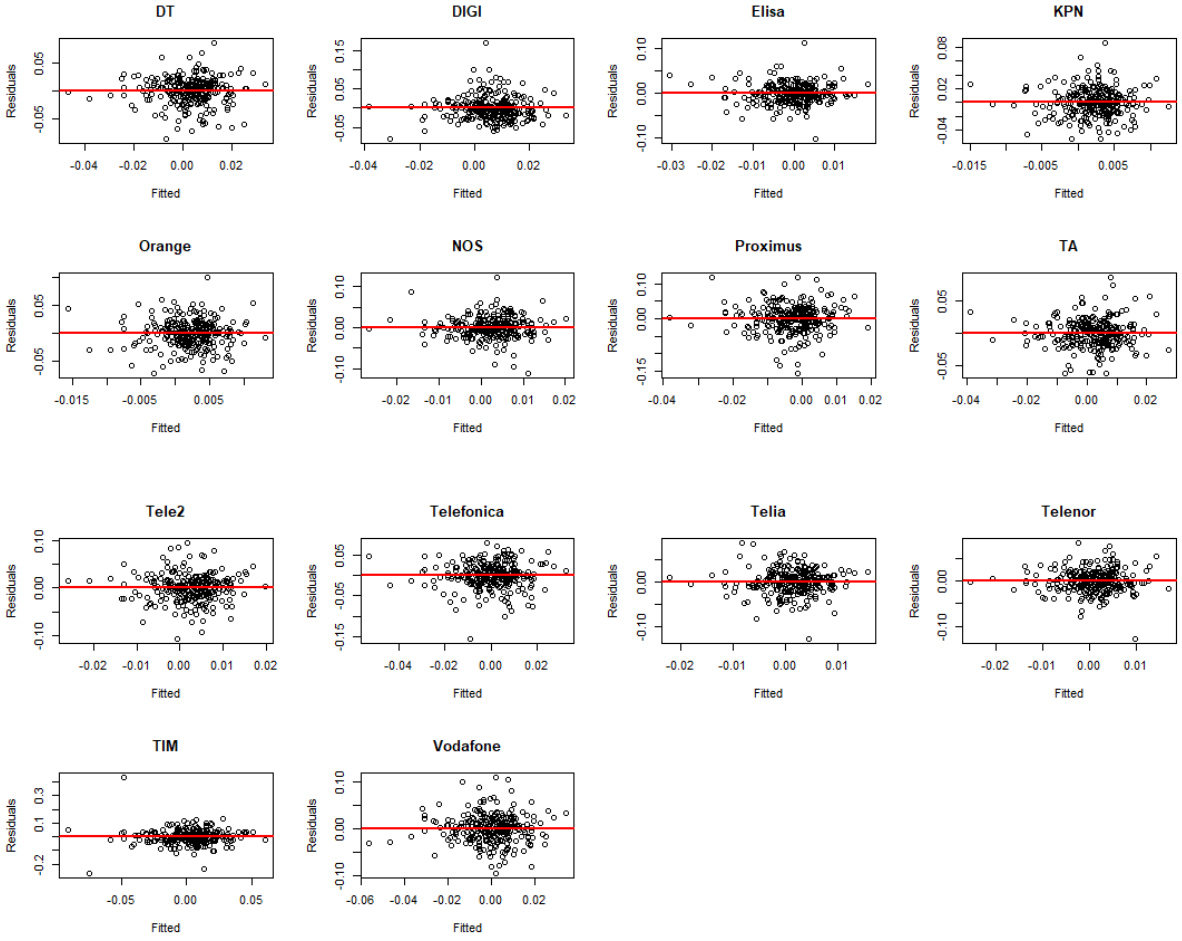


Homoscedasticity

In relation with the homoscedastic behaviour (constant variance of the residual), a graphical analysis of the distribution of the residual with respect to the corresponding fitted value of the

model is provided. If the residuals are distributed around the zero line, and no pattern is observable, then the residuals are homoscedastic at least with respect to the constant variance attribute across the sample. In figure A6 the corresponding situation of the residual estimation is given for the spot beta at “1 of April 2026”.

Figure A6 - Residual versus Fitted Values (spot beta at 1 of April 2026)



The general picture of the residuals shows a distribution in line with a homoscedastic property of the residuals. Deviation from a “random noise” of the residual around a zero line is only due to some outliers, and thus not based on a systematic pattern of the residual.

Autocorrelation of the residuals

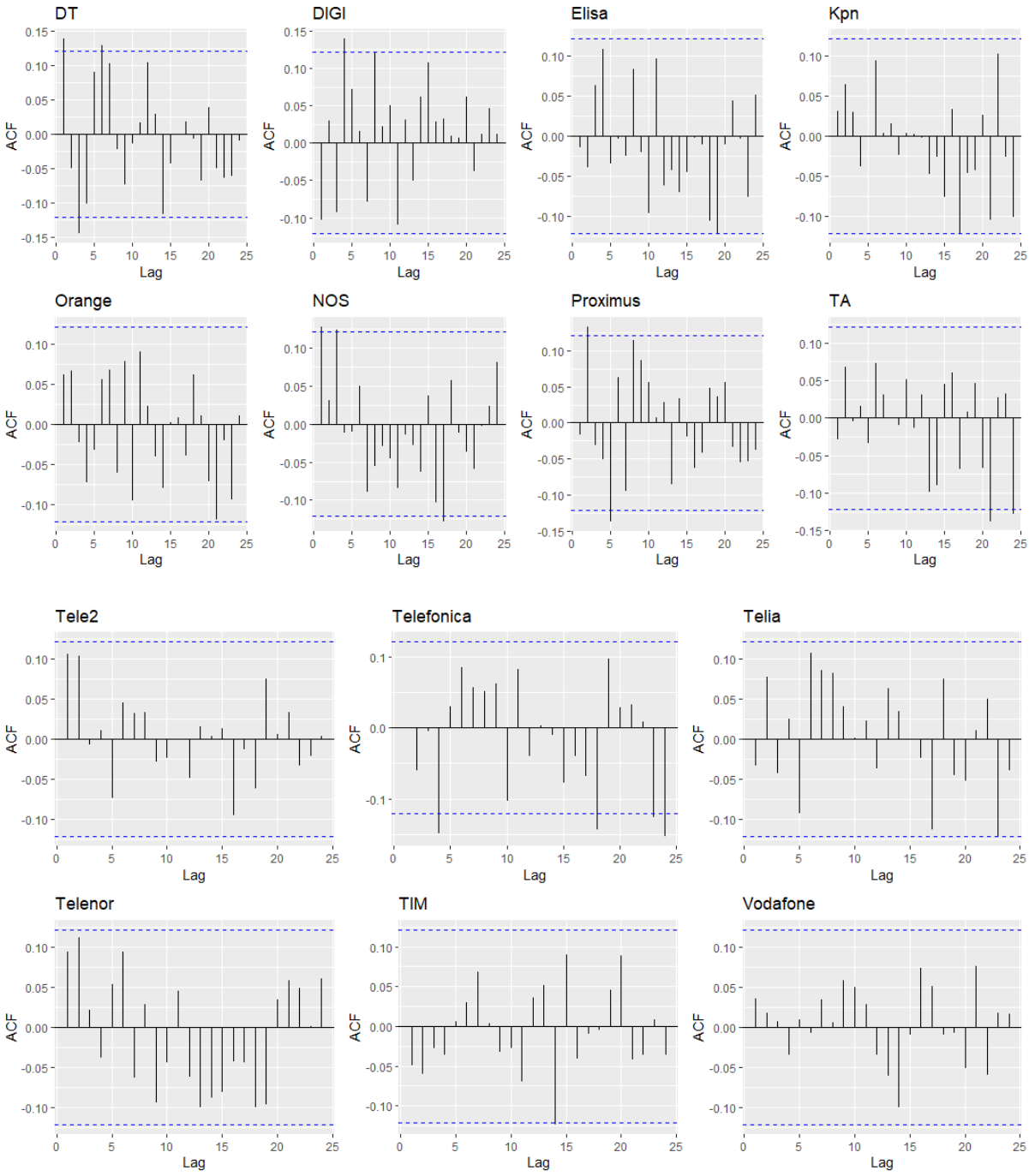
The graphical analysis reported in the previous section indicates that the presence of strong autocorrelation in the residuals is statistically unlikely. At the same time in this section a deepening on this issue will be given.

In the following the autocorrelation (ACF) of the residual from each comparable is reported for the residual of the spot beta at 1 of April 2026.[188]

In the same graph the “test bound” (dashed lines) is also shown. These bounds are used to test the null hypothesis that an autocorrelation coefficient is 0. The null hypothesis is rejected if the sample autocorrelation is outside the bounds. The picture below (Correlogram)[189] shows that the level of autocorrelation of the residual is low or absent for all the comparable considered until the 24 lags of the ACF are taken into account.

[188] The Autocorrelation function is used to assess to what extent a time series is dependent on its past.
[189] The plot of the Autocorrelation sample for different lags is known as an Autocorrelation plot.

Figure A7 ACF residuals (spot beta at 1 of April 2026)



To obtain a more quantitative picture and comparison between the 14 comparable, the Ljung-Box test and the Breusch-Godfrey test[190] are also considered in the next table A3. In the table

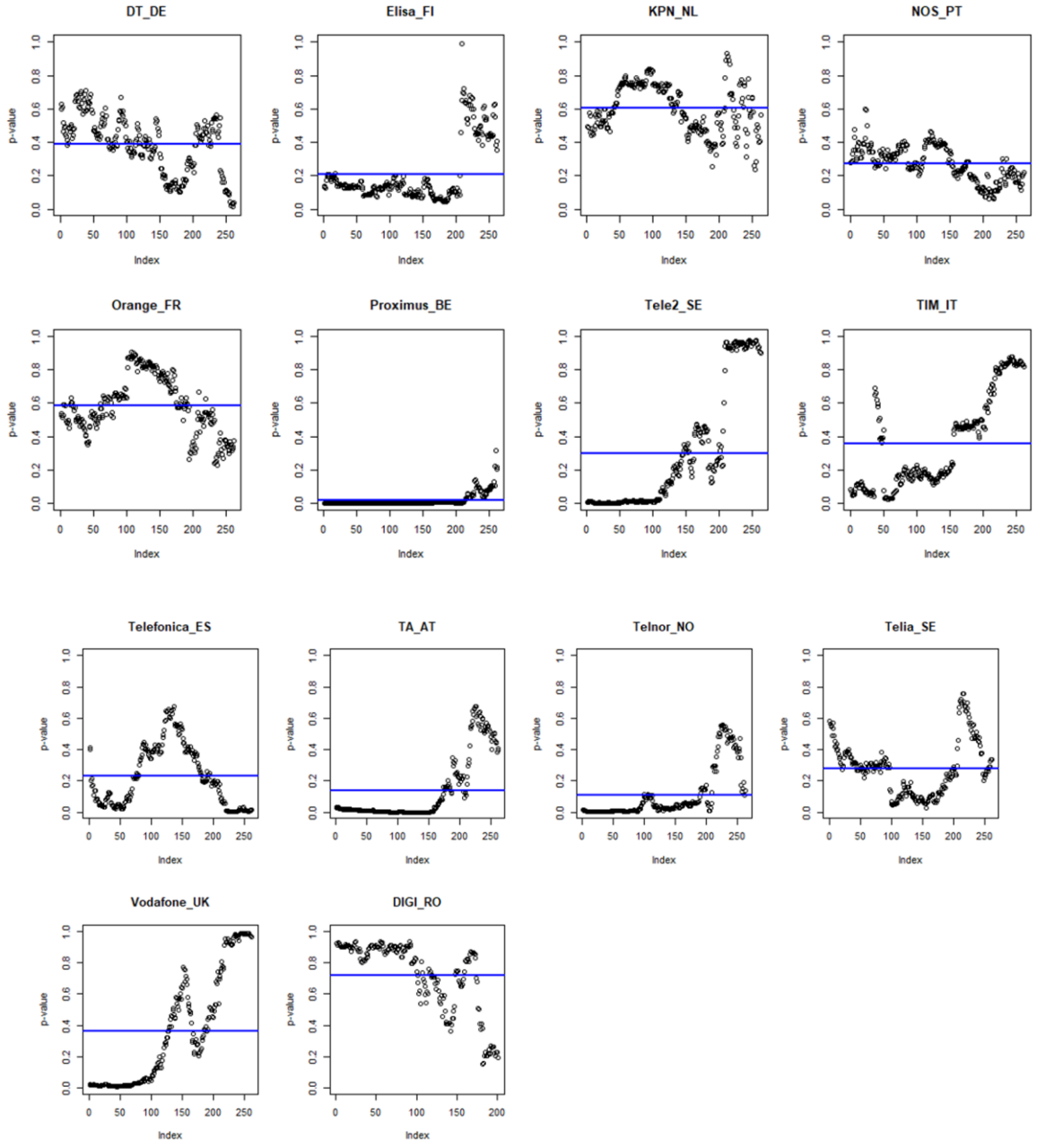
[190] The Ljung-Box test and the Breusch-Godfrey test consist of the verification of absence of global correlation with respect to a certain number of lags.

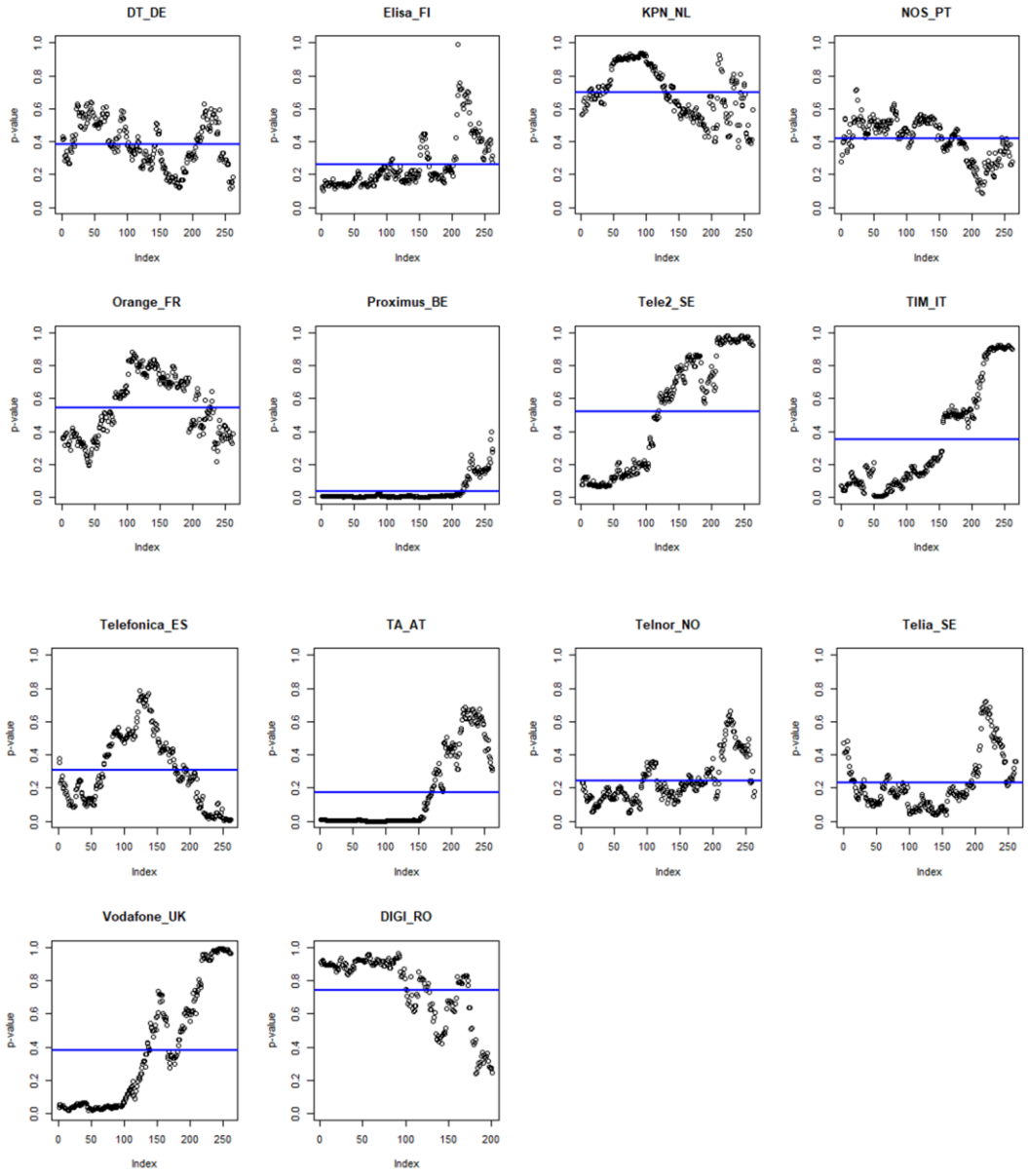
for each comparable and for both: i) the beta spot at 1 of April 2026, ii) the rolling beta estimated over a five year time window; the p-values of the two test are reported. For the rolling beta estimation the average values over five year time windows is given. In figures A8 and A9 the corresponding values along the time series used for estimating the average on rolling beta are given.

Table A3 Statistic test for the Ljung-Box test and the Breusch-Godfrey test for 24 lags (in blue the operators that don't pass the test)

	Spot beta (last value)		Rolling beta (averages values)	
	P-value (spot value)Lj-test	P-value (spot value) BG-test	P-value (mean value over five years) LJ-test	P-value (mean value over five years) BG-test
DT	0.0358672	0.1824965	0.3863570	0.3821156
Digi	0.1941241	0.2475958	0.7188468	0.7430755
Elisa	0.3557499	0.2698836	0.2089099	0.2612351
KPN	0.5616006	0.5950779	0.6041198	0.6984595
NOS	0.2210682	0.2789258	0.2741440	0.4173655
Orange	0.3744731	0.3848245	0.5840192	0.5447322
Prox	0.2049178	0.2728238	0.0172935	0.0352136
Tele2	0.9001700	0.9228532	0.2990172	0.5187358
TIM	0.8171229	0.8985451	0.3577811	0.3490466
Telef	0.0165015	0.0103951	0.2280607	0.3078673
TA	0.4054420	0.3207221	0.1365054	0.1736160
Telenor	0.1402198	0.1803850	0.1088984	0.2446351
Telia	0.3361892	0.3614102	0.2779793	0.2279298
Vodafone	0.9661177	0.9654196	0.3612570	0.3771457

Figure A8 –P-value of Ljung-Box Test and BG Test along the rolling beta (the average values are the blue lines reported)





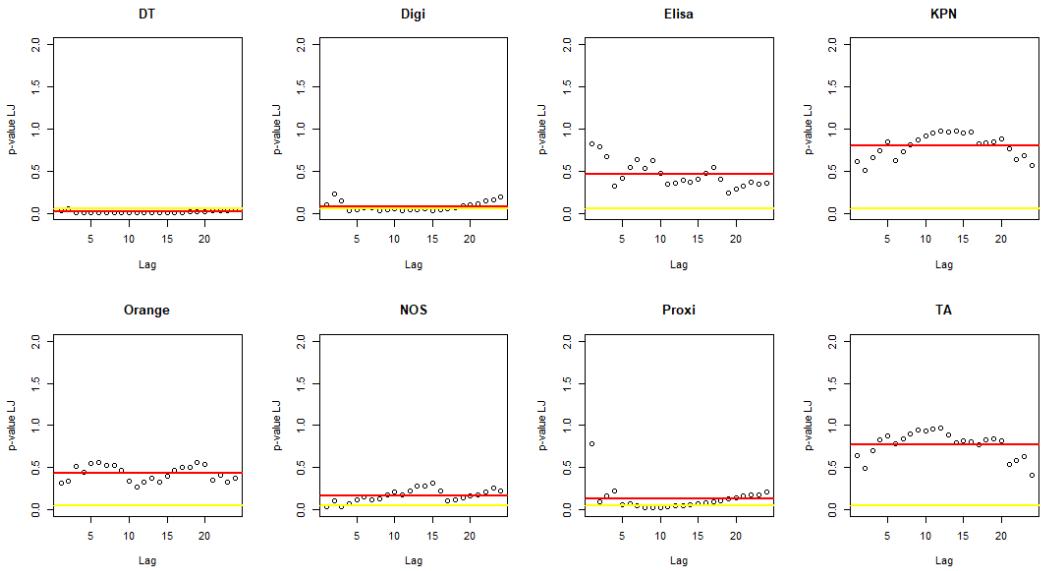
The p-values from the Ljung-Box and Breusch-Godfrey test applied on 24 lags[191] show on average on the time windows considered that no systematic autocorrelation is present in the residual. Proximus and only recently Telefonica and DT show a small level of autocorrelation due to their increased volatility during the last year when it is possible to observe that in the long run the quality of the statistical data is on average better than the spot value for all the peers, as the number of failures of the test is marginal along the time series for the most part of the operators and on average all operators in principle pass the test. In every case the failure level of the test happens not in strong way and a considering a confidence level of 99%

[191] 24 lags are generally accepted as maximum inspection for the test.

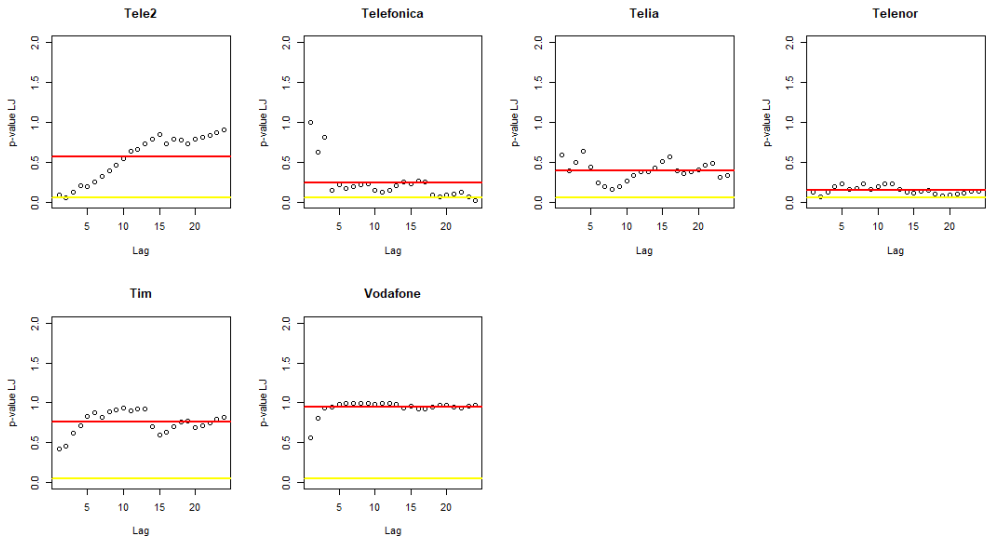
no failure of the tests happens so there is absolutely no need to make any adjustment to the model to take into account any autoregressive component in the model.[192]

In the following picture the test is done considering different lags from 1 to 24 for the spot beta at 1 of April 2026. The statistical test don't fail at 95 % to reject the Hypothesis of null autocorrelation for any operator even if for some lags, DT, DiGI, Proximus, Telefonica and Telenor, can fail the test at 95%, considering a level of confidence at 99 % also for those operators the test does not fail for any part of the lag and so the null hypothesis of no autocorrelation cannot be rejected. This analysis shows that in every case the level of autocorrelation in the residuals is low so that we can still consider the beta estimation to be reliable and unbiased.

Figure A9 –P-value of Ljung-Box Test for different lags (1-24) (yellow line: the 0.05 limit for null hypothesis evaluation; red line: average p-value over the 24 lags)

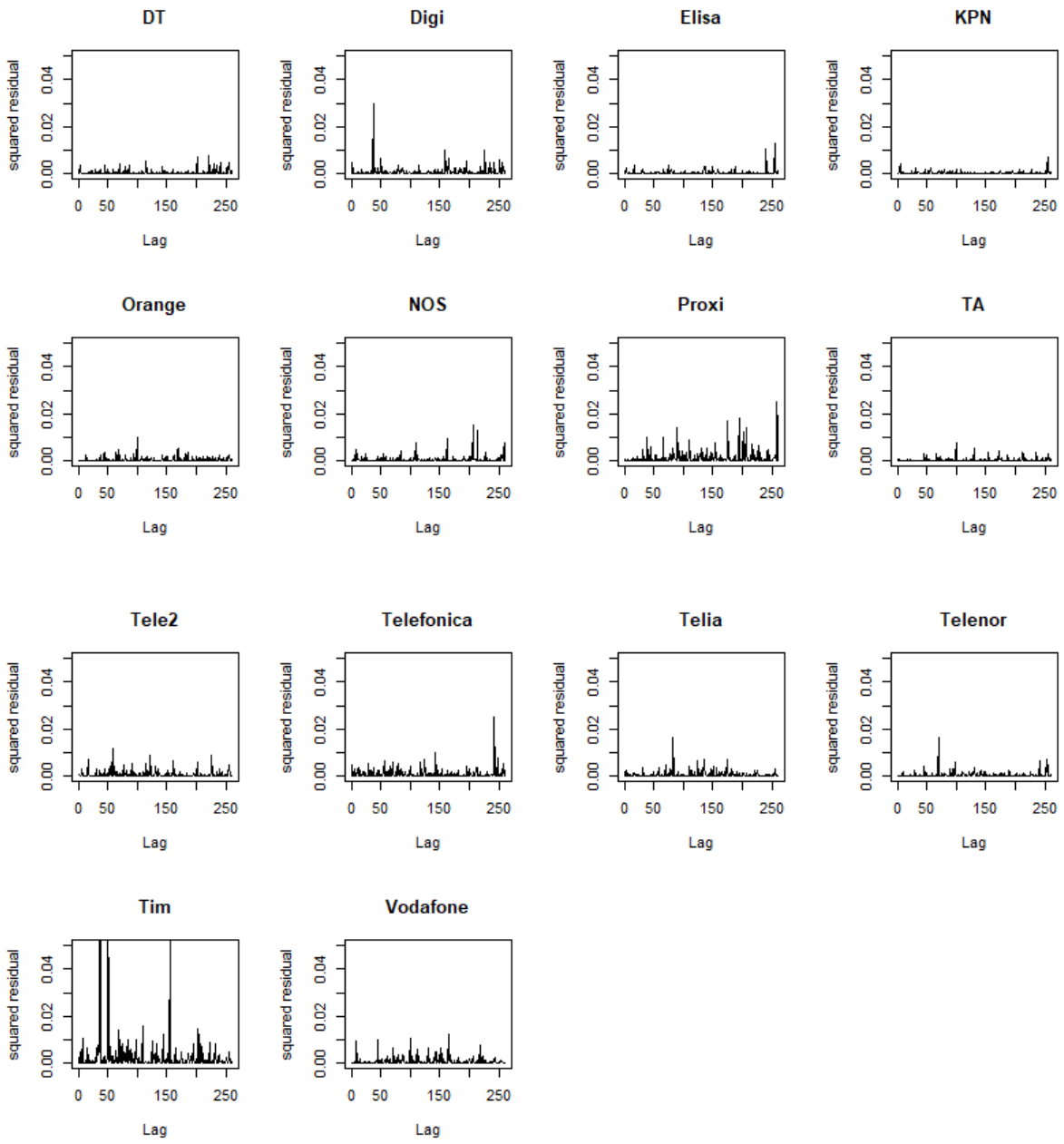


[192] The presence of autocorrelation in the residuals can affect the dynamics of the mean and may indicate an autoregressive component in the error term. This pattern can be explicitly modelled by adding an autoregressive structure to the regression specification in order to address potential misspecification when such issues arise.



The volatility experienced, that is a cause of a reduction in the quality of the OLS estimator, can be understood looking at the squared residuals in the picture below for most of the operators, the picture refers to the data for the spot beta at the cut-off date (1 April 2026).

Figure A10: Squared residual representation of spot beta at 1 April 2026



Another relevant test is to check if conditional heteroscedasticity in the residual is present. The presence of the Arch effect in the residual when there is no autocorrelation in the residual is an indication that outliers are not independent. In presence of conditional heteroscedasticity, an uncorrelated time series can still be serially dependent due to a dynamic conditional variance process. A time series exhibiting conditional heteroscedasticity—or autocorrelation in the squared series—is said to have autoregressive conditional heteroscedastic (ARCH) effects.

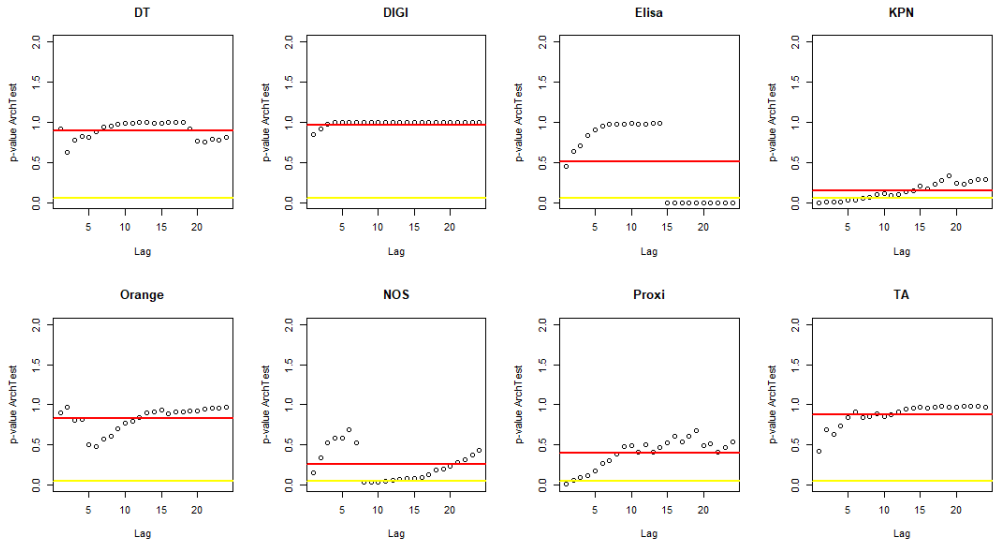
For this reason, the ARCH Engle test is carried out. The test is the Lagrange Multiplier test which aims to fit a linear regression model for the squared residuals and examines whether the fitted model is significant. So, the null hypothesis is that the squared residuals are a sequence of white noise, namely, the residuals are homoscedastic. This means that, under the ARCH framework, large shocks tend to be followed by another large shock. The Arch effect can be detected considering the following model

$$a_t^2 = \alpha_0 + \alpha_1 a_{t-1}^2 + \cdots + \alpha_m a_{t-m}^2 + e_t \qquad t = m+1, \ldots., T$$

Where t is the error term, m is the lag order of the model and T the sample size with a_t the residual of the model considered. The test wants to verify the $\alpha_i = 0\ (i = 1, \ldots, m)$ in the previous linear regression.[193] In line with the past year the test is applied before on the spot beta and then this year for the rolling beta as well.

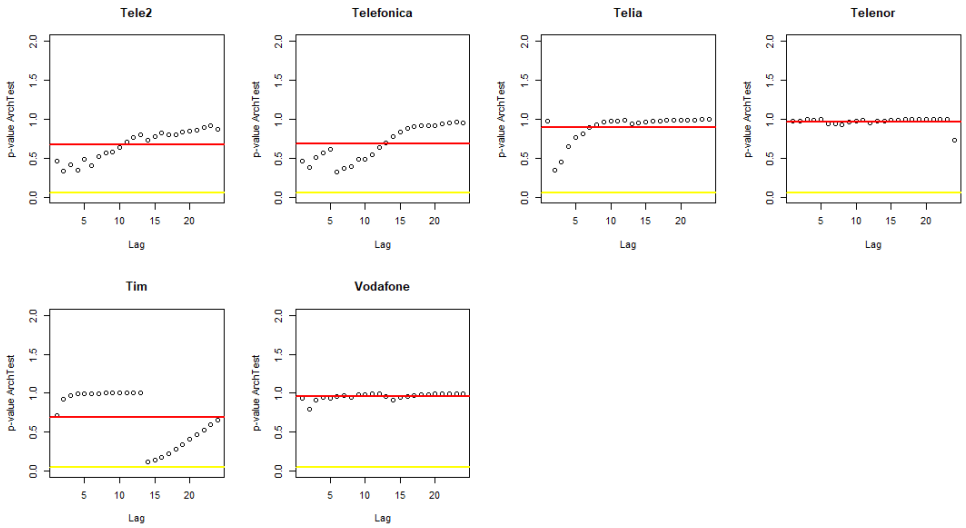
With this analysis an Arch effect in the residual can be detected for most part of the lags in KPN (short term), Elisa (long term), NOS and Proximus, even if the test on average is not "failed" meaning that absence of conditional heteroscedasticity cannot be excluded on average; in comparison to last year the same peers showed analogous behaviour.[194] In every case the level of an "arch effect" can be considered to be low without the need to apply any adjustment to the equity beta estimated by the OLS as can be seen in the following.

Figure A11 P-values of arch test for different order (lags) in the Engle test model



[193] The test evaluates the F statistic as ((SSR_0-SSR1)/m)/(SSR_1/(T-2m-1))) with SSR_0=∑(a_t-omega)^2 and SSR_1=∑e_t^2 with t from m+1 to T and omega is the sample mean a_t^2 which is asymptotically distributed as chi-squared distribution with m degrees of freedom under the null hypothesis. "Analysis of Financial Time Series" Wiley R.S. Tsay (2004)

[194] The considered operators are those with an Engle test with an average failure of 24 lags.

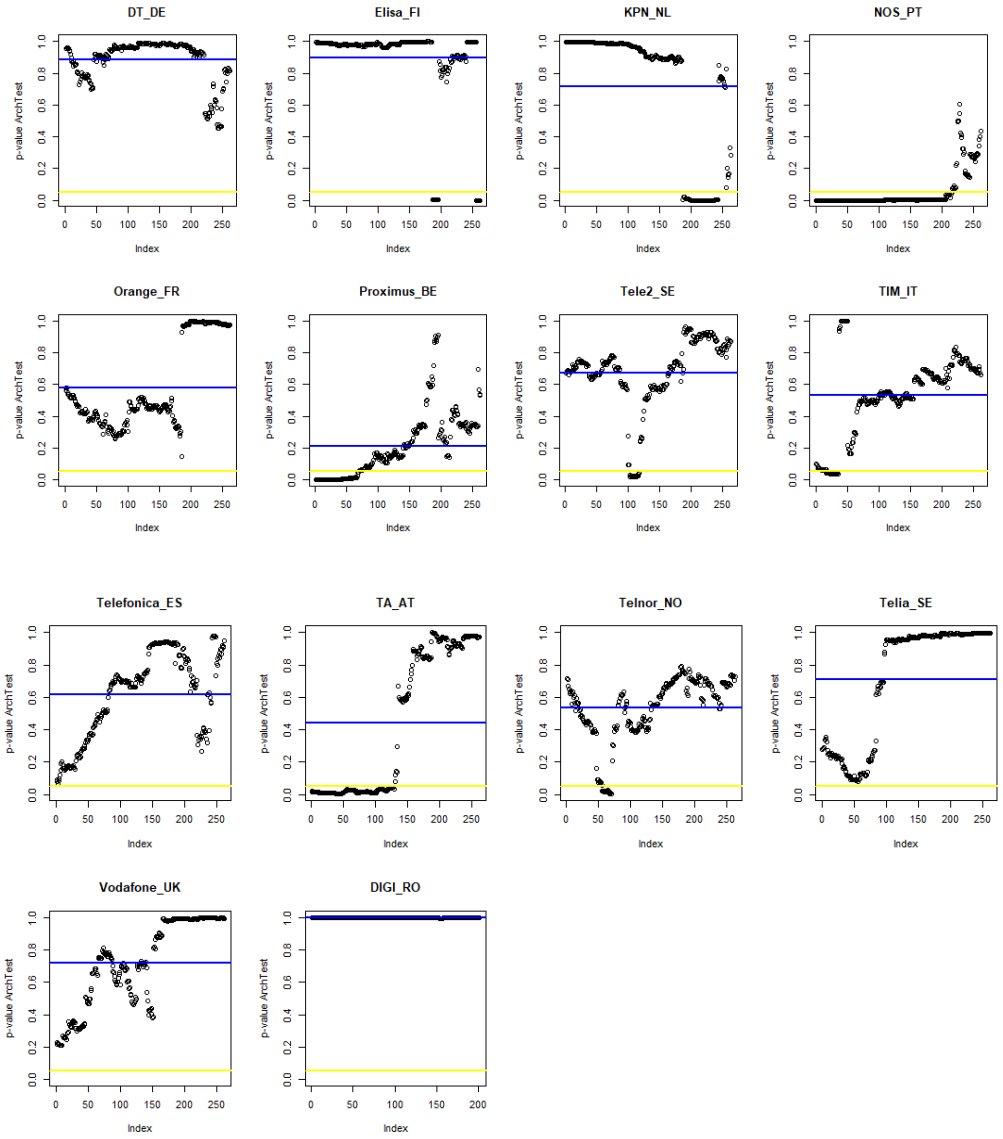


In table A5 the p-value of the corresponding outcome of the Arch test evaluated at 24 lags is reported separately for the spot beta at 1 April 2026 and on average over the time window of the rolling beta. As for the other test before the p-value reported for the rolling beta refers to the average p-value detected over the time windows of five year and weekly sampling period. In figure A11 the corresponding evolution over the time windows of five years of the p-value is reported from which the average for the rolling beta is derived. Also for this test it is possible to observe that on average over the five years time window it is passed for all operators with respect to the spot value where one operator fails the test.

Table A5 Statistic test for the Arch test for 24 lags for rolling beta and spot beta

	Beta (spot value)	Rolling beta (average)
	Arch test p-value 24 lags (spot)	Arch test p-value 24 lags (average)
DT	0.8176132	0.8820711
Digi	0.9995242	0.9988891
Elisa	0.0000032	0.8982822
KPN	0.2834558	0.7182851
NOS	0.4368129	0.0502490
Orange	0.9741528	0.5800388
Proximus	0.5341868	0.2118544
Tele2	0.8687559	0.6742045
TIM	0.6590867	0.5292417
Telefonica	0.9510018	0.6160896
Telekom Austria	0.9713686	0.4392295
Telenor	0.7270581	0.5324212
Telia	0.9962818	0.7096044
Vodafone	0.9950929	0.7200681

Figure A11 P-values of arch test for point in time (24 lags) in the Engle test model the blue line reports the average value also reported in Table A5. The Yellow line provides the threshold of the test failure



To strengthen the assertion that the beta estimation in every case is not biased in a significant way, as in previous years we have estimated the Beta including in the error term of the regression the “Arch” effect and adjusted the regression estimation by a weighted least-squares, with weights equal to the reciprocals of the conditional variances of the Arch/Garch model estimated with respect to the time series of the standard residuals.

The fit of the residuals with a suitable Arch model has followed the AIC[195] "Akaike Information Criteria", the best model has been selected choosing the one with the lower Akaike Information Criteria parameter considering different GARCH(p,q) models with p,q from 1 to N.

The regressions lines have been recalculated through a weighted least square with weights equal to the reciprocal of the conditional variance of the Arch/Garch[196] model estimated with relevant order. It provides the following results for a beta adjusted for few peers that fails the statistical Engle test for the spot beta for some lag at 1 of April 2026.[197] The adjustment calculated provides in absolute term a value between -0.02 and -0.01 and so can be considered marginal.

Table A6 Adjustment of spot beta on Arch/Garch effect for the three peers that fail the test (Table A5 above)

	EQUITY BETA	EQUITY BETA ADJUSTED	VARIATION	Adjustment in the error term
ELISA	**0.35**	**0.34**	**-0.01**	**Garch(1,0)**
NOS	**0.34**	**0.35**	**-0.01**	**Garch(1,1)**
KPN	**0.20**	**0.18**	**-0.02**	**Garch(1,0)**
PROX	**0.41**	**0.40**	**-0.01**	**Garch(1,0)**

This is consistent with the literature that shows small adjustments in situations where there is conditional heteroscedasticity in the CAPM beta estimation.[198]

The estimated betas for companies with illiquid stocks tend to be unusually low and statistically less reliable. As a result, it is also necessary to assess the liquidity of stocks when selecting comparable companies. Failure in liquidity merit figures is also a reason for the failure of some statistical tests previously carried on. As liquidity is a difficult concept to define and is subject to interpretation, it is useful to look at a wide range of measures. In particular, the following liquidity measures were considered other than considering the free float reported in table A1 for each comparable.

Bid–ask spread as a percentage of closing price. This is the difference between the lowest price at which an asset is offered for sale in a market and the highest price that is offered for purchase of the asset. The lower the bid–ask spread, the more liquid the stock. A relatively narrow bid–ask spread could be a sign that there are a large number of buyers and sellers in

[195] AIC rewards goodness of fit (as assessed by the likelihood function), but it also includes a penalty that is an increasing function of the number of estimated parameters. The penalty discourages overfitting, because increasing the number of parameters in the model almost always improves the goodness of the fit.

[196] The Garch model is a generalization of the Arch model when the estimation of the variance of the error term includes both autoregressive term the squared error and of the variance itself. With Garch (p,q), p is the order of the Autoregressive variance and q is the maximum order of Autoregressive term of the square error.

$$\sigma_t^2 = \omega + \alpha_1 \epsilon_{t-1}^2 + \cdots + \alpha_q \epsilon_{t-q}^2 + \beta_1 \sigma_{t-1}^2 + \cdots + \beta_p \sigma_{t-p}^2 = \omega + \sum_{i=1}^{q} \alpha_i \epsilon_{t-i}^2 + \sum_{i=1}^{p} \beta_i \sigma_{t-i}^2$$

[197] D. Ruppert, "Statistics and Data analysis for financial engineering" Springer 2015.

[198] Armitage, S & Brzeszczynski, J 2011, 'Heteroscedasticity and interval effects in estimating beta: UK evidence', *Applied Financial Economics*, vol. 21, no. 20, pp. 1525-1538.

the market. The merit figure has been evaluated considering the data, reported by Bloomberg with respect to the maximum and minimum price of the days.

Share turnover. This is a measure of stock liquidity calculated by dividing the total value of shares traded over a period of time by the average market capitalization of the stock for the period. The higher the share turnover, the more liquid a stock is. For example, a high trading volume would indicate that a stock can be bought and sold easily.

In the picture below the five years average of Bid Ask Spread and Share Turnover are provided for the previous set of comparable. Telecom Austria have lower values with respect to the others considering the share turnover, which means a low level of not affecting the quality of the estimation of the beta as seen from the previous paragraph on residual analysis. The value reports also comparable data considering the values for 2025 of last year report on comparable merit figure.[199]

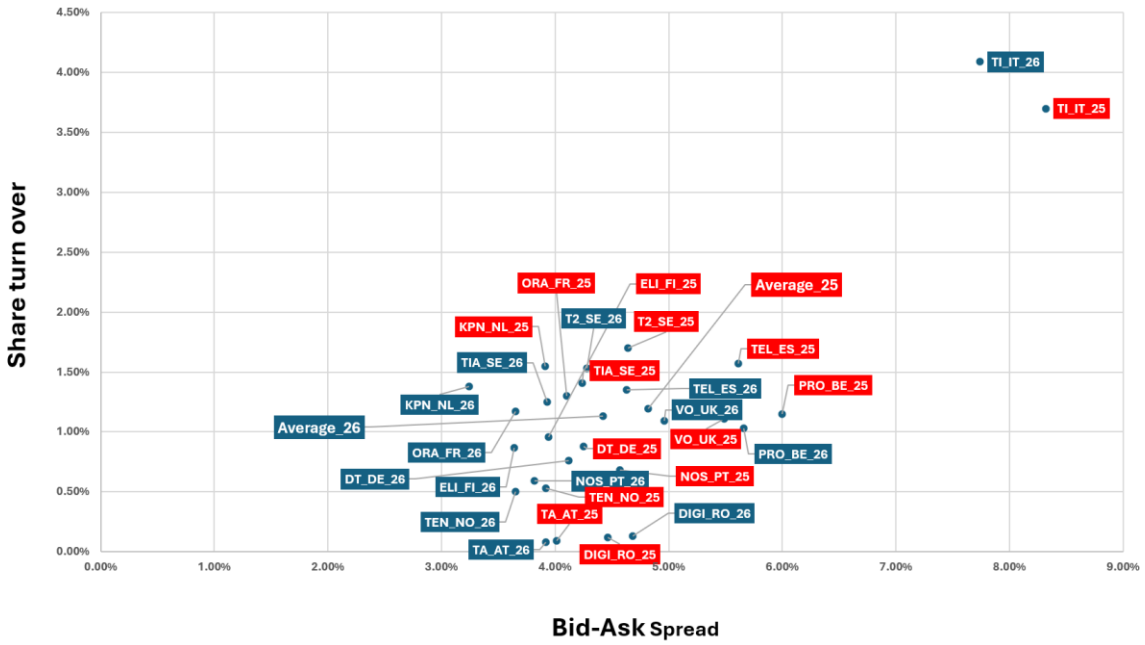
Table A8

	Bid-Ask spread	Share turn over
DT_DE_25	4.25%	0.88%
DT_DE_26	4.12%	0.76%
DIGI_RO_25	4.46%	0.12%
DIGI_RO_26	4.68%	0.13%
ELI_FI_25	3.94%	0.96%
ELI_FI_26	3.64%	0.87%
KPN_NL_25	3.91%	1.55%
KPN_NL_26	3.24%	1.38%
NOS_PT_25	4.57%	0.68%
NOS_PT_26	3.82%	0.59%
ORA_FR_25	4.10%	1.30%
ORA_FR_26	3.65%	1.17%
PRO_BE_25	6.00%	1.15%
PRO_BE_26	5.66%	1.03%
T2_SE_25	4.64%	1.70%
T2_SE_26	4.28%	1.53%
TI_IT_25	8.32%	3.70%
TI_IT_26	7.74%	4.09%
TEL_ES_25	5.61%	1.57%
TEL_ES_26	4.63%	1.35%
TA_AT_25	4.01%	0.09%
TA_AT_26	3.92%	0.08%
TEN_NO_25	3.92%	0.53%
TEN_NO_26	3.65%	0.50%
TIA_SE_25	4.24%	1.41%
TIA_SE_26	3.93%	1.25%
VO_UK_25	5.49%	1.11%
VO_UK_26	4.96%	1.09%
Average_25	4.82%	1.20%

[199] The Bid-ask spread is evaluated considering the high and lower price in the same trading day.

Average_26	4.42%	1.13%

Figure A13 Bid-ask spread and Share turnover



In the following some comparable merit figures obtained from analysing the balance sheets and income statement of the companies included in the peer group are given.[200]

Since 2024 report in the following specifically four group of indicators are considered to stream line some easy merit figures on the following stream of analysis: i) Profitability; ii) Financial Coverage; iii) Enterprise value; iv) Investments, measured using directly data from the Financial analysis Balance sheet and Income statement data available on Bloomberg.

All four group of indicators provide an insight into the revenues, and financial conditions that also influence the level of beta, gearing evolution that can, as well as, provide an explanation of merger and acquisition or separation activities.

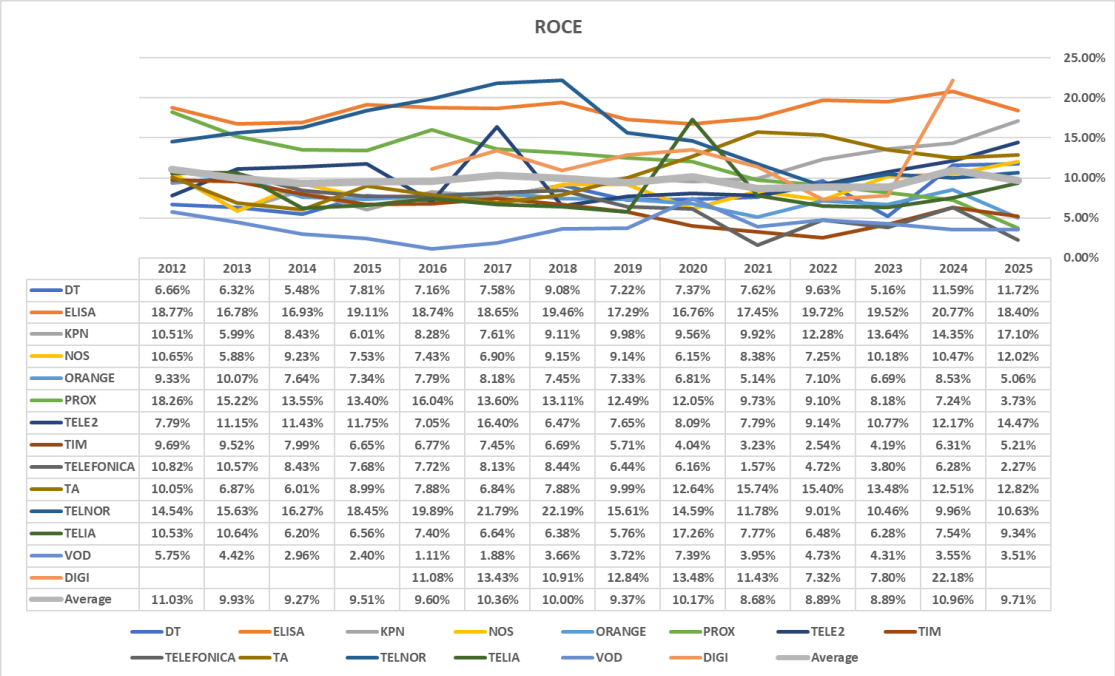
Profitability is shown by the following indicators:

ROCE (return on capital employed**)** = EBIT/capital employed. This index can be especially useful when comparing the performance of companies in capital-intensive sectors, such as utilities and telecoms. This is because it analyses profitability related to a company's shareholders' equity and debt, neutralizing financial performance analysis for companies with significant debt. Ultimately, the calculation of ROCE tells the amount of profit a company is generating per 1 Euro/own currency of capital employed. The more

[200] The data are retrieved from Bloomberg from the standardized Financial Analysis section (Data is adjusted to remove the impact of abnormal items (as defined by Bloomberg). Data have been standardized for consistent accounting treatment and presentation across companies).

profit per 1 Euro/own currency a company can generate, the better. Thus, a higher ROCE indicates stronger profitability.

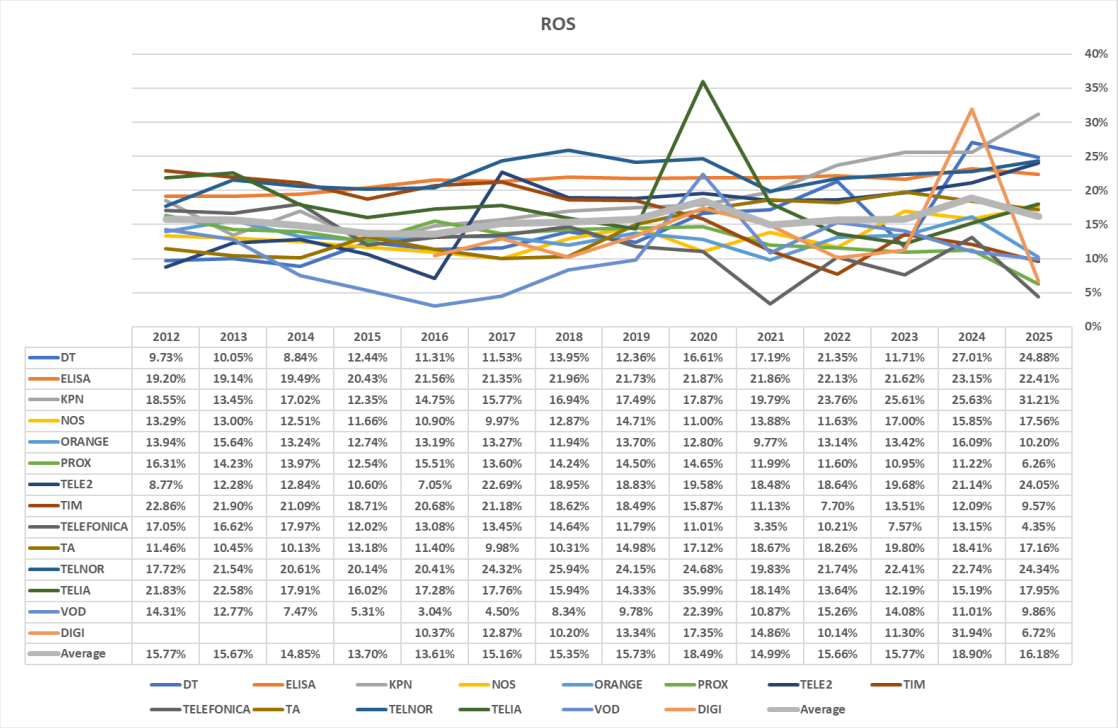
Investors tend to favour companies with stable and rising ROCE levels over companies where ROCE is volatile or trending lower.



	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
DT	6.66%	6.32%	5.48%	7.81%	7.16%	7.58%	9.08%	7.22%	7.37%	7.62%	9.63%	5.16%	11.59%	11.72%
ELISA	18.77%	16.78%	16.93%	19.11%	18.74%	18.65%	19.46%	17.29%	16.76%	17.45%	19.72%	19.52%	20.77%	18.40%
KPN	10.51%	5.99%	8.43%	6.01%	8.28%	7.61%	9.11%	9.98%	9.56%	9.92%	12.28%	13.64%	14.35%	17.10%
NOS	10.65%	5.88%	9.23%	7.53%	7.43%	6.90%	9.15%	9.14%	6.15%	8.38%	7.25%	10.18%	10.47%	12.02%
ORANGE	9.33%	10.07%	7.64%	7.34%	7.79%	8.18%	7.45%	7.33%	6.81%	5.14%	7.10%	6.69%	8.53%	5.06%
PROX	18.26%	15.22%	13.55%	13.40%	16.04%	13.60%	13.11%	12.49%	12.05%	9.73%	9.10%	8.18%	7.24%	3.73%
TELE2	7.79%	11.15%	11.43%	11.75%	7.05%	16.40%	6.47%	7.65%	8.09%	7.79%	9.14%	10.77%	12.17%	14.47%
TIM	9.69%	9.52%	7.99%	6.65%	6.77%	7.45%	6.69%	5.71%	4.04%	3.23%	2.54%	4.19%	6.31%	5.21%
TELEFONICA	10.82%	10.57%	8.43%	7.68%	7.72%	8.13%	8.44%	6.44%	6.16%	1.57%	4.72%	3.80%	6.28%	2.27%
TA	10.05%	6.87%	6.01%	8.99%	7.88%	6.84%	7.88%	9.99%	12.64%	15.74%	15.40%	13.48%	12.51%	12.82%
TELNOR	14.54%	15.63%	16.27%	18.45%	19.89%	21.79%	22.19%	15.61%	14.59%	11.78%	9.01%	10.46%	9.96%	10.63%
TELIA	10.53%	10.64%	6.20%	6.56%	7.40%	6.64%	6.38%	5.76%	17.26%	7.77%	6.48%	6.28%	7.54%	9.34%
VOD	5.75%	4.42%	2.96%	2.40%	1.11%	1.88%	3.66%	3.72%	7.39%	3.95%	4.73%	4.31%	3.55%	3.51%
DIGI					11.08%	13.43%	10.91%	12.84%	13.48%	11.43%	7.32%	7.80%	22.18%	
Average	11.03%	9.93%	9.27%	9.51%	9.60%	10.36%	10.00%	9.37%	10.17%	8.68%	8.89%	8.89%	10.96%	9.71%

On average the ROCE is not dramatically decreasing, with some exceptions and generally looking only at last years data almost all operators have increased the return on capital, this can be a mix of effects that can be better understood looking also at the following indicators and it should be said that looking only at last years the increase can be attributed also a reduction on capital employed in light of a decrease of capital investment activity with respect to the past taking into account the fact that coverage for VHCN, spectrum licenses payment for 5G are going to reduce over time.

ROS (Return on Sales) = EBIT (earnings before interest and tax)/revenues. This index provides information on the efficiency of a company, i. e. how much revenue is transformed into earnings.

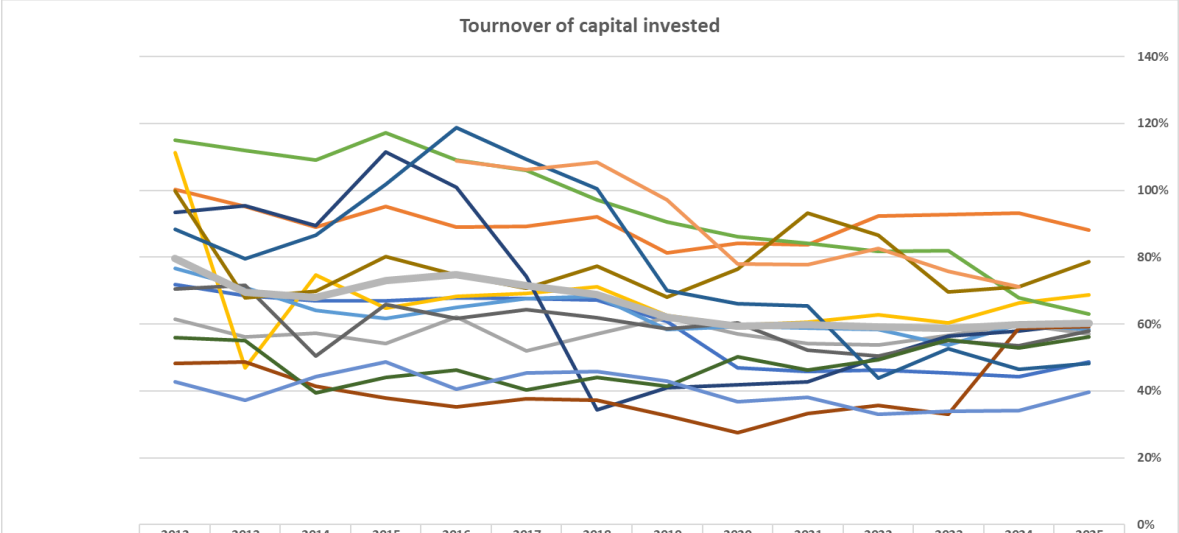


	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
DT	9.73%	10.05%	8.84%	12.44%	11.31%	11.53%	13.95%	12.36%	16.61%	17.19%	21.35%	11.71%	27.01%	24.88%
ELISA	19.20%	19.14%	19.49%	20.43%	21.56%	21.35%	21.96%	21.73%	21.87%	21.86%	22.13%	21.62%	23.15%	22.41%
KPN	18.55%	13.45%	17.02%	12.35%	14.75%	15.77%	16.94%	17.49%	17.87%	19.79%	23.76%	25.61%	25.63%	31.21%
NOS	13.29%	13.00%	12.51%	11.66%	10.90%	9.97%	12.87%	14.71%	11.00%	13.88%	11.63%	17.00%	15.85%	17.56%
ORANGE	13.94%	15.64%	13.24%	12.74%	13.19%	13.27%	11.94%	13.70%	12.80%	9.77%	13.14%	13.42%	16.09%	10.20%
PROX	16.31%	14.23%	13.97%	12.54%	15.51%	13.60%	14.24%	14.50%	14.65%	11.99%	11.60%	10.95%	11.22%	6.26%
TELE2	8.77%	12.28%	12.84%	10.60%	7.05%	22.69%	18.95%	18.83%	19.58%	18.48%	18.64%	19.68%	21.14%	24.05%
TIM	22.86%	21.90%	21.09%	18.71%	20.68%	21.18%	18.62%	18.49%	15.87%	11.13%	7.70%	13.51%	12.09%	9.57%
TELEFONICA	17.05%	16.62%	17.97%	12.02%	13.08%	13.45%	14.64%	11.79%	11.01%	3.35%	10.21%	7.57%	13.15%	4.35%
TA	11.46%	10.45%	10.13%	13.18%	11.40%	9.98%	10.31%	14.98%	17.12%	18.67%	18.26%	19.80%	18.41%	17.16%
TELNOR	17.72%	21.54%	20.61%	20.14%	20.41%	24.32%	25.94%	24.15%	24.68%	19.83%	21.74%	22.41%	22.74%	24.34%
TELIA	21.83%	22.58%	17.91%	16.02%	17.28%	17.76%	15.94%	14.33%	35.99%	18.14%	13.64%	12.19%	15.19%	17.95%
VOD	14.31%	12.77%	7.47%	5.31%	3.04%	4.50%	8.34%	9.78%	22.39%	10.87%	15.26%	14.08%	11.01%	9.86%
DIGI					10.37%	12.87%	10.20%	13.34%	17.35%	14.86%	10.14%	11.30%	31.94%	6.72%
Average	15.77%	15.67%	14.85%	13.70%	13.61%	15.16%	15.35%	15.73%	18.49%	14.99%	15.66%	15.77%	18.90%	16.18%

ROS is more stable and does not show a specific trend with respect to ROCE, that means that operators are pushing mainly on efficiency on current costs to generate earnings, moreover it is possible to say that looking at the evolution in 2024 and 2025 the level of ROS has generally increased with regard to the year before for most operators consistent with ROCE figures.

Turnover of net capital employed = revenues/(total asset-current liability-cash and cash equivalent). This index provides insight into the ability of the company to build up revenues in relation to the corresponding net capital employed. Generally, a higher ratio indicates efficiency with respect to the capital employed. The product between the Turnover and ROS provides information on the corresponding Return on invested capital (ROIC)[201].

[201] ROIC can be calculated as ROCE excluding cash and cash equivalent from the capital employed.

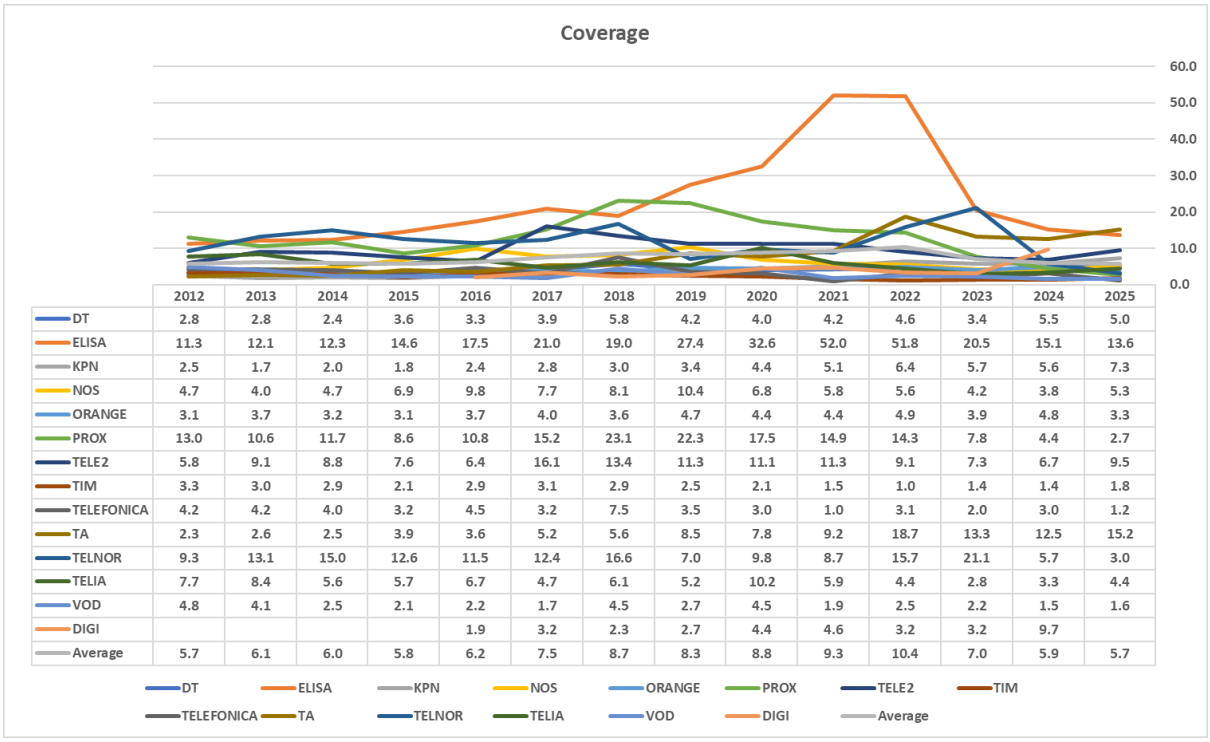


	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
DT	71.88%	68.58%	66.91%	66.90%	67.92%	67.73%	67.22%	60.84%	47.01%	45.75%	46.15%	45.34%	44.31%	48.58%
ELISA	100.28%	95.11%	88.96%	95.21%	89.06%	89.27%	92.19%	81.37%	84.13%	83.65%	92.42%	92.72%	93.14%	88.19%
KPN	61.43%	56.16%	57.21%	54.13%	62.23%	52.03%	57.02%	61.97%	56.97%	54.20%	53.74%	56.64%	59.94%	57.00%
NOS	111.28%	46.87%	74.67%	64.87%	68.26%	69.27%	71.14%	62.52%	59.71%	60.64%	62.76%	60.31%	66.31%	68.83%
ORANGE	76.69%	70.95%	64.00%	61.58%	65.02%	67.56%	68.22%	58.27%	59.34%	58.92%	58.41%	53.68%	59.91%	58.28%
PROX	115.02%	111.82%	109.16%	117.28%	109.14%	106.09%	97.26%	90.56%	86.25%	84.20%	81.67%	81.96%	67.84%	62.98%
TELE2	93.36%	95.33%	89.53%	111.39%	100.92%	74.29%	34.34%	40.93%	41.93%	42.72%	49.98%	56.42%	57.95%	60.46%
TIM	48.33%	48.64%	41.39%	37.97%	35.20%	37.61%	37.27%	32.66%	27.61%	33.35%	35.61%	33.11%	58.78%	59.28%
TELEFONICA	70.53%	71.56%	50.47%	65.90%	61.61%	64.36%	61.87%	58.59%	60.39%	52.27%	50.43%	55.10%	53.47%	57.94%
TA	99.89%	67.95%	69.75%	80.23%	74.70%	70.77%	77.27%	68.06%	76.43%	93.15%	86.52%	69.62%	71.24%	78.56%
TELNOR	88.35%	79.55%	86.52%	101.75%	118.73%	109.30%	100.57%	70.16%	66.04%	65.49%	43.79%	52.64%	46.46%	48.13%
TELIA	55.88%	55.12%	39.42%	43.97%	46.23%	40.33%	44.00%	41.40%	50.14%	46.24%	49.42%	55.26%	52.80%	56.20%
VOD	42.81%	37.14%	44.25%	48.65%	40.53%	45.42%	45.90%	43.01%	36.68%	38.09%	33.06%	33.86%	34.03%	39.70%
DIGI					108.83%	106.31%	108.47%	97.14%	78.06%	77.86%	82.69%	75.88%	71.15%	
Average	79.67%	69.60%	67.86%	73.06%	74.88%	71.45%	68.77%	61.96%	59.33%	59.75%	59.05%	58.75%	59.81%	60.32%

In this case equivalently with respect to ROCE there is a more clearly decreasing trend considering specific data before 2020, showing that investments are still relevant, but there is much difficulty on converting new capital employed in corresponding new revenues, at the same time looking only at last year there is a small increase showing that profitability and capital efficiency are increasing.

The coverage indicators provide information on the financial stability, for this purpose two related indicators are reported:

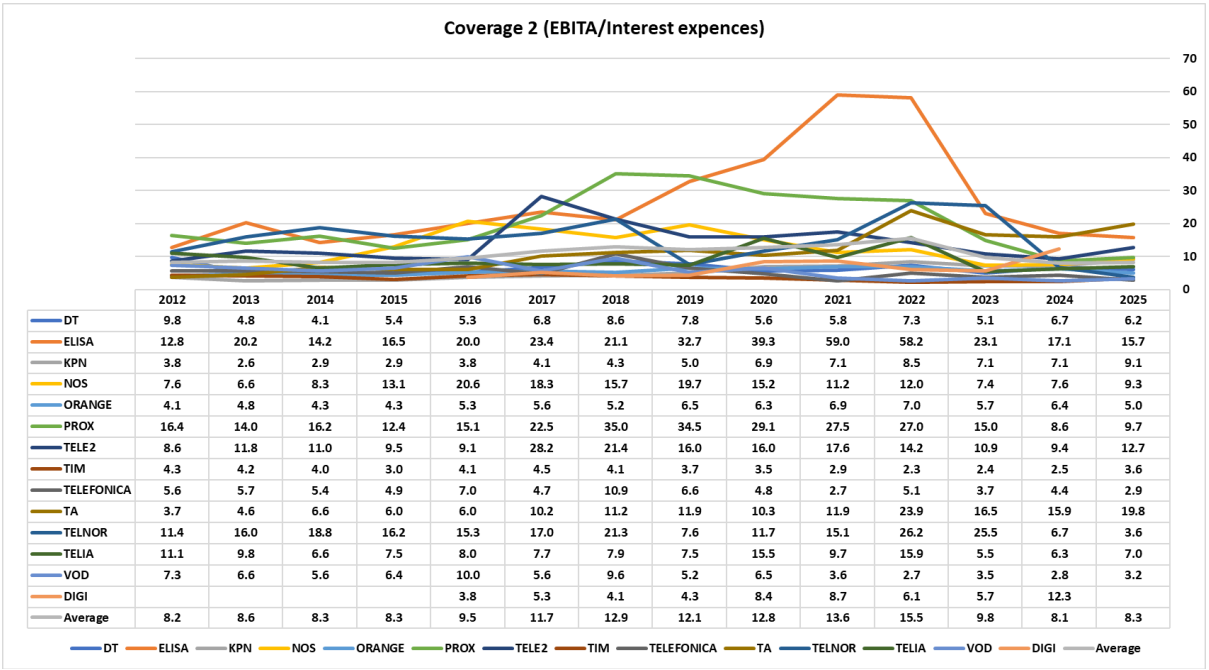
Coverage ratio 1 = EBIT/net interest expense. This indicator provides information about how much earnings are used to pay financial interest. A value lower than one means that the earnings are used to pay interest expenses instead of remunerating equity investors.



	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
DT	2.8	2.8	2.4	3.6	3.3	3.9	5.8	4.2	4.0	4.2	4.6	3.4	5.5	5.0
ELISA	11.3	12.1	12.3	14.6	17.5	21.0	19.0	27.4	32.6	52.0	51.8	20.5	15.1	13.6
KPN	2.5	1.7	2.0	1.8	2.4	2.8	3.0	3.4	4.4	5.1	6.4	5.7	5.6	7.3
NOS	4.7	4.0	4.7	6.9	9.8	7.7	8.1	10.4	6.8	5.8	5.6	4.2	3.8	5.3
ORANGE	3.1	3.7	3.2	3.1	3.7	4.0	3.6	4.7	4.4	4.4	4.9	3.9	4.8	3.3
PROX	13.0	10.6	11.7	8.6	10.8	15.2	23.1	22.3	17.5	14.9	14.3	7.8	4.4	2.7
TELE2	5.8	9.1	8.8	7.6	6.4	16.1	13.4	11.3	11.1	11.3	9.1	7.3	6.7	9.5
TIM	3.3	3.0	2.9	2.1	2.9	3.1	2.9	2.5	2.1	1.5	1.0	1.4	1.4	1.8
TELEFONICA	4.2	4.2	4.0	3.2	4.5	3.2	7.5	3.5	3.0	1.0	3.1	2.0	3.0	1.2
TA	2.3	2.6	2.5	3.9	3.6	5.2	5.6	8.5	7.8	9.2	18.7	13.3	12.5	15.2
TELNOR	9.3	13.1	15.0	12.6	11.5	12.4	16.6	7.0	9.8	8.7	15.7	21.1	5.7	3.0
TELIA	7.7	8.4	5.6	5.7	6.7	4.7	6.1	5.2	10.2	5.9	4.4	2.8	3.3	4.4
VOD	4.8	4.1	2.5	2.1	2.2	1.7	4.5	2.7	4.5	1.9	2.5	2.2	1.5	1.6
DIGI					1.9	3.2	2.3	2.7	4.4	4.6	3.2	3.2	9.7	
Average	5.7	6.1	6.0	5.8	6.2	7.5	8.7	8.3	8.8	9.3	10.4	7.0	5.9	5.7

In this case it is possible to observe that on average there is not a clear trend, but the level of financial sustainability is generally high with some exceptions, and the index is clearly supported in period with lower interest rate. Since last two years the average merit figures have decreased on average and this is due to still high level of interest rate.

Coverage ratio 2 = EBITA (earnings before interest, tax, amortisation)/interest expense. This indicator is very close to the previous one, but provides more effective information on the capability of the company to pay passive interest on debt, independent of the chance to afford investment in immaterial asset in future. In the previous index amortisation is excluded (i. e. intangible assets including goodwill).

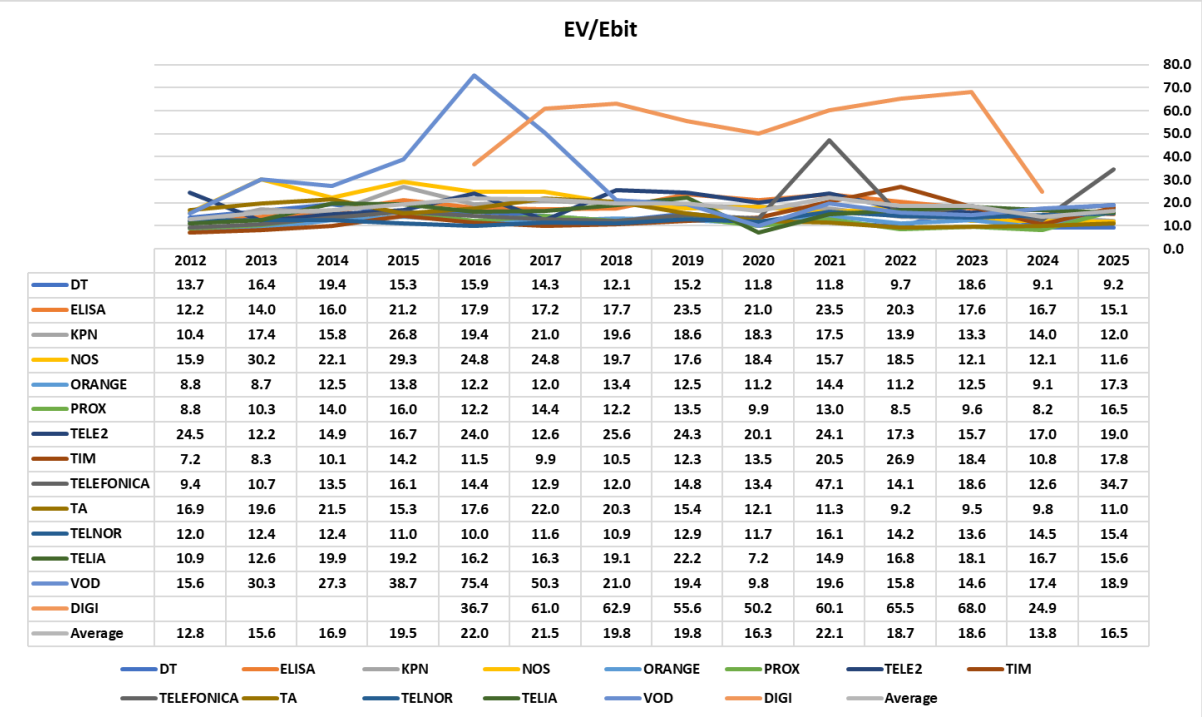


	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
DT	9.8	4.8	4.1	5.4	5.3	6.8	8.6	7.8	5.6	5.8	7.3	5.1	6.7	6.2
ELISA	12.8	20.2	14.2	16.5	20.0	23.4	21.1	32.7	39.3	59.0	58.2	23.1	17.1	15.7
KPN	3.8	2.6	2.9	2.9	3.8	4.1	4.3	5.0	6.9	7.1	8.5	7.1	7.1	9.1
NOS	7.6	6.6	8.3	13.1	20.6	18.3	15.7	19.7	15.2	11.2	12.0	7.4	7.6	9.3
ORANGE	4.1	4.8	4.3	4.3	5.3	5.6	5.2	6.5	6.3	6.9	7.0	5.7	6.4	5.0
PROX	16.4	14.0	16.2	12.4	15.1	22.5	35.0	34.5	29.1	27.5	27.0	15.0	8.6	9.7
TELE2	8.6	11.8	11.0	9.5	9.1	28.2	21.4	16.0	16.0	17.6	14.2	10.9	9.4	12.7
TIM	4.3	4.2	4.0	3.0	4.1	4.5	4.1	3.7	3.5	2.9	2.3	2.4	2.5	3.6
TELEFONICA	5.6	5.7	5.4	4.9	7.0	4.7	10.9	6.6	4.8	2.7	5.1	3.7	4.4	2.9
TA	3.7	4.6	6.6	6.0	6.0	10.2	11.2	11.9	10.3	11.9	23.9	16.5	15.9	19.8
TELNOR	11.4	16.0	18.8	16.2	15.3	17.0	21.3	7.6	11.7	15.1	26.2	25.5	6.7	3.6
TELIA	11.1	9.8	6.6	7.5	8.0	7.7	7.9	7.5	15.5	9.7	15.9	5.5	6.3	7.0
VOD	7.3	6.6	5.6	6.4	10.0	5.6	9.6	5.2	6.5	3.6	2.7	3.5	2.8	3.2
DIGI					3.8	5.3	4.1	4.3	8.4	8.7	6.1	5.7	12.3	
Average	8.2	8.6	8.3	8.3	9.5	11.7	12.9	12.1	12.8	13.6	15.5	9.8	8.1	8.3

In the following the EV/EBIT multiple is considered for comparison between peers.

The indicator is estimated as follows:

EV/EBIT = Enterprise value/ Earning before interest and tax where EV= Market cap + total debt (long term including capital lease + Short term debt) - cash and cash equivalent. This indicator is used by market analysts and investors to determine the value of a company. It compares the company's profit with its market valuation. Comparisons among companies using the EV/EBIT multiple provides better results than traditional profitability ratios like the return on invested capital (ROIC). The EV/EBIT multiple allows investors to compare companies with different tax rates and different levels of debt. EV/EBIT multiple normalizes the effect of dissimilar capital structure; hence, companies with different capital structures can be put on an equal base for comparison of earnings yields. Furthermore, the use of EBIT as a profitability measure eliminates the distorting effects of tax rate benefits. The enterprise value takes into consideration the debt value and market capitalisation. Thus, it rewards the companies carrying less debt and high cash and penalises companies with less cash and high debt.



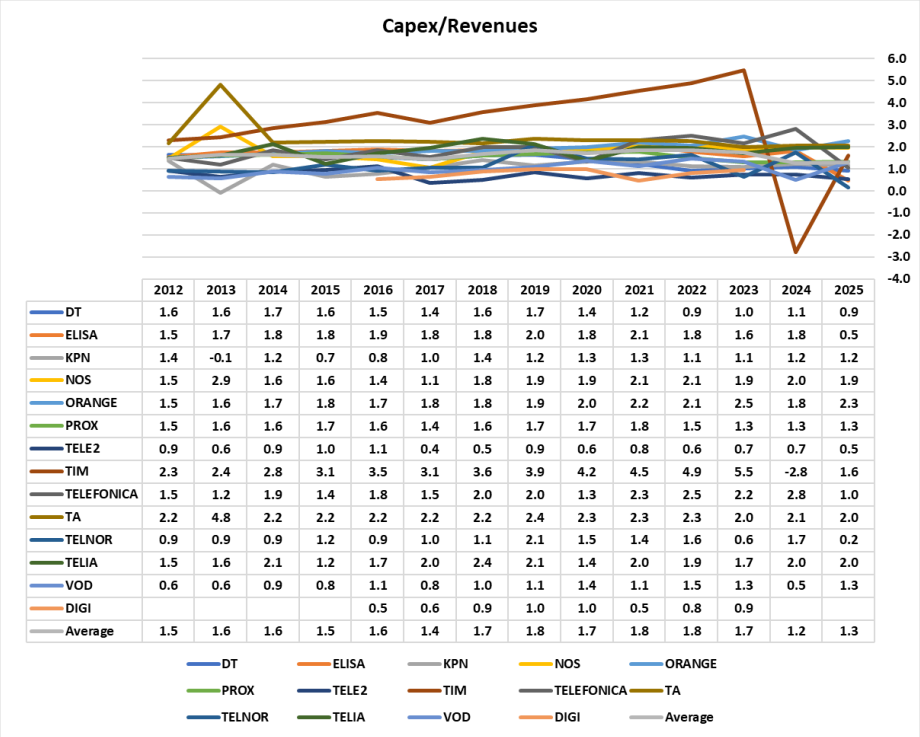
	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
DT	13.7	16.4	19.4	15.3	15.9	14.3	12.1	15.2	11.8	11.8	9.7	18.6	9.1	9.2
ELISA	12.2	14.0	16.0	21.2	17.9	17.2	17.7	23.5	21.0	23.5	20.3	17.6	16.7	15.1
KPN	10.4	17.4	15.8	26.8	19.4	21.0	19.6	18.6	18.3	17.5	13.9	13.3	14.0	12.0
NOS	15.9	30.2	22.1	29.3	24.8	24.8	19.7	17.6	18.4	15.7	18.5	12.1	12.1	11.6
ORANGE	8.8	8.7	12.5	13.8	12.2	12.0	13.4	12.5	11.2	14.4	11.2	12.5	9.1	17.3
PROX	8.8	10.3	14.0	16.0	12.2	14.4	12.2	13.5	9.9	13.0	8.5	9.6	8.2	16.5
TELE2	24.5	12.2	14.9	16.7	24.0	12.6	25.6	24.3	20.1	24.1	17.3	15.7	17.0	19.0
TIM	7.2	8.3	10.1	14.2	11.5	9.9	10.5	12.3	13.5	20.5	26.9	18.4	10.8	17.8
TELEFONICA	9.4	10.7	13.5	16.1	14.4	12.9	12.0	14.8	13.4	47.1	14.1	18.6	12.6	34.7
TA	16.9	19.6	21.5	15.3	17.6	22.0	20.3	15.4	12.1	11.3	9.2	9.5	9.8	11.0
TELNOR	12.0	12.4	12.4	11.0	10.0	11.6	10.9	12.9	11.7	16.1	14.2	13.6	14.5	15.4
TELIA	10.9	12.6	19.9	19.2	16.2	16.3	19.1	22.2	7.2	14.9	16.8	18.1	16.7	15.6
VOD	15.6	30.3	27.3	38.7	75.4	50.3	21.0	19.4	9.8	19.6	15.8	14.6	17.4	18.9
DIGI					36.7	61.0	62.9	55.6	50.2	60.1	65.5	68.0	24.9	
Average	12.8	15.6	16.9	19.5	22.0	21.5	19.8	19.8	16.3	22.1	18.7	18.6	13.8	16.5

In the following the corresponding indicator on capital Investment is derived based on the ratio between the Capex and revenues.

The indicator is estimated as follows:

Capex/revenues = Capex is estimated using the following formula (Property Plant and Equip Gross_N - Property Plant and Equip Gross_N-1+ Cumulated Depreciation_N)/Revenues_N, the row data are derived from the Income Statement

and Balance Sheet from Bloomberg Adjusted template.[202] This indicator is useful to understand the level of investment in capital expenditure (equipment, spectrum, as well as civil infrastructures etc.) in relation to the revenues, thus capital effectively used for the core business independent from the full net capital resource as considered in the net capital turnover indicator. This indicator also attempts to capture potential future investment needs by incorporating accumulated depreciation into its calculation, providing an indication of the level of future investment required.

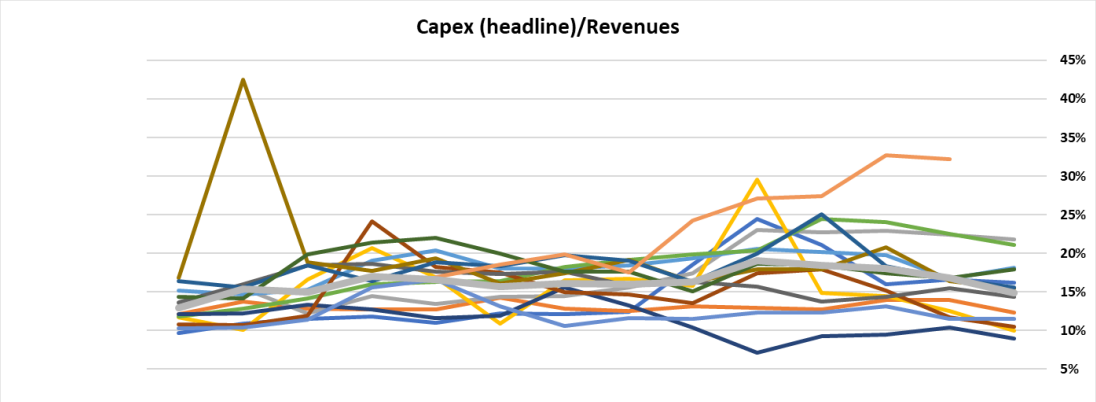


	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
DT	1.6	1.6	1.7	1.6	1.5	1.4	1.6	1.7	1.4	1.2	0.9	1.0	1.1	0.9
ELISA	1.5	1.7	1.8	1.8	1.9	1.8	1.8	2.0	1.8	2.1	1.8	1.6	1.8	0.5
KPN	1.4	-0.1	1.2	0.7	0.8	1.0	1.4	1.2	1.3	1.3	1.1	1.1	1.2	1.2
NOS	1.5	2.9	1.6	1.6	1.4	1.1	1.8	1.9	1.9	2.1	2.1	1.9	2.0	1.9
ORANGE	1.5	1.6	1.7	1.8	1.7	1.8	1.8	1.9	2.0	2.2	2.1	2.5	1.8	2.3
PROX	1.5	1.6	1.6	1.7	1.6	1.4	1.6	1.7	1.7	1.8	1.5	1.3	1.3	1.3
TELE2	0.9	0.6	0.9	1.0	1.1	0.4	0.5	0.9	0.6	0.8	0.6	0.7	0.7	0.5
TIM	2.3	2.4	2.8	3.1	3.5	3.1	3.6	3.9	4.2	4.5	4.9	5.5	-2.8	1.6
TELEFONICA	1.5	1.2	1.9	1.4	1.8	1.5	2.0	2.0	1.3	2.3	2.5	2.2	2.8	1.0
TA	2.2	4.8	2.2	2.2	2.2	2.2	2.2	2.4	2.3	2.3	2.3	2.0	2.1	2.0
TELNOR	0.9	0.9	0.9	1.2	0.9	1.0	1.1	2.1	1.5	1.4	1.6	0.6	1.7	0.2
TELIA	1.5	1.6	2.1	1.2	1.7	2.0	2.4	2.1	1.4	2.0	1.9	1.7	2.0	2.0
VOD	0.6	0.6	0.9	0.8	1.1	0.8	1.0	1.1	1.4	1.1	1.5	1.3	0.5	1.3
DIGI					0.5	0.6	0.9	1.0	1.0	0.5	0.8	0.9		
Average	1.5	1.6	1.6	1.5	1.6	1.4	1.7	1.8	1.7	1.8	1.8	1.7	1.2	1.3

It is possible to observe that generally the average value in last year is reducing in line with the fact that investment have been stabilized.

In the following a second indicator on capex expenditure is also reported considering current capital expenditure over revenues. In this case capex figure refers to the current capex headline expenditure as reported by the company in the cash flow statement in the current year.

[202] Bloomberg calculated or company reported figures. Data is adjusted to remove the impact of abnormal items as defined by Bloomberg. Data are reported by Bloomberg standardized for consistent accounting treatment and presentation across companies.



	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
DT	9.66%	10.93%	11.47%	11.80%	11.00%	12.21%	12.08%	12.40%	18.51%	24.50%	21.12%	15.96%	16.56%	16.17%
ELISA	12.16%	13.73%	12.88%	12.73%	12.77%	14.26%	12.86%	12.56%	13.15%	12.95%	12.73%	13.97%	13.99%	12.36%
KPN	13.53%	15.54%	12.23%	14.44%	13.48%	14.36%	14.50%	15.62%	17.45%	23.07%	22.71%	22.95%	22.40%	21.79%
NOS	11.75%	10.12%	16.56%	20.65%	16.96%	10.95%	16.53%	16.69%	15.75%	29.53%	14.90%	14.50%	12.57%	9.95%
ORANGE	15.20%	14.69%	15.30%	19.09%	20.40%	18.06%	18.00%	18.45%	19.33%	20.58%	20.19%	19.73%	16.67%	18.13%
PROX	11.85%	12.88%	14.20%	15.98%	16.29%	16.43%	18.22%	19.15%	19.87%	20.38%	24.43%	24.02%	22.54%	21.06%
TELE2	12.10%	12.20%	13.39%	12.71%	11.64%	11.90%	15.63%	13.26%	10.35%	7.17%	9.23%	9.50%	10.42%	8.98%
TIM	10.82%	10.70%	11.88%	24.14%	18.22%	17.54%	14.95%	14.71%	13.53%	17.40%	17.91%	15.16%	11.68%	10.46%
TELEFONICA	13.70%	15.97%	18.40%	18.68%	17.66%	17.29%	17.63%	15.82%	16.30%	15.69%	13.77%	14.39%	15.48%	14.39%
TA	16.82%	42.52%	18.85%	17.72%	19.39%	16.10%	17.39%	19.14%	16.32%	17.97%	17.90%	20.83%	16.45%	15.53%
TELNOR	16.45%	15.59%	18.46%	16.43%	18.85%	18.39%	19.75%	19.00%	16.36%	20.02%	25.10%	18.31%	16.74%	15.58%
TELIA	14.38%	14.19%	19.86%	21.44%	22.01%	19.98%	17.58%	17.61%	15.10%	18.67%	18.43%	17.38%	16.86%	17.95%
VOD	10.26%	10.40%	11.46%	15.55%	16.59%	13.20%	10.56%	11.57%	11.52%	12.36%	12.29%	13.16%	11.49%	11.55%
DIGI					16.92%	18.53%	19.85%	17.56%	24.25%	27.10%	27.39%	32.69%	32.24%	
Average	12.98%	15.34%	15.00%	17.03%	16.58%	15.65%	16.11%	15.97%	16.27%	19.10%	18.43%	18.04%	16.86%	14.91%

To better figure out the determinants behind the risk represented in the equity beta parameter an econometric panel data estimation is reported as follows in line with past year. With respect to past year the historical series is longer and data in some cases have been restated in some cases.

The objective is to understand how accounting measures are correlated with the corresponding market risk (i.e. equity beta) in a statistically significant way considering the present BEREC peer group. The models estimated are based on the following main specifications: the dependent variable is the equity beta estimated on three possible time windows (one, two and five years).[203] The estimation for one year and two years are based on a daily sampling period, the five years estimation is based on weekly data as the relevant time and sampling period considered in the Notice.

The following panel data model is considered:

Equity_beta_i_k = C+ β1 CAPEX_i-1_k + β2 CAPEX2_i-1_k + β3 ROCE_i-1_k + β4 MC_i-1_k + β5 COV1_i-1_k +β6 EV1_i-1_k+ constant_k[204]+ constant_i[205]+ error_term (where i is the year of the data and k identifies the peer).

[203] We have considered also different time windows to better understand if the statistical significance between the relevant predictors and the corresponding dependent variable is affected by the time windows chosen for the equity beta estimation, even if BEREC is concentrated on a specific five years time windows for the relevant estimation.
[204] Fixed effect over peers: heterogeneity over peers.
[205] Time fixed effect: heterogeneity over years.

In the panel data estimation, the relevant accounting data at year t-1 are related to the beta estimation in year t.

In the following table a short description of the indicator and a summary of the main statistics are reported. The number of observations in such a balanced panel are 169 observation obtained as 13 years of data for 13 operators.[206]

	Description
CAPEX	Capex/Revenues
CAPEX 2	Current Capex head line/Revenues
ROCE	Return on capital employed: EBIT/(total asset-current liabilities)
MC	Yearly market cap in Euro currency
COV1	EBIT/net interest expense
EV1	Enterprise value / EBIT
EBETAONE	Is the equity beta estimated regressing the return of the security with the return of the market index (BKXP have been used as market index) using daily sampling period and one year of time windows. It refers to the average value of the corresponding year I obtained from a rolling regression over the year.
EBETATWO	Is the equity beta estimated regressing the return of the security with the return of the market index (BKXP have been used as market index) using daily sampling period and two years of time windows. It refers to the average value of the corresponding year I obtained from a rolling regression over the year.
EBETAFIVE	Is the equity beta estimated regressing the return of the security with the return of the market index (BKXP have been used as market index) using daily sampling period and five years of time windows. It refers to the average value of the corresponding year I obtained from a rolling regression over the year.

	Unique	Mean	SD	Min	Median	Max
ROCE	169	0.10	0.05	0.01	0.08	0.22
COV1	169	7.58	7.36	0.96	4.84	51.99
EV_1	169	16.41	7.74	7.17	14.86	75.36
CAPEX2	169	0.16	0.04	0.07	0.16	0.43
MCEUR	169	22.20	25.49	0.92	12.19	144.06
CAPEX1	169	1.67	0.89	-2.78	1.60	5.48
EBETATWO	169	0.67	0.28	0.07	0.65	1.40
EBETAFIVE	169	0.74	0.21	0.31	0.72	1.24
EBETAONE	169	0.65	0.30	0.07	0.63	1.38

[206] DIGI is excluded as no information is available for the time series considered as quoted on the market only from the 2017.

The selection of the indicators has been done in a way to reduce a maximum multicollinearity problem looking at VIF (Variance Inflation Factors) figures[207].

The model selection process has considered many different models: i) simple pooled OLS; ii) one way and two way fixed effect model (FE1-FE2); iii) one way and two way random effect model (RE1-RE2).

Since the Pooled OLS estimator ignores the panel structure of the data, it provides consistent and efficient estimates only if there is no unit-specific and time-specific heterogeneity across observations (i.e. the error term is uncorrelated with regressors). If this is not the case, a one-way fixed or random effects transformation may be a better choice, since it allows the impact of unobserved and time-invariant factors (effects) that are specific to each peer (e. g. effects relating to geographical factors, management competence etc.) to be assessed.

In the (one-way) fixed and random effects approach the error term (ε) is divided into two components: a unit-specific error (constant_k), which does not change over time (i.e. the individual effect), and an idiosyncratic error (εik) which is observation-specific (i.e. varies over units and time). The key difference of the fixed and random effects estimator is in the assumptions about constant_k. In the FE1 model we assume each peer to have a constant individual-specific effect shifting the dependent variable up or down by a fixed amount; that is, contant_i is now part of the constant term. In this way, each unit (peer) has a different intercept term, though all regression coefficients (slopes) are the same.

While the fixed effects model treats the individual-specific effects (constant_k) as a variable that is allowed to be correlated with the observed regressors, in the RE1 approach we assume any unobserved individual heterogeneity (constant_k) to be a random variable which is distributed independently of the explanatory variables. As a consequence, individual effects are treated as a part of the composite error term.

Given that the one-way fixed and the random effects specification do not fully eliminate the possibility of omitted-variable bias, we have also performed a two-way fixed and random effects model, which allow to estimate both peer-specific and time-specific effects. For each of the regression equations above, we have also considered potential heteroskedastic and autocorrelation effects using the robust covariance estimation technique HAC (Heteroskedasticity Autocorrelated Consistent) to improve the significance of the estimates.

In order to select the most appropriate estimator, a sequential choice process was applied, which relies on various specification tests as reported in the following table.[208] First, to choose between the pooled OLS regression and one-way fixed effects model, we used an F-Test, where the null hypothesis implies that the pooled OLS model is the appropriate specification (no significant difference across units). Second, to examine whether the pooled OLS model is more appropriate than the one-way random effects model, we performed a Breusch-Pagan LM (Lagrange Multiplier) test, where the null hypothesis is that the pooled OLS estimator is adequate against the random effects model (no error variance across units).

[207] The VIF is lower than 2.5 for all the explanatory variables considered.
[208] Panel Data Econometrics Y. Croissant, G. Millo Wiley

An F-test is then performed on FE1 and FE2 models to understand if the time effect is needed and finally to understand if random specification is better than fixed effect specification, the Hausman test has been performed, showing that RE is preferred for one and two years time windows estimation of the beta is considered, instead FE is better in the case of five year average specified models. In the following table the results of the tests are reported and in red the outcomes of the tests are provided[209].

The results are consistent with the one reported in past year report BoR(24)102, even if some restatement of the balance sheets for most part of operators happens on historical series and so the data are not identical as previous report in the historical series (EBIT figure, revenues and capex are sometimes along the time series restated for most of the peers).

	Model	Specification test	Null hypothesis	Alternative Hypothesis	Test Statistics	p-value
Test I	EBETAONE	Ftest	POLS	FE1	F=5.3325	1.806e-07
	EBETATWO	Ftest	POLS	FE1	F=6.1736	9.2e-09
	EBETAFIVE	Ftest	POLS	FE1	F=10.747	3.393e-15
Test II	EBETAONE	BPTest	POLS	RE1	chisq = 21.331	3.865e-06
	EBETATWO	BPTest	POLS	RE1	chisq = 28.709	8.412e-08
	EBETAFIVE	BPTest	POLS	RE1	chisq = 50.114	1.45e-12
Test III	EBETAONE	Ftest	FE1	FE2	F = 17.835	< 2.2e-16
	EBETATWO	Ftest	FE1	FE2	F = 18.982	<2.2e-16
	EBETAFIVE	Ftest	FE1	FE2	F = 12.529	<2.2e-16
Test IV	EBETAONE	Hausman	RE2	FE2	chisq = 0.53391	0.9974
	EBETATWO	Hausman	RE2	FE2	chisq = 10.543	0.1036
	EBETAFIVE	Hausman	RE2	FE2	chisq = 41.259	<2.574e-07

The results of the panel data estimations are given considering a standard estimation of the covariance matrix of the error term and then including for the estimation of the SE and p-values a robust estimation of the error terms[210]. The simple pooled estimation for the three models is also reported for comparison.

In the one-year and two-year beta estimation windows, the random effects model indicates that “Coverage” is statistically significant, with a negative coefficient (robust estimation). This

[209] To test if also random effect models need to control for cross sectional time effects, a random fixed effect model over individual has been run including dummy variable in time showing statistical significance of those variables that means need for controlling also for time effect.

[210] Specifically, a Driscoll–Kraay estimator has been used in line with the fact that the number of time period in the panel data are close to the number of individual.

is consistent with the general understanding that a higher financial coverage ratio is associated with lower systematic risk.

When considering longer and more relevant estimation windows, such as five years: ROCE shows a positive correlation, as expected, while Coverage maintains a negative correlation, also in line with expectations. More importantly, current market capitalization becomes the most statistically significant variable, exhibiting a negative relationship with beta. This reflects a relatively new phenomenon, likely linked to the perception of the telecom sector as a defensive asset.

The negative coefficient of market capitalization implies that an increase in share prices is significantly associated with a reduction in risk this effect is still in combination with a positive and statistically significant positive correlation of ROCE.

The following tables present five estimations of the same model considering the time series from 2013–2022 until 2013–2025, using only a five-year window for beta estimation and incrementally adding one year of data for each model. The estimation is consistently performed using a two-way fixed effects model (individual and time effects).

From this analysis, it is evident that the key determinants change over time. Specifically, in the 2013–2022 period, current CAPEX was the only statistically significant variable, with a positive coefficient. Over time, ROCE first, and then market capitalization, became more significant. In recent years, market capitalization has shown greater statistical significance than ROCE.

This negative correlation with beta suggests that investors increasingly value investments in the telecom sector in association with lower perceived risk, consistent with its characterization as a defensive equity asset.

	Pool_one	R2_one	Pool_two	R2_two	Pool_five	F2_five
(Intercept)	1.092***	0.984***	0.992***	0.876***	0.898***	
	(0.139)	(0.121)	(0.131)	(0.115)	(0.093)	
CAPEX1	0.051*	-0.024	0.066**	-0.012	0.070***	-0.023+
	(0.026)	(0.022)	(0.024)	(0.021)	(0.017)	(0.013)
CAPEX2	-1.939***	-0.463	-1.571**	-0.243	-0.730*	0.367
	(0.516)	(0.414)	(0.487)	(0.390)	(0.346)	(0.251)
ROCE	-0.699	-0.914	-0.661	-0.525	-0.670	0.779+
	(0.727)	(0.621)	(0.686)	(0.589)	(0.487)	(0.404)
COV1	-0.010*	-0.003	-0.010**	-0.004	-0.007**	-0.003+
	(0.004)	(0.003)	(0.004)	(0.003)	(0.003)	(0.002)
MCEUR	0.000	-0.000	0.001	-0.000	0.001	-0.002**
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
EV_1	-0.005	-0.006*	-0.003	-0.004	-0.004+	-0.002
	(0.003)	(0.003)	(0.003)	(0.002)	(0.002)	(0.002)
Num.Obs.	169	169	169	169	169	169
R2	0.193	0.068	0.204	0.039	0.271	0.172
R2 Adj.	0.163	0.034	0.174	0.004	0.244	-0.008

- **p < 0.1, * p < 0.05, ** p < 0.01, *** p < 0.001**

	Pool_one_R	R2_one_R	Pool_two_R	R2_two_R	Pool_five_R	F2_five_R
(Intercept)	1.092***	0.984***	0.992***	0.876***	0.898***	
	(0.153)	(0.157)	(0.146)	(0.142)	(0.093)	
CAPEX1	0.051*	-0.024	0.066**	-0.012	0.070**	-0.023
	(0.026)	(0.023)	(0.023)	(0.019)	(0.025)	(0.014)
CAPEX2	-1.939***	-0.463	-1.571***	-0.243	-0.730*	0.367+
	(0.417)	(0.294)	(0.328)	(0.195)	(0.360)	(0.189)
ROCE	-0.699	-0.914**	-0.661	-0.525+	-0.670	0.779*
	(0.632)	(0.288)	(0.676)	(0.275)	(0.600)	(0.316)
COV1	-0.010**	-0.003+	-0.010**	-0.004**	-0.007***	-0.003*
	(0.004)	(0.002)	(0.004)	(0.002)	(0.002)	(0.001)
MCEUR	0.000	-0.000	0.001	-0.000	0.001	-0.002***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.000)
EV_1	-0.005	-0.006**	-0.003	-0.004*	-0.004*	-0.002+
	(0.003)	(0.002)	(0.003)	(0.002)	(0.002)	(0.001)
Num.Obs.	169	169	169	169	169	169

- **p < 0.1, * p < 0.05, ** p < 0.01, *** p < 0.001**

	F2_five_2026	F2_five_2025	F2_five_2024	F2_five_2023	F2_five_2022
CAPEX3	-0.023+	0.016	0.021	0.015	0.006
	(0.013)	(0.021)	(0.024)	(0.026)	(0.028)
CAPEX2	0.367	0.251	0.187	0.228	0.444
	(0.251)	(0.249)	(0.259)	(0.281)	(0.335)
ROCE	0.779+	1.053*	1.127*	0.885+	0.512
	(0.404)	(0.412)	(0.445)	(0.494)	(0.532)
COV1	-0.003+	-0.003	-0.003	-0.003	-0.005
	(0.002)	(0.002)	(0.002)	(0.002)	(0.004)
MCEUR	-0.002**	-0.002**	-0.002*	-0.002*	-0.001
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
EV_1	-0.002	-0.002	-0.001	-0.001	-0.002
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
Num.Obs.	169	156	143	130	117
R2	0.172	0.185	0.170	0.131	0.096
R2 Adj.	-0.008	-0.003	-0.034	-0.099	-0.165

- **p < 0.1, * p < 0.05, ** p < 0.01, *** p < 0.001**

	F2_five_2026_R	F2_five_2025_R	F2_five_2024_R	F2_five_2023_R	F2_five_2022_R
CAPEX1	-0.023	0.016	0.021	0.015	0.006

	(0.014)	(0.013)	(0.017)	(0.019)	(0.023)
CAPEX2	0.367+	0.251+	0.187	0.228	0.444*
	(0.189)	(0.129)	(0.118)	(0.144)	(0.212)
ROCE	0.779*	1.053***	1.127**	0.885+	0.512
	(0.316)	(0.289)	(0.396)	(0.476)	(0.432)
COV1	-0.003*	-0.003+	-0.003+	-0.003+	-0.005
	(0.001)	(0.002)	(0.002)	(0.002)	(0.004)
MCEUR	-0.002***	-0.002**	-0.002*	-0.002	-0.001
	(0.000)	(0.001)	(0.001)	(0.001)	(0.001)
EV_1	-0.002+	-0.002*	-0.001*	-0.001*	-0.002
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Num.Obs.	169	156	143	130	117

- **p < 0.1, * p < 0.05, ** p < 0.01, *** p < 0.001**

Annex 4: Table of bond indices

Country	Thicker Bloomberg Barclays Index Global index	
Bulgaria	I11095US	Bulgaria Global Aggregate Index
Croatia	I03354US	Croatia Global Aggregate Total return Index Unhedged
Cyprus	I03355US	Cyprus Global Aggregate Total return Index Unhedged
Czech Rep.	I03356US	CzechRep Global Aggregate Return Total return Index
Estonia	I13197US	Estonia Global Aggregate Return Total return Index
Greece	I03361US	Greece Global Aggregate Total return index Unhedged
Hungary	I03362US	Hungary Global Aggregate Total return index Unhedged
Latvia	I09101US	Latvia Global Aggregate Total return index Unhedged
Lithuania	I06240US	Lithuania Global Aggregate Total return index Unhedged
Luxemburg		
Malta		
Poland	I03368US	Poland Global Aggregate Total return index Unhedged
Romania	I13198US	Romania Global Aggregate
Slovakia	I06239US	Slovakia Global Aggregate Total return index
Slovenia	I03370US	Slovenia Global Aggregate Total return index
Iceland	I11096US	Iceland Global Aggregate

The choice of the index for the bond return evaluation of Eastern European countries, Iceland and Luxemburg has been based on the family of homogeneous Bloomberg Barclays Global Aggregate indexes[211]. This choice is mainly guided by the fact that the Global Bloomberg Barclays index has a longer time series available at country level. The bond index return has been evaluated (consistent with last year's report) using, for each country, the time series of

[211] https://data.bloomberglp.com/professional/sites/10/Bloomberg-Barclays-Methodology1.pdf

the last price with a monthly sampling period, in line with the DMS time series, as P_t/P_(t-1) -1 with P_t the price at Year t and P_(t-1) the price in the Year t-1.

In this year's report the index chosen includes longer data series. The eligibility criteria of bonds' components in the Global aggregate index is mainly based on investment grade. Classes of indexes based on Emerging Market[212] or Inflation linked Indexes were excluded.

Annex 5: Evolution of the BEREC Peer Group

In the SWD the European Commission presented, by way of illustration, the following companies that it considered to be consistent with the criteria[213]:

Figure 11 Illustrative list of peer group companies in the SWD

Company	Country	S&P rating
TDC A/S	DK	BBB-
Elisa Oyj	FI	BBB+
Orange S.A.	FR	BBB+
Koninklijke KPN	NL	BBB-
BT Group plc	UK	BBB+
Telenet	BE	BBB
Tele 2	SE	BBB
Telekom Austria	AT	BBB
Telecom Italia	IT	B+
Vodafone Group plc	UK	BBB+
Telia Company AB	SE	A-
Proximus S.A.	BE	A

This illustrative list has been subsequently reviewed and amended by BEREC through the application of the five criteria, as set out in the SWD, together with the clarifications issued by the EC. The following is a high-level summary of the inclusions and exclusions made to the Illustrative list of peer group companies in the SWD since 2020.

[212] Emerging market debts are specific indexes where the members are chosen based on certain rules and reviewed annually.

[213] Table 25 of the SWD – "Electronic companies from relevant EU Member States with investment grade (2017)".

Company	Included / excluded	WACC parameters Report	Reasoning
TDC A/S	Excluded	2020	Delisted in 2018
Deutsche Telekom	Included	2020	All major strategic decisions are taken and significant proportions of their total revenues are generated within the Union.
Telefónica	Included	2020	All major strategic decisions are taken and significant proportions of their total revenues are generated within the Union.
NOS[214]	Included[215]	2020	Complies with the SWD
Vodafone Group plc	Included	2020	While it is currently headquartered in the United Kingdom it continues to have extensive activities in several EU member states and generates a significant proportion of its revenue from operations in the EU in comparison to its UK operations.
BT Group plc	Excluded	2021	The United Kingdom has left the EU, is not a member of the EEA and the majority of its revenues are earned outside of the EU/EEA
Telenor Group	Included	2021	Meets each of the five criteria
DIGI Communications N.V.	Included	2022	Complies with the SWD
Telenet Group Holdings N.V.	Excluded	2024	Delisted in 2023
		2025	No amendments
		2026	No amendments

BEREC also examined other fixed line operators for possible inclusion in the peer group. However, when applying the five criteria above (as modified) none met the minimum requirement of complying with at least four of the five criteria and were therefore not included. While it is noted that some companies in Central and Eastern Europe are publicly traded, they do not have a five-year trading history or have a credit rating and therefore are not included. In particular, the following should be noted:

- **Telekom Slovenije** is publicly traded and meets certain criteria[216], but the company does not have a credit rating and therefore is not to be included in the peer group. This is the same position as previous years.

- **4iG (Hungary)** is a leading IT systems integrator in Hungary, also active in telecom, IT, broadcasting and satellite & technology industries[217], and publicly traded on the Budapest

[214] https://www.bloomberg.com/news/articles/2020-04-05/lisbon-court-seizes-nos-stake-held-by-angola-s-dos-santos

[215] BEREC is aware that the conduct of judicial proceedings may affect the future tradability of NOS shares. BEREC makes no further comment in this regard.

[216] Listed on a stock exchange; owns and invests in electronic communications infrastructure; main operations in the EU/EEA; not involved in substantial mergers and acquisitions.

[217] https://bse.hu/pages/company_profile/$security/4IG

Stock exchange. Through its acquisition of some telecommunication operators, the company has become a convergent regional player in Western Balkans (Albania, Montenegro). While it has a BB- credit rating issued by Scope Ratings GmbH[218], for consistency with the other companies in the peer group credit ratings issued by Fitch, Moody's and Standard & Poor's are used. Therefore, 4iG has not been included in the 2026 WACC peer group. This is the same position as previous years.

Cyfrowy Polsat SA is a provider of electronic communication services primarily in Poland. As it does not have an investment grade status and its primary focus is digital satellite platform and terrestrial television (TV) it is currently not included in the peer group.

In order to ensure that the peer group is representative of the entire EU/EEA, BEREC also examined whether or not the members of the peer group had significant investments in fixed line operators in Central and Eastern Europe. In doing so, BEREC considered that where this is the case the peer group members' parameters would also incorporate some of the underlying parameters of its investments. Many members of the peer group were found to have made significant investments into Eastern European fixed line operators.[219]

While BEREC notes that it does not offer a one-to-one comparison, it does offer reasonable assurance that telecom assets in Central and Eastern European companies are included in the overall calculations of beta and also debt premiums. BEREC expects that as Central and Eastern European capital markets become more mature over time, which will allow the incorporation of companies from this region into the peer group. This will be assessed on an annual basis.

[218] https://www.scoperatings.com/announcements/rating-announcement/EN/179942, ("Following the recent affirmation of the BB- issuer rating, Scope has updated its analytical report on 4iG Nyrt. This monitoring note does not constitute a rating action, nor does it indicate the likelihood of a credit rating action in the short term. On 20 Jan 2026, Scope Ratings GmbH (Scope) has affirmed the BB- issuer rating on 4iG Nyrt. Scope has also affirmed 4iG's BB- senior unsecured debt rating."

[219] Chapter 7, Table 19.

Annex 6: EC Decisions on NRAs WACC notifications on 2025

NOTIFICATION	COUNTRY	MARKET	Date of uploading	Notification	Brief Description	Date of EC comments	Comment Letter	EC's comments	CLOSED	English version
PT/2025/2593	Portugal	Others: WACC - remedies	11-09-25	Case PT/2025/2593: Update of the weighted average cost of capital (WACC)	The notified measure is ANACOM's yearly update of the WACC value. ANACOM proposes to set the value of the WACC for services on a public communications network at 5.1247%	10-10-25	Article 32(3) of Directive (EU) 2018/1972	No comments	13/10/2025	PT-2025-2593 Adopted_EN.pdf
CZ/2025/2594	Czech Republic	Others: WACC - remedies	12-09-25	Case CZ/2025/2594: Weighted average cost of capital (WACC) in Czechia	The notified measure is ČTÚ's yearly update for year 2026 of the WACC value. ČTÚ proposes to set the value of the WACC for legacy infrastructure for services on a public communications network at 5.26%. ČTÚ also intends to extent to year 2026 the risk premium to the cost of capital and to maintain the nominal pre-tax WACC for Next Generation Access (NGA)/ Very High Capacity Networks (VHCN) infrastructure at 8.39%.	09-10-25	Article 32(3) of Directive (EU) 2018/1972:	No comments	10/10/2025	CZ-2025-2594 Adopted_EN.pdf
FR/2025/2595	France	Others: WACC - remedies	15-09-25	Case FR/2025/2595: Weighted average cost of capital (WACC) in France	The draft measure concerns the update of the WACC rate. The WACC is used to set regulated prices of Orange.	13-10-25	Article 32(3) of Directive (EU) 2018/1972:	No comments	14/10/2025	FR-2025-2595 Adopted_EN.pdf
FI/2025/2600	Finland	Others: WACC	30-09-25	Case FI/2025/2600: Remedies on the market for broadcasting transmission services, to deliver broadcast content to end users in Finland	The notified measure is Traficom's update of the WACC value. Traficom proposes to set the value of the WACC for broadcasting transmission services at 7.37%.	27-10-25	Article 32(3) of Directive (EU) 2018/1972:	No comments	28/10/2025	FI-2025-2600 Adopted_EN.pdf

NOTIFICATION	COUNTRY	MARKET	Date of uploading	Notification	Brief Description	Date of EC comments	Comment Letter	EC's comments	CLOSED	English version
ES/2025/2608	Spain	Others: WACC	17-10-25	Case ES/2025/2608: Weighted average cost of capital (WACC) in Spain	The draft measure concerns the update of the WACC rate. The WACC is used to set regulated prices of Telefonica	12-11-25	Article 32(3) of Directive (EU) 2018/1972:	No comments	13/11/2025	ES-2025-2608 Adopted_EN.pdf
HR/2025/2609	Croatia	Others: WACC	17-10-25	Case HR/2025/2609: Weighted average cost of capital in Croatia	The draft measure concerns the update of the WACC rate and the additional risk premium for investments in new fibre-based networks.	13-11-25	Article 32(3) of Directive (EU) 2018/1972:	No comments	14/11/2025	HR-2025-2609 Adopted_EN.pdf
SI/2025/2615	Slovenia	Others: WACC	07-11-25	Case SI/2025/2615: Weighted Average Cost of Capital (WACC) in Slovenia	The draft measure concerns the update of the WACC values for the legacy and next generation access (NGA) infrastructure of the operators designated as having significant market power (SMP) on all relevant markets. The new WACC values are to be applied as of 1 January 2026.	04-12-25	Commission comments pursuant to Article 32(3) of Directive (EU) 2018/1974	**3.1. Calculation of the risk-free rate:** The Commission notes that AKOS deviates from the methodology set out in the WACC Notice by calculating the risk-free rate as an arithmetic average of government bond yields over two different periods, with the stated aim of better reflecting current macroeconomic conditions. While the Commission recognises that NRAs may exceptionally justify an alternative approach where this remains in line with the regulatory objectives of the Code and supported by clear reasoning, such departures should not compromise the coherence and predictability of the WACC calculations. In this context, the Commission invites AKOS to take the utmost account of the Notice and of the Commission's comments, in line with Article 32(8) of the EECC, when finalising the current WACC calculation, and to ensure full alignment with the Notice methodology in its future WACC reviews, thereby supporting the	05/12/2025	SI-2025-2615 Adopted_EN.pdf

NOTIFICATION	COUNTRY	MARKET	Date of uploading	Notification	Brief Description	Date of EC comments	Comment Letter	EC's comments	CLOSED	English version
								objectives and consistency envisaged by the Notice across the Union.		
CY/2025/2616	Cyprus	Others: WACC		CASE CY/2025/2616: COST MODEL METHODOLOGY AND WEIGHTED AVERAGE COST OF CAPITAL (WACC)		26-11-25	NOTICE OF WITHDRAWAL OF THE NOTIFIED DRAFT MEASURES UNDER ARTICLE 32 OF DIRECTIVE (EU) 2018/19721		24/11/2025	EC Notice of withdrawal CY-2025-2616.pdf