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Technical Assistance for Achieving the Harmony with EU Regarding the Implementation of Accounting Separation, Cost Accounting and WACC (Weighted Average Cost of Capital)

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Gap Analysis Report

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0 INTRODUCTION AND PURPOSE OF THE REPORT

A consortium of Regulaid BV and Incyte Consulting Ltd has been assigned to implement the project "Technical Assistance for Achieving the Harmony with EU Regarding the Implementation of Accounting Separation, Cost Accounting and WACC (Weighted Average Cost of Capital)" (contract number DOGER/TWACC/TR2013/0740.10-2/SER/029).

The Turkish regulatory authority, ICTA, has been applying a system of accounting separation and WACC calculation for a number of years already. There are legal provisions in the Electronic Communication's Law and bylaws, and these have been detailed out in guidelines in Board Decision 2013/DK-ETD/557. In this project, the objective is to harmonize the legal framework and practice in Turkey with regard to accounting separation, cost accounting and WACC, benefiting from other national regulatory authorities' experience in the field and to contribute to achieving the information society and the provision of electronic communications services to consumers at affordable prices by improving ICTA's capacities and skills to analyse thoroughly the accounting separation reports of obliged operators and to calculate the WACC for each obliged operator.

The project aims to achieve this by (1) providing ICTA with state of the art secondary legislation aligning the regulatory framework with EU best practice and strengthening its legal position when applying it; (2) providing ICTA with thorough expertise in applying the framework and analysing the regulatory accounting reports submitted by operators; and (3) providing ICTA with the tools and know-how to calculate the WACC when relevant.

This is done through 4 results:

Result 1 - A report identifying the deviations, if any, of the current Turkish regulatory regime on accounting separation and WACC calculation from relevant EU regulations and member state practices – the Gap Analysis Report.

Result 2 - Secondary legislation proposal report on accounting separation, cost accounting and WACC calculation, fully in line with current relevant EU regulations.

Result 3 - Improvement of relevant ICTA staff's capacity and knowledge regarding the evaluations of accounting separation reports and WACC calculations through Workshops and Study visits.

Result 4 - A model to calculate WACC ratio for each obliged operator taking the different circumstances of each operator and sector/market specific conditions into account, and a training on how to use the model.

This report is Result 1, the Gap Analysis Report.

According to the Work program of our project, the Gap Analysis Study should contain:

- a) Benchmarking of accounting separation guidelines in selected EU countries
- b) Comparison with the ICTA Board Decision number 2013/DK-ETD/557
- c) Proposed amendments to the ICTA Board Decision number 2013/DK-ETD/557 based on this comparison

1 REQUIREMENTS AND METHODOLOGY

1.1 Terms of reference of the Project

The Terms of Reference of our assignment require that "the Contractor shall review the current Turkish regime and regulations on accounting separation, cost accounting and WACC. The Contractor shall also compare the current Turkish regulations with relevant EU regulations and member state practices and submit a comprehensive report (both in English and in Turkish¹) highlighting the deviations of the current Turkish regime from that of the EU in 5 months from the start of the project. The Benchmark part of the report shall include minimum 10 member states. The report shall also cover the emerging issues such as application of different WACC ratios for NGN/NGA services/infrastructure and possibility of applying geographical differentiation for WACC in the countries having demographically and economically uneven large territories like Turkey."

1.2 Special points of attention

During the Inception Phase of the project, we discussed with ICTA if there are any specific points of attention. It turned out that ICTA does not currently identify any specific point in which it is already determined that there is a gap between the Turkish and the EU regulatory frameworks and practices, but it wants to use the project to make sure that there is no gap and, if there is, to decide on further harmonization either on the level of the secondary legislation or in its application in practice.

However, ICTA did bring forward special points of attention based on comments received from Turkish operators, namely:

- *Treatment of fibre access network with the aim to promote investment into fibre access network*

The replacement of currently used copper access cables with fibre access cables requires substantial investment due to high cost of civil work needed and the scale of the operation. It is important to assess how the regulatory framework and practice take into account to ensure that operators have incentives to perform this upgrade of the access network. Options to be investigated include regulatory holiday, regional differentiation in regulated price, different WACC for fixed access network services, different WACC for different regions etc.

- *Determination of WACC*

The common approach to calculate WACC is based on the Capital Asset Pricing Model. In order to calculate WACC using this methodology several parameters need to be decided like risk free rate, market risk premium, equity beta, gearing ratio, cost of debt. Values of these parameters can differ significantly. In addition, post tax WACC or pre tax WACC can be used.

- *Cost model methodology*

¹ The Turkish version of the report is to be made after the approval of the English version

The common approach to accounting separation is that the accounting separation reports are prepared based on results of a top-down costing model. However there are different variants of the top-down costing models.

- 1) Fully allocated cost models are based on the cost values from the financial accounts of the operator without any modification and allocate them to services.
- 2) Current cost accounting models reevaluate the fixed assets to current prices and as a result modify the depreciation values and capital employed in the model. In addition some cost adjustments related to the asset revaluation can be performed (for example if some old type of equipment was replaced by new equipment which requires less maintenance, occupies less space and has lower power consumption, these operating costs of the equipment should be reduced accordingly).
- 3) Long run incremental cost models reevaluate the fixed assets to current prices and in addition eliminate inefficiency (for example excessive capacity) and allocate costs to services based on cost-volume relationships, which show how costs of individual network components change based on change of service (traffic) volume. Change in cost resulting from a change in volume is called incremental cost. There are two basic approaches to long run incremental cost models: Pure LRIC and TSLRIC (total service LRIC). Pure LRIC takes only the incremental costs into account and does not include the fixed and common costs into the final cost of the service. TSLRIC also calculates the incremental costs but adds the fixed and common costs to the final cost of the service by mark-up based on the incremental costs.

- *Choice of financial accounting methodology*

As mentioned above the top-down cost models which are used to prepare the accounting separation reports are based on the costs from financial accounts of the operators (with some possible further modifications in case of current cost accounting and long run incremental cost models). However operators can prepare different sets of financial accounts, some based on national accounting rules and some based on IFRS.

These special points of attention shall be taken into account in defining the aspects on which the Turkish legal framework and regulatory practice will be compared with selected EU Member States in the Gap Analysis Report. If comparison leads to the conclusion that they shall be addressed in changes to the legal framework, this will be taken into account in the drafting of the Secondary Legislation review. They shall also be taken into account in designing the WACC model and in implementing the workshops and trainings. Through the Gap Analysis Report they will also play a role in the selection of destinations and programs for the study visits.

It was agreed to organize, at the start of the Project, a meeting with the Turkish operators enabling them to bring forward their views, which took place on September 11, 2017. In addition the operators could submit their inputs in writing after the meeting. Apart from taking these inputs into account in the project approach where appropriate, we discuss the inputs received in Annex 12 of this report.

1.3 Selection of relevant documents

At the start of the Gap Analysis Study, we have produced a Study Definition document which was discussed with ICTA. The purpose of this document is to discuss the project definitions and proposals with ICTA in order to make sure that expectations were aligned and agreement was reached on the choices made. The Project Definition Document was then finalized and served as an additional reference document for the study, adding detail to the requirements of the Terms of Reference.

In the Study definition Document, we listed the documents that would jointly be considered to define the EU regulatory regime on accounting separation and WACC calculation for the purpose of the Study. Listing the documents enabled us to check with ICTA if there was any additional document that ICTA considers relevant, before the research and the writing of the Study was finalized. This was not the case.

Hence, the following documents were considered relevant for a comparison with the EU framework:

- European Commission Recommendation of 19 September 2005 on accounting separation and cost accounting systems under the regulatory framework for electronic communications (2005/698/EC)
- European Regulators Group (ERG) Common Position on Guidelines for implementing the Commission Recommendation C (2005) 3480 on Accounting Separation & Cost Accounting Systems under the regulatory framework for electronic communications
- European Commission Recommendation of 20 September 2010 on regulated access to Next Generation Access Networks (NGA) (2010/572/EU)
- European Commission Recommendation of 11.9.2013 on consistent non-discrimination obligations and costing methodologies to promote competition and enhance the broadband investment environment
- European Commission Review of approaches to estimate a reasonable rate of return for investments in telecoms networks in regulatory proceedings and options for EU harmonization, prepared by the Brattle Group, SMART number 2015/0007.
- BEREC Report on Regulatory Accounting in Practice 2016 (BoR (16) 159)².

1.4 Components to be compared

Based on the documents listed above, the Study Definition document proposed to compare the regulatory frameworks and practice in selected EU countries with those in Turkey with regard to the following aspects.

This includes the special points of attention requested by ICTA:

- General: The approach taken on Accounting Separation and WACC and 1) how this compares to the relevant Recommendations and Common Positions, and 2) how this differs from the approach taken in Turkey.

² This was at the time the latest available report. The 2017 report is due to be published in Q4, 2017.

- Specific areas of interest:
 - Treatment of fibre access network with the aim to promote investment into fibre access network (for example NGA/NGN risk premium)
 - Cost model methodology (HCA FAC, CCA FAC, LRIC)
 - Choice of financial accounting methodology (national financial accounting or IFRS)
 - Geographic/regional differentiation.

1.5 Selection of countries

The Study Definition Document also set out a framework and selection of at least 10 EU Member States for further analysis of their accounting separation and WACC practices, as follows.

1.5.1 Addressing the Terms of Reference

The Terms of Reference sets out two specific criteria for the selection of a suitable sample of EU member states, with a view of maximising the relevance of the benchmarking sample to the situation (both actual and projected) in Turkey. These criteria are:

1. The application of different WACC ratios for NGA/NGN services/infrastructure
2. Applying geographical differentiation for WACC ratios in countries having demographically and economically uneven characteristics across the country, like Turkey.

The benchmarking of at least 10 EU Member States therefore needed be set up in such a way that it enabled these issues to be addressed.

On the first issue this was relatively easy. The analysis presented below identifies a number of countries that fulfil the first criterion, in that they have experience with emerging issues not yet covered in EC or BEREC guidelines, such as the application of different WACCs for NGN/NGA. We have made sure that most of these countries were included within the benchmark set.

On the second criterion it is more difficult as we have been unable to find any countries that apply geographically differentiated WACCs³. Whilst it is in theory possible to differentiate WACC geographically, the practical implementation is very difficult, because it is the same company that operates both access and core network and is present in all regions of the country. The calculation of the WACC, specifically the debt premium and equity beta, is for the whole company: if banks borrow money to a company, they consider the situation of the whole company, and company shares move on the stock market based on the situation of the whole company. In all EU Member States a single WACC has therefore been applied across all geographical regions.

To address the second criterion we have identified those EU Member States that are most similar to Turkey in a range of geographic, demographic and economic factors, that are

³ In Finland there are regional incumbents each with its own WACC, so there is regional differentiation by proxy.

relevant when considering the costs of service in different geography regions. Using these measures we have ranked the EU Member States against Turkey and identified those that are most likely to be facing the same or similar issues.

1.5.2 The overall selection process

Having in mind the criteria discussed in Section 2.5.1 we have taken the following approach to selecting at least 10 EU Member States for the benchmarking task:

1. Ranked all EU Member States on the basis of relevant objective criteria to determine those most similar to Turkey
2. Assessed each country in terms of the availability of national regulations and reports on accounting separation and cost accounting. Many countries have relied entirely on the overall EU framework without adopting specific national legislation. It is appropriate to ensure that at least some of the benchmark sample have their own national rules (based on and developed from the EU Recommendations)
3. Identified those EU Member States that have applied different WACCs to NGN/NGA infrastructure or services, and ensured that most of them are contained within the benchmark set.

Figure 1 shows the overall benchmark set of EU Member States that derives from this approach. As part of the work programme for the assignment, it is planned that site visits will be organised to 3-4 of these benchmark countries.

Figure 1: The proposed EU benchmark set

Country	Ranking vs Turkey	National cost accounting rules?	Differentiated WACCs for NGA/NGN?
France	2	Yes	Yes
Spain	3	Yes	Yes
Italy	4	Yes	Yes
Poland	5	Yes	No
United Kingdom	6	Yes	Yes
Romania	7	Yes	No
Ireland	8	Yes	No
Finland	9	Yes	No
Bulgaria	10	Yes	No
Sweden	11	Yes	No
Czech Republic	13	Yes	No

1.5.3 Similarity of EU Member States to Turkey

The 28 EU Member States have been ranked against Turkey on the basis of four criteria:

- **Population.** Telecommunications is a sector characterised by high fixed costs and large economies of scale. The population of the country therefore plays an important role in determining unit costs. Turkey has a large population by EU standards: at 80.5m it is greater than all EU Member States except Germany.
- **Area.** The cost of serving a given population is greater when that population is dispersed across a bigger area. The requirement for network coverage is a significant driver of costs for both fixed and mobile networks. Whilst the landmass of Turkey is bigger than any EU country, there is great variation between EU Member States, with many not even close to the scale of Turkey.
- **Urbanisation.** Apart from the raw scale of population and landmass, network costs are affected by the distribution of population around the country and, in particular, its concentration within urban areas. In Turkey there are some large cities (e.g. Istanbul is the largest city in Europe) but the country is characterised by a relatively

low overall level of urbanisation coupled with a broad spread of population throughout the rural areas.

- **Market share of the fixed incumbent as a mobile network operator.** The need for accounting separation is greater in markets where there is a fixed network incumbent that also has dominance in the mobile services market. In such cases it is appropriate to regulate both the fixed and mobile services of the operator, and clear cost accounting for each service separately will be required. In Turkey the market share of Turk Telecom within the mobile market (via its subsidiary Avea) is relatively low at 20% (based on subscriber numbers).

Figure 2 shows the ranking of the EU Member States compared with Turkey using these four measures. Countries have been ranked within each criterion by their % deviation from the result for Turkey, with the overall ranking being the sum of the four deviations. The top ten countries are highlighted.

Figure 2: Ranking of EU Member States against Turkey

Country ranking	Country	Population (millions)		Area ('000km ²)		Urbanisation (% of population)		Market share of fixed incumbent as MNO		Sum of deviations
		Data	Deviation from Turkey	Data	Deviation from Turkey	Data	Deviation from Turkey	Data	Deviation from Turkey	
1	Germany	82.2	2%	357	54%	75.3	3%	33	65%	124%
2	France	66.8	17%	643	18%	79.5	8%	39	95%	138%
3	Spain	46.4	42%	504	36%	79.6	8%	34	70%	156%
4	Italy	60.7	25%	301	62%	69	6%	33	65%	157%
5	Poland	38	53%	312	60%	60.5	18%	29	45%	176%
6	United Kingdom	65.4	19%	244	69%	82.6	13%	36	80%	180%
7	Romania	19.7	76%	238	70%	54.6	26%	18	10%	181%
8	Ireland	4.7	94%	70	91%	63.2	14%	20	0%	199%
9	Finland	5.5	93%	337	57%	84.2	15%	28	40%	205%
10	Bulgaria	7.2	91%	111	86%	73.9	1%	29	45%	223%
11	Sweden	9.9	88%	449	43%	85.8	17%	42	110%	257%
12	Slovakia	5.4	93%	48	94%	53.6	27%	31	55%	269%
13	Czech Republic	10.5	87%	79	90%	73	1%	0	100%	277%
14	Austria	8.7	89%	84	89%	66	10%	39	95%	284%
15	Latvia	2	98%	66	92%	67.4	8%	40	100%	297%
16	Lithuania	2.9	96%	65	92%	66.5	9%	0	100%	297%
17	Greece	10.8	87%	132	83%	78	6%	46	130%	306%
18	Hungary	9.8	88%	93	88%	71.2	3%	46	130%	309%
19	Denmark	5.7	93%	43	95%	87.7	19%	41	105%	312%
20	Portugal	10	88%	93	88%	63.5	13%	45	125%	314%
21	Cyprus	0.8	99%	9	99%	66.9	9%	42	110%	317%
22	Netherlands	17	79%	41	95%	90.5	23%	44	120%	317%
23	Luxembourg	0.6	99%	3	100%	90.2	23%	40	100%	322%
24	Belgium	11.3	86%	31	96%	97.9	33%	42	110%	325%
25	Malta	0.4	100%	0.3	100%	95.4	30%	40	100%	329%
26	Estonia	1.3	98%	45	94%	67.5	8%	46	130%	331%
27	Croatia	4.2	95%	57	93%	59	20%	48	140%	347%
28	Slovenia	2.1	97%	20	97%	49.6	32%	50	150%	377%
	Turkey	80.5		783		73.4		20		

1.5.4 Availability of national cost accounting regulations and reports

The top ten countries identified in Figure 2 are appropriate comparators with Turkey for the purposes of cost accounting and accounting separation. The question arises, however, whether these countries have particular regulations that govern accounting separation and cost accounting that will make for useful points of reference. We have investigated this and based on the outcome, have concluded that Germany does not have such specific regulations in place. Therefore, Germany was removed from the final list.

To ensure that there are sufficient countries within the benchmark that do operate cost accounting rules, we added two of the next three countries in the rankings: Sweden (which operates guidelines for the LRIC bottom-up and top-down models) and the Czech Republic (which operates accounting separation methodology). The total number of countries for the benchmarking was therefore set to 11.

1.5.5 Differentiated WACC ratios for NGA/NGN services

In the ToR, mention is made of the use of differentiated WACC for ratios for NGA/NGN services as an area of interest to ICTA. In order to derive a list of National Regulatory Authorities (NRAs) in the EU that have addressed this matter in recent regulatory reviews, we have utilized a recent report issued by the European Commission setting out guidelines for a common WACC methodology in the EU’s telecom sector⁴. In this report, the following NRAs are listed as having developed specific WACCs for NGA services that are differentiated from WACCs for legacy services.

Figure 4 – NGA WACC Approaches by EU NRAs

Country	Year	Regulator	Methodology
Italy	2015	AGCOM	Real option theory
UK	2014	OFCOM	Beta decomposition approach
Spain	2013	CMT	Discounted cash flow model
France	2015	ARCEP	Discounted cash flow model
The Netherlands	2015	ACM	Financial IRR model

Four of these countries (Italy, France, Spain and the UK) are included in the top-10 rankings from section 2.5.3 and are therefore retained within the benchmark set.

Figure 4 also shows a diversity of approaches to setting a WACC premium for investments in NGA networks, including:

- **Real option theory** – taking account of the ‘option premium’ relative to respectively the ‘wait and see’ (rewards the investor for the uncertainty of future market dynamics) and ‘flexibility’ (rewards the incumbent for being obliged to provide open access) alternatives.
- **Beta decomposition approach** – this approach consists of four main steps 1) estimating the asset beta of BT Group based on market data 2) estimating the asset

⁴ See “Review of approaches to estimate a reasonable rate of return for investments in telecoms networks in regulatory proceedings and options for EU harmonization”, a study prepared for the European Commission DG Communications Networks, Content & Technology by the Brattle Group, 2016, pages 100-103, <http://publications.europa.eu/en/publication-detail/-/publication/da1cbe44-4a4e-11e6-9c64-01aa75ed71a1/prodSystem-cellar/language-en/format-PDF>.

beta of copper activities 3) defining relative weights for copper and NGN in BT's economic value and 4) backing out the asset beta of the BT broadband business using the asset beta for copper and the relative weights.

- **Discounted cash flow approach/financial IRR model** – estimating the internal rate of return of investments in a fiber network and subsequent operation of the network under various defined scenarios with different rates of uncertainty.

In the report issued by the European Commission on harmonizing the approach in the EU on estimating WACCs in telecoms, a financial modelling approach is advocated, while using the beta decomposition approach as a sanity check.

1.5.6 Discussions with BEREC regarding the selection of the countries

On 6th of September 2017 we had a conference call with the co-chairs of BEREC regulatory accounting working group, Annegret Groebel and Marco Benacchio. We presented them the purpose of the country benchmarking, the criteria which we applied for the selection of the countries and the proposed countries. They discussed with us the development in these countries and the up-to-date situation in the area of accounting separation. They agreed that the criteria which we applied and the selected countries are fit for the purpose of the study.

1.5.7 Final selection of countries

Based on the above considerations, the final selection of countries for the benchmarking was concluded as follows:

Country
France
Spain
Italy
Poland
United Kingdom
Romania
Ireland
Finland
Bulgaria
Sweden
Czech Republic

2 COMPARISON OF THE TURKISH REGULATORY FRAMEWORK AND PRACTICE WITH THAT OF THE EUROPEAN UNION

2.1 Comparison of Legal Frameworks

Both for this study and for the parallel analysis of improvements to the Secondary legislation, our team has analysed the following laws and regulations to verify their conformity with EU legal provisions:

- Electronic Communications Law – Law No. 5809 of November 5, 2008.
- By-Law on Access and Interconnection, published in Official Gazette No. 27343 on September 8, 2009.
- By-Law on the Principles and Procedures Concerning the designation of the Undertakings with Significant Market Power in the Electronic Communications sector and the remedies to be imposed on those undertakings, published in Official Gazette No. No. 27336 on September 1, 2009.
- Board Decision adopting the Procedures and Principles on Accounting Separation and Cost Accounting, 2013/DK-ETO/557 of October 21, 2013.
- Law No. 2813 on Institutional arrangements (Law About Establishment of ICTA, Official Gazette No. 18011, April 7, 1983).
- By-Law No. 5783 on Internal organisation decision (ICTA organizational By-Law, Official Gazette No. 27958, June 8, 2011)

We have found no provision in the Turkish legal texts that diverges from the EU legal framework. If anything, the main difference with some Member States of the EU (but not with all) is in the level of detail of the legal texts. In the EU approach this level of detail is decided on the national level as long as the minimum requirements of the EU framework are met, which is the case in Turkey. In that sense, there is no legal divergence. However, we recommend that ICTA increases the level of detail of the Board Decision in order to enhance the regulatory compliance process. In the Secondary Legislation Report we present a recommended model for this. In this model, we have taken into account the recommendations made in this report.

2.2 Regulatory practice on cost accounting in selected EU countries

In Annexes 1-11, we include the results of the benchmarking research for the selected EU member states. In this section we give an overview of the common characteristics of these countries' regulatory practices.

We have analysed the regulatory practices with regard to accounting separation and WACC calculation in the 11 selected countries described in the annexes 1-11. From this analysis, we can derive a number of common characteristics that can be used as benchmarks to compare with the Turkish regulatory practice.

The accounting separation guidelines of the countries are based on the European Commission recommendation of 19 September 2005 on accounting separation and cost accounting systems under the regulatory framework for electronic communications (2005/698/EC) and on the ERG Common Position 'Guidelines for implementing the Commission Recommendation C (2005) 3480 on Accounting Separation & Cost Accounting Systems under the regulatory framework for electronic communications'.

However they do not reflect the European Commission Recommendation of 20 September 2010 on regulated access to Next Generation Access Networks (NGA) (2010/572/EU) and the European Commission Recommendation of 11.9.2013 on consistent non-discrimination obligations and costing methodologies to promote competition and enhance the broadband investment environment. In most countries the accounting separation guidelines were created before these two recommendations and the countries did not seem to have any reason to update the accounting separation guidelines based on these two recommendations, because the accounting separation guidelines give general instructions on the accounting separation, which should be applied in all markets. However the European Commission Recommendation of 20 September 2010 on regulated access to Next Generation Access Networks (NGA) (2010/572/EU) and the European Commission Recommendation of 11.9.2013 on consistent non-discrimination obligations and costing methodologies to promote competition and enhance the broadband investment environment relate to special treatment of fixed access markets. Therefore the implementation of these two commission recommendations is not reflected in accounting separation guidelines but in the market analysis decisions about obligations of SMP operators in fixed access markets.

The accounting separation guidelines do not include treatment of fibre access network with the aim to promote investment into fibre access network (for example NGA/NGN risk premium) and geographic/regional differentiation.

The findings from the benchmarking are as follows:

- 1. All countries prepare accounting separation reports based on top-down FAC CCA model results. Most countries prepare in addition also accounting separation reports based on top-down FAC HCA model results (8 countries out of 10). Half of the countries prepare also accounting separation reports based on top-down LRIC model results.**

Country	Top-down FAC HCA	Top-down FAC CCA	Top-down LRIC
France	Yes	Yes	Yes
Spain	Yes	Yes	Yes
Italy	Yes	Yes	Yes
Poland	Yes	Yes	Yes

United Kingdom	No	Yes	Yes
Romania	Yes	Yes	No
Ireland	Yes	Yes	No
Finland	No	Yes	No
Bulgaria	Yes	Yes	No
Sweden	No	No	No
Czech Republic	Yes	Yes	No

2. **The top-down models are based on similar principles. The common principles are cost causality, objectivity, transparency and consistency. Some countries add few other principles based on their own preferences, but these have no significant impact. The principle of consistency is accompanied by the obligation to restate previous year results reflecting any changes in the cost model.**

Country	Principle of cost causality	Principle of objectivity	Principle of transparency	Principle of consistency	Other principles
France	Yes	Yes	No	No	Completeness Availability Auditability
Spain	Yes	Yes	Yes	Yes	Auditability No compensation
Italy	NA	NA	NA	NA	NA
Poland	Yes	Yes	Yes	Yes	Sampling
United Kingdom	Yes	Yes	Yes	Yes	Priority Completeness Accuracy Compliance Relevance Reliability Proportionality

Romania	Yes	Yes	Yes	Yes	No
Ireland	Yes	Yes	Yes	Yes	No
Finland	Yes	No	No	No	No
Bulgaria	Yes	Yes	Yes	Yes	Priority Definitions
Sweden	NA	NA	NA	NA	NA
Czech Republic	Yes	Yes	Yes	No	Efficiency

3. **The general principles and rules for cost allocations are defined by the regulator. This includes definition of direct, indirect and common costs and principles how each of these categories should be allocated to services. Only two regulators include examples of allocations of different assets and operating costs.**

Country	General principles of allocations defined	Examples of allocations included
France	Yes	No
Spain	Yes	No
Italy	No	No
Poland	Yes	Yes
United Kingdom	No	No
Romania	Yes	Yes
Ireland	Yes	No
Finland	Yes	No
Bulgaria	Yes	Yes
Sweden	Yes	No
Czech Republic	Yes	No

4. **The asset revaluation methodology is defined by the regulator. This includes options of absolute valuation, revaluation using MEA, indexation, historical valuation. Asset lives used in top-down models are usually the same as in statutory financial accounting.**

Country	Asset revaluation methodology defined
France	Yes
Spain	Yes
Italy	No
Poland	Yes
United Kingdom	Yes
Romania	Yes
Ireland	No
Finland	Yes
Bulgaria	Yes
Sweden	Yes
Czech Republic	Yes

5. **Where LRIC is used, the LRIC methodology is usually defined by the regulator. This includes definition of variable costs, fixed costs, specific costs, joint costs and common costs.**

Country	LRIC methodology defined
France	Yes
Spain	No
Italy	No
Poland	Yes
United Kingdom	No
Romania	Yes
Ireland	No
Finland	No
Bulgaria	No
Sweden	Yes
Czech Republic	No

6. **The cost of capital should be calculated by multiplying the mean capital employed by WACC. The WACC is determined by the regulator using the Capital Asset Pricing Model. Pre-tax nominal WACC is used. 6 of the countries calculated a higher WACC for fibre access networks.**

Country	WACC used	CAPM used	Higher WACC for NGA
France	Pre-tax nominal	Yes	Yes
Spain	Pre-tax nominal	Yes	Yes
Italy	Pre-tax nominal	Yes	Yes
Poland	Pre-tax nominal	Yes	Yes
United Kingdom	Pre-tax nominal	Yes	Yes
Romania	Pre-tax nominal	Yes	No
Ireland	Pre-tax nominal	Yes	No
Finland	NA	NA	NA
Bulgaria	Pre-tax nominal	Yes	No
Sweden	Pre-tax nominal	Yes	No
Czech Republic	Pre-tax nominal	Yes	Yes

7. **Transfer charges should be calculated as the transfer price multiplied by the volume of services sold internally. The transfer price for the internal use should be equivalent with the tariffs charged for the equivalent services provided to other operators. In cases where there are no equivalent external services sold to other operators, the transfer price should be cost based, including cost of capital.**

Country	Transfer charge calculated as volume multiplied by unit price	Internal transfer price equal to external price
France	Yes	Yes
Spain	Transfer charges not used	Transfer charges not used
Italy	Yes	Yes
Poland	Yes	Yes
United Kingdom	NA	NA

Romania	Yes	Yes
Ireland	Yes	Yes
Finland	NA	NA
Bulgaria	Yes	Yes
Sweden	NA	NA
Czech Republic	NA	NA

8. **The accounting separation reports have to be reconciled with statutory financial accounting results.**

Country	Accounting separation reports reconciled with statutory financial accounting
France	Yes
Spain	Yes
Italy	Yes
Poland	Yes
United Kingdom	Yes
Romania	Yes
Ireland	Yes
Finland	Yes
Bulgaria	Yes
Sweden	Yes
Czech Republic	Yes

9. **The results are calculated annually and the accounting separation reports are to be submitted to the regulators usually within 6 months after the end of the financial year.**

Country	Frequency of calculation	Submission deadline
France	Annually	6 months from the publication of financial statements
Spain	Annually	NA
Italy	Annually	60 days from the approval of the statutory financial statements
Poland	Annually	NA
United Kingdom	Annually	4 months after the end of the financial year
Romania	Annually	6 months after the end of the financial year
Ireland	Annually	6 months after the end of the financial year
Finland	Annually	8 months after the end of the financial year
Bulgaria	Annually	6 months after the end of the financial year
Sweden	Annually	NA
Czech Republic	Annually	NA

10. **The regulators define the templates of accounting separation reports (with exception of Spain) and the list of services. In some countries also the list of network elements is defined by the regulator.**

Country	Accounting separation reports defined	List of services defined	List of network elements defined
France	Yes	Yes	Yes
Spain	No	Yes	No
Italy	Yes	Yes	Yes
Poland	Yes	Yes	No
United Kingdom	Yes	Yes	Yes
Romania	Yes	Yes	No

Ireland	Yes	Yes	No
Finland	Yes	No	No
Bulgaria	Yes	Yes	No
Sweden	No	Yes	No
Czech Republic	Yes	Yes	Yes

11. The lists of accounting separation reports are quite different between the countries. The basic reports are Profit and loss statements for markets and services, Statements of mean capital employed for markets and services, Reconciliation statements with statutory financial accounting, Statement of unit transfer prices, Network element costs and their allocation to services. Most countries then add some country specific reports.

Country	Profit and loss statements	Statements of mean capital employed	Network element costs	Reconciliation statement	Unit transfer prices
France	Yes	Yes	Yes	Yes	Yes
Spain	NA	NA	NA	NA	NA
Italy	No	No	Yes	No	Yes
Poland	Yes	Yes	Yes	Yes	Yes
United Kingdom	Yes	Yes	Yes	Yes	Yes
Romania	Yes	Yes	Yes	Yes	Yes
Ireland	Yes	Yes	Yes	Yes	Yes
Finland	Yes	No	Yes	No	No
Bulgaria	Yes	Yes	No	Yes	Yes
Sweden	NA	NA	NA	NA	NA
Czech Republic	Yes	No	Yes	No	No

12. **Accounting separation reports have to be accompanied by a detailed methodology which describes all the allocations of costs, revenues and capital employed from financial accounts to the reported services.**

Country	Detailed methodology document required
France	Yes
Spain	NA
Italy	Yes
Poland	NA
United Kingdom	Yes
Romania	Yes
Ireland	Yes
Finland	Yes
Bulgaria	Yes
Sweden	Yes
Czech Republic	Yes

13. **Accounting separation reports, the underlying models and their methodology are audited by an external auditor.**

Country	Audit performed
France	Yes
Spain	Yes
Italy	Yes
Poland	Yes
United Kingdom	Yes
Romania	Yes
Ireland	Yes

Finland	Yes
Bulgaria	Yes
Sweden	No
Czech Republic	No

14. **The auditor can be hired by the operator (usually subject to the approval by the regulator) or directly by the regulator. In most countries the auditor is hired directly by the regulator.**

Country	Auditor hired by
France	Regulator
Spain	Regulator
Italy	Regulator
Poland	Regulator
United Kingdom	Operator
Romania	NA
Ireland	Operator
Finland	Operator
Bulgaria	Regulator
Sweden	NA
Czech Republic	NA

15. **The auditor can be the same as the one who audits the statutory financial accounts or different from the statutory auditor. Both options are used, but usually the regulatory auditor is different from the statutory auditor.**

Country	Auditor same or different from statutory auditor
France	Different
Spain	Different

Italy	Different
Poland	Same
United Kingdom	Same
Romania	NA
Ireland	Same
Finland	NA
Bulgaria	Different
Sweden	NA
Czech Republic	NA

2.3 Comparison between Turkish and EU regulatory practice

In this section we compare the EU practice on cost accounting with the current Turkish regulatory practice.

The Turkish regulatory authority, ICTA, has been applying a system of accounting separation and WACC calculation for a number of years already. There are legal provisions in the Electronic Communication's Law and bylaws, and these have been detailed out in Board Decision 2013/DK-ETD/557. Reviewing this Decision is a central objective of this project. We had the text of the Decision translated after budget approval.

Accounting separation is one of the obligations to apply SMP operators in relevant markets in Turkey. The obliged operators shall submit a report with their separated regulatory accounts every year in July. On the other hand, a process for the determination of WACC for each operator to be used in the separated regulatory accounts runs every year before the submission of the mentioned report. Operators shall submit information and documents regarding the variables for the calculation of Weighted Average Cost of Capital (WACC) to be used in separated regulatory accounts by the end of February each year. Within three months after submission, ICTA shall either define WACC ratios for operators or let the operators define their WACC ratios pursuant to the regulation. Since the Board Decision 2013/DK-ETD/557, ICTA has let the operators define their WACC's only once, for the year 2013.

In the feedback received by ICTA about the regulatory framework applied in Turkey, there is criticism of some aspects and operators state that the Turkish regulatory practice is not in line with the European Union framework or best practice (see below for more details).

The ICTA Board Decision number 2013/DK-ETD/557 includes all the basic elements of accounting separation guidelines as applied by regulators in the selected EU countries.

Using the same structure as for the benchmarking of the selected EU countries we can describe the accounting separation guidelines in Turkey as follows.

Accounting separation reports are created based on following models: Top-down FAC CCA. This is the basic methodology used also in EU countries. The only small difference is that in many EU countries also accounting separation reports based on top-down FAC HCA are created. However usually top-down FAC CCA is used to set the regulated prices, so the accounting separation reports based on top-down FAC HCA play only informative role for the regulator. Only half of the selected EU countries use top-down LRIC models, so the fact, that it is not used in Turkey, is also in line with the EU best practice.

The models should be constructed using following regulatory accounting principles:

- Causality
- Periodicity
- Objectivity
- Consistency
- Transparency

This is completely in line with EU best practice. Turkey uses all four basic principles (cost causality, objectivity, consistency and transparency) and as most countries adds one country specific principle to it (periodicity). However the regulator does not define the principles, so it is up to the operators to interpret them.

General principles and rules for cost allocations are defined by the regulator. This includes definition of direct, indirect and common costs and principles how each of these categories should be allocated to services. Examples of allocations of different assets and operating costs are described. This is fully in line with the best practice in EU.

The ICTA Board Decision number 2013/DK-ETD/557 states that current costs should be used, but does not define the asset revaluation methodology (absolute valuation, revaluation using MEA, indexation, historical valuation). It only says that it should include sufficient detail so that the regulator can validate the method used.

Asset lives from statutory financial accounting should be used, unless the regulator sets different asset lives. This is fully in line with the best practice in EU.

Cost of capital should be calculated by multiplying the mean capital employed by WACC. WACC is determined by the regulator using Capital Asset Pricing Model. This is in line with the EU approach, however ICTA defines that after tax WACC should be used. This is different from the EU best practice. In all EU countries the pre-tax WACC is used. The reason is that taxes in general are excluded from regulatory accounting because prices and resulting revenues from regulated services are also before tax.

The transfer charges for internal usage shall be determined as the product of usage and unit charges. For the sake of non-discrimination, the charge for internal usage should be equivalent to the charge that would be levied if the product or service were sold externally rather than internally. However, if the costs are different when the product or service is used internally than when sold outside the company, transfer charge should be cost based. This is fully in line with EU best practice.

The accounting separation reports have to be reconciled with statutory financial accounting results. The accounting separation reports should be based on Turkish Financial Reporting Standards. This is fully in line with EU best practice.

Results of the regulatory accounting must be submitted by the end of July every year. This is in line with EU best practice (even if at the high end of the range).

Templates of reports are defined by the regulator. The reports include:

- Direct / Indirect Operating Costs – this report shows the direct costs allocated to services and costs of network elements and their allocation to services.
- Capital employed – this report shows the capital employed in network elements and its allocation to services.
- Transfer charges between services
- Transfer charges between markets
- Profit and loss statement for each service
- Profit and loss statement for each market

There is no statement of capital employed for services and markets. The capital employed in network elements does not show the full capital employed.

In addition to the reports also methodology describing the details of allocations and transfer charges has to be submitted by the operators. This is fully in line with EU best practice.

The regulator may audit the accounts of the operators or may oblige the operators to have their accounts audited by independent auditors. This is fully in line with EU best practice.

However the audit option should be used to conform with EU regulatory best practice, which was not the case until now.

3 RECOMMENDATIONS

Based on the comparison with the selected EU countries and based on the comments from Turkish operators we propose following changes to the Turkish regulatory regime:

1. *The principles of cost causality, objectivity, transparency and consistency should be included and defined in the Turkish regulatory regime.*

Most regulators in EU member states describe the principles which should be used when creating the regulatory accounting. The common principles are cost causality, objectivity, transparency and consistency. Some countries add few other principles based on their own preferences, but these have no significant impact. In the Turkish instructions the principles are included but not described, so that operators have no exact guidelines when creating the regulatory accounting models and reports. A description of the regulatory accounting principles should be added so that operators cannot interpret them freely. It is advised to include only the four basic principles (cost causality, objectivity, transparency and consistency) that are common to almost all EU member states. The principle of consistency should be accompanied by the obligation to restate previous year results reflecting any changes in the cost model (as it is in the EU member states).

2. *Instructions for creating LRIC models should be included.*

All countries prepare accounting separation reports based on top-down FAC CCA model results. Most countries prepare in addition also accounting separation reports based on top-down FAC HCA model results (8 countries out of 10). Half of the countries prepare also accounting separation reports based on top-down LRIC model results. Currently LRIC methodology is not used for creating accounting separation reports in Turkey. However we recommend to include also the instructions for creating LRIC models in the accounting separation guidelines for the case, that ICTA would decide in future to request also the accounting separation reports created based on LRIC methodology.

3. *Input values for the preparation of separated accounts should come from national statutory financial accounting.*

The regulatory separated accounts can be created based on input values coming from national statutory accounting or from IFRS. Both options are used across EU member states. We think that the input values entered into the regulatory costing models should be based on the national statutory financial accounting which is the primary accounting system. The advantage of this approach is that the source data in the financial books of the operators are kept in accordance with the national statutory financial accounting rules and as such they can be used directly as input into the regulatory costing models without any adjustments. Much of this is already embedded in current practice in Turkey, but the existing option to present values from IFRS should be removed to avoid any misinterpretation.

4. *The description of the cost allocation should include more details about the allocation of common costs and conversion of different traffic types (voice, sms, data) into common unit.*

In the meeting with the Turkish operators which was held on 11th of September 2017 in ICTA's premises Vodafone specifically asked for detailed instructions how to allocate common costs and how to convert different traffic types (voice, sms, data) into common unit. Because the accounting separation guidelines include description of examples of allocation of different types of costs, we recommend to describe there also the allocation of common costs and the conversion of voice traffic, sms and data traffic into common unit.

5. Asset revaluation methodology should be described.

The ICTA Board Decision number 2013/DK-ETD/557A states that current costs should be used when creating the regulatory costing models and the accounting separation reports, but it does not define the asset revaluation methodology (absolute valuation, revaluation using MEA, indexation). In order to make sure that all operators use the same and the correct methodology, the asset revaluation methodology should be described in the accounting separation guidelines.

6. Pre-tax WACC should be used to calculate the cost of capital.

Cost of capital should be calculated by multiplying the mean capital employed by WACC. ICTA defines that after tax WACC should be used. This is different from the EU best practice. In all EU member states the pre-tax WACC is used. The reason is that taxes in general are excluded from regulatory accounting because prices and resulting revenues from regulated services are also before tax.

7. Cost of debt can include also commissions and other fees directly related to the debt (for example commissions and fees paid when issuing bonds).

In the meeting with the Turkish operators which was held on 11th of September 2017 in ICTA's premises Türk Telekom asked for costs other than interest such as commission and insurance premiums to be included in cost of debt calculation.

The cost of debt can be calculated as risk free return plus debt premium or as the actual cost of debt paid by the operators. If the debt premium approach is used a sector-specific premium may be calculated from a peer group of operators in Europe. If the actual cost of debt paid by the operators is used, then the cost of debt may include in addition to the interest paid also the commissions and other fees directly related to the debt (for example commissions and fees paid when issuing bonds).

8. Statements of mean capital employed for services and markets, reconciliation between separated accounts and statutory financial accounting and statement of unit transfer prices should be added to the list of reports.

The lists of accounting separation reports are quite different between the EU member states. However there are some basic reports which are required in all member states. These basic reports are Profit and loss statements for markets and services, Statements of mean capital employed for markets and services, Reconciliation statements with statutory financial accounting, Statement of unit transfer prices, Network element costs

and their allocation to services. Most countries then add some country specific reports.

The ICTA Board Decision number 2013/DK-ETD/557A includes the following reports:

- Direct / Indirect Operating Costs – this report shows the direct costs allocated to services and costs of network elements and their allocation to services.
- Capital employed – this report shows the capital employed in network elements and its allocation to services.
- Transfer charges between services
- Transfer charges between markets
- Profit and loss statement for each service
- Profit and loss statement for each market.

This means that from the basic reports used in EU member states ICTA Board Decision number 2013/DK-ETD/557A does not cover the Statements of mean capital employed for markets and services, Reconciliation statements with statutory financial accounting, Statement of unit transfer prices. These reports should be therefore added to the list of the required reports.

9. ICTA should hire an auditor to perform the audit of the separated accounts.

The accounting separation reports, the underlying models and their methodology are usually audited by external auditors, to ensure regulatory compliance. The auditor can be hired directly by the regulator or by the operator (if this is the case, then the selection of the auditor should be subject to the approval by the regulator). In most EU member states the auditor is hired directly by the regulator.

The auditor can be the same as the one who audits the statutory financial accounts or different from the statutory auditor. The preferred option is a regulatory auditor different from the statutory auditor. The basic reason is that when the regulatory auditor is different from the statutory auditor it is perceived as more independent. Furthermore having two different auditors creates a double check and the audit results are considered to be more reliable by other market players. In most EU member states the regulatory auditor is different from the statutory auditor. Therefore we recommend that ICTA hires an independent auditor to audit the separated accounts of the operators and this auditor should be different from the statutory auditors.

In the Secondary Legislation Report, which was produced in parallel to this study, a proposal for a new Board Decision is presented in which these recommendations have been taken into account.

ANNEXES

Annex 1: France

Regulatory Authority:	ARCEP, Autorité de Régulation des Communications Electroniques et des Postes
Regulations/ sources used:	<p>Décision n° 06-1007 de l’Autorité de régulation des communications électroniques et des postes en date du 7 décembre 2006 portant sur les obligations de comptabilisation des coûts et de séparation comptable imposées à France Télécom</p> <p>(Decision n ° 06-1007 of the Regulatory authority for electronic communications and posts dated December 7, 2006 relating to the obligations of cost accounting and accounting separation imposed on France Telecom):</p> <p>https://www.arcep.fr/uploads/tx_gsavis/06-1007.pdf</p> <p>Projet de décision soumis à consultation publique et notifié à la Commission Européenne et aux autres régulateurs européens sur la spécification des obligations de comptabilisation et de restitution des coûts, notamment de séparation comptable imposées aux opérateurs mobiles outre-mer</p> <p>(Draft decision submitted for public consultation and notified to the European Commission and other European regulators on the specification of accounting and cost recovery obligations, including accounting separation imposed on mobile operators overseas):</p> <p>https://www.arcep.fr/fileadmin/reprise/dossiers/modeles-couts/proj-dec-07-0129-fev07.pdf</p> <p>France Telecom regulatory audit report for 2015:</p> <p>https://www.arcep.fr/fileadmin/reprise/dossiers/sep-comptable/110517-attestation-Orange-SC-2015.pdf</p> <p>France Telecom annual report 2015:</p> <p>https://www.orange.com/en/content/download/36161/1131283/version/2/file/Orange%20-%20DDR%202015_VA.pdf</p>

The following characteristics were found to apply in France.

Principles

Accounting separation reports are created based on following models: Top-down FAC HCA, Top-down FAC CCA, Top-down LRIC

The models should be constructed using following regulatory accounting principles:

- Completeness – cost accounting system must cover all costs of company activities. These data are derived from financial accounting.
- Cost causality
- Non-discrimination – two equivalent uses of the same activity or network element must receive the same costs. The application of the ABC method or a method based on the principles of causality ensures non-discrimination in the allocation of costs.
- Availability and auditability - the relevant elements of the information system and the accounting data relating to the cost accounting and accounting separation obligations shall be made available to the regulator for a period of five years. Compliance with accounting obligations must be verified through an audit process. As such, accounting information should be designed to make this process feasible.

Guidelines

Cost allocation

General principles and rules for cost allocations are defined by the regulator. This includes definition of direct, indirect and common costs and principles how each of these categories should be allocated to services.

Asset valuation

Asset revaluation methodology is defined by the regulator. This includes options of absolute valuation, revaluation using MEA, indexation, historical valuation.

LRIC

LRIC methodology is defined by the regulator. This includes definition of variable costs, fixed costs, specific costs, joint costs and common costs.

WACC

Cost of capital should be calculated by multiplying the mean capital employed by WACC. WACC is determined by the regulator using Capital Asset Pricing Model. Pre-tax nominal

WACC is used. Higher WACC for fibre access network is calculated.

Transfer pricing

Transfer charges shall be based on a transparent transfer pricing system and shall comply with the following rules:

- France Telecom's production activities upstream of the accounting separation system, provide services to its wholesale and retail activities, these services shall be valued on the basis of the components comprising them
- Services provided to both wholesale and retail activities are always transferred at the same "price" (which in this case corresponds to their cost, if applicable)
- Where a retail activity of France Telecom can be considered to be downstream of one or more of its regulated wholesale markets, it must produce its retail offerings by using the offers available on the upstream wholesale markets in the same conditions as an alternative operator would build and sell the same retail offerings. The choice of wholesale offers used for the construction of each retail offer should reflect the conditions that alternative operators could reasonably access through the offers marketed by France Telecom on the wholesale markets. France Telecom is required to formalize in a protocol on which wholesale offers it relies to produce its retail offers.
- For each retail offer based on the consumption of wholesale offers as specified in a protocol, it is necessary to highlight the charges for the purchase of wholesale offer.

Reporting

France Telecom is primarily obliged to provide separate accounts for all relevant wholesale markets, as defined by market analyses carried out by the regulator, on which the company has been recognized as having SMP and where the obligation of accounting separation was imposed on it.

The implementation of accounting separation obligation may require for completeness also the provision of information relating to markets in which the operator has SMP but where the obligation of accounting separation is not imposed and markets where the operator does not have SMP.

Unregulated markets and services are allocated to residual account which makes it possible to verify the completeness of the accounting separation system and thus provides a point of reconciliation between statutory accounting and regulatory accounting.

France Telecom may modify on its own initiative certain parameters of its cost accounting system. Any substantial change resulting in a difference of more than 5% in the cost of a technical product or a regulatory product as defined by its cost accounting system shall be submitted to the regulator, as well as the factors justifying it. These modifications must be submitted prior to their implementation when they relate to a modelling or data source evolution.

Templates of reports and list of network elements are defined by the regulator. The reports include:

- Inputs from financial accounting
- Detailed methodology describing the allocations in the cost model
- List of network elements
- Cost of network elements
- Routing table
- List of transmission costs and their allocation
- List of Information Systems costs and their allocation
- List of number portability costs and their allocation
- List of common costs and their allocation
- Description of cost volume relationships
- Markets reports – Profit and loss statement
- Markets reports – Balance sheet (mean capital employed)
- Conformity statement
- Audit report

Reconciliation with financial accounts

Reconciliation between financial accounting and regulatory accounting:

- the operating costs (excluding financial expenses) must be reconciled with financial accounting justifying the adjustments made;
- financial expenses are replaced in the regulatory accounts by the return on capital;
- depreciation in each of the accounts cannot be reconciled directly, due to differences in costing methodologies.

Timelines

Results of the regulatory accounting must be submitted 6 months from the publication of financial statements.

Audit

The accounting system for France Telecom costs and the accounting results produced under the cost accounting obligation are subject to an annual audit procedure. The regulator hires independent auditor to audit regulatory accounts. It is the responsibility of the regulator to make an annual audit of accounting obligations. Regulatory auditor is different from the statutory auditor. The latest regulatory separated accounts of France Telecom which were audited are regulatory separated accounts for year 2015. The audit report is dated 27 March 2017. The regulatory audit was performed by a company called Mazars. The statutory audit of the financial accounts of France Telecom for the financial year 2015 was performed by Ernst&Young and by KPMG.

Annex 2: Spain

Regulatory Authority:	CNMC, Comisión Nacional de los Mercados y la Competencia
Regulations/sources used:	Resolution on the updating of principles, criteria and conditions for the development of the cost accounting system (dossier AEM 2010/270) https://www.cnmc.es/sites/default/files/1478896_0.pdf Telefonica Spain regulatory audit report for financial year 2015 https://www.cnmc.es/sites/default/files/1730181_0.pdf Telefonica Spain statutory audit report for financial year 2015 https://www.telefonica.com/documents/153952/13347843/Cuentas_anual_es_consolidadas_2015.pdf/b84a33d5-28d4-4f7b-806f-2f5b4299f575

The following characteristics were found to apply in Spain.

Principles

Accounting separation reports are created based on following models: Top-down FAC HCA, Top-down FAC CCA, Top-down LRIC

The models should be constructed using following regulatory accounting principles:

- Causality - Cost distribution must be carried out in such a way that costs are attributed to the services which cause them to be incurred. Cost amounts must be measured proportionally to the corresponding contribution to the product. Measurable cost drivers will be established in order to identify the reasons why costs are incurred.
- Objectivity – Drivers of costs or revenues must be objective, reliable and quantifiable using census data, or statistical/sample-based computations. Cost drivers based on sample data must be based on generally accepted statistical techniques. Costs which, as an exception, are recognised as being difficult to identify using measurable, objective drivers, must be attributed using previously established and objective distribution criteria.
- Transparency - It must be possible to break down the cost attributed to each

activity, asset item or service according to the different cost components that make it up.

- **Auditability** - The Cost Accounting System will establish the proper relationship with the operator's external financial accounting records and with the operating and statistical systems upon which drivers of costs and revenues attributed to services are based. This is intended to facilitate full auditability of the cost accounting system.
- **Consistency** - Accounting principles, together with the proposed valuation, allocation criteria, must be maintained from year to year. When introducing changes which are not required by the regulator and will have an effect of more than 2% on the cost or revenue of any of the regulated services, then both the old criteria and the updated criteria must be applied simultaneously during one financial year. This will show the resulting differences in the measurement of costs, revenues and margins.
- **No compensation** - When processing costs and revenues in cost accounting, both concepts should remain separated with no compensations between them.

Guidelines

General principles and rules for cost allocations are defined by the regulator. This includes definition of direct, indirect and common costs and principles how each of these categories should be allocated to services.

Asset valuation

Asset revaluation methodology is defined by the regulator. This includes options of absolute valuation, revaluation using MEA, indexation, historical valuation. "Market price" is understood to be the mean acquisition price for the operator in the past two financial years if that operator acquired goods of that type and technology from at least three different providers. If this is not the case, the operator will call for tenders from other providers until it has at least three samples from different providers per asset, referring to acquisitions and estimates, and it will use the mean price as the new reference value. Attributing the cost of fully depreciated access elements is not permitted even if they are in use, but in rest of the network also fully depreciated assets are revalued and their cost is included.

Efficiency adjustments are not done in top-down models. Bottom-up models are more suitable for this.

WACC

Cost of capital should be calculated by multiplying the mean capital employed by WACC. WACC is determined by the regulator using Capital Asset Pricing Model. Pre-tax nominal WACC is used. Higher WACC for fibre access network is calculated.

Transfer pricing

There are no transfer charges used. At present, given the amount of information found in current cost models, the regulator feels it is not necessary to include transfer charges in the accounting separation system. Discriminatory treatment and cross-subsidy are also avoided when common distribution drivers for network components are applied to wholesale and retail services, as this guarantees that the same costs are attributed to both self-consumption and wholesale services.

Reporting

Operators must present to the regulator the results of their cost accounting systems for each financial year along with the accounts for the previous year modified according to the adjustments specified by the regulator in the previous revision.

Accounting separation reports are not defined by the regulator. List of services is defined by the regulator.

Reconciliation with financial accounts

Reconciliation with financial accounting: For each cost standard, the operator must provide the regulator with its reconciliation with external financial accounting in which it indicates the amounts and the nature of the adjustments applied with what the regulator feels to be sufficient itemisation. Top-down models are based on Spanish national accounting principles. Asset lives are proposed by the operator in accordance with normal practice in the sector worldwide, subsequently accepted by the regulator. Rejection of the useful lives proposed by the operator must be explained.

Audit

The cost accounting system must be accompanied by a report drawn up by an auditor with sufficient technical qualifications which expresses whether or not the accounts represent a faithful view of the results for the period according to the principles, criteria and conditions established by the regulator.

The regulator will issue a yearly declaration on the operator's compliance with the accounting principles, criteria and conditions in its cost accounting system, and propose mandatory modifications to the cost accounting system as it sees fit.

Regulatory auditor is different from the statutory auditor. The latest regulatory separated accounts of Telefonica Spain which were audited are regulatory separated accounts for year 2015. The audit report is dated 12 May 2017. Until this year the regulatory audit was performed by a company called Axon, but from 2016 onwards this role was taken over by Deloitte which is currently reviewing the accounts of 2016. The statutory audit of the financial accounts of Telefonica Spain for the financial year 2015 was performed by Ernst&Young.

Annex 3: Italy

Regulatory Authority:	AGCOM, Autorità per le Garanzie nelle Comunicazioni
Regulations/sources used:	<p>LINEE GUIDA IN MATERIA DI CONTABILITÀ REGOLATORIA E CONTRATTI DI SERVIZIO: SERVIZI DI INTERCONNESSIONE A TRAFFICO</p> <p>Allegato A alla Delibera N. 324/13/CONS</p> <p>(GUIDELINES FOR REGULATORY ACCOUNTING AND SERVICE CONTRACTS: TRAFFIC INTERCONNECTION SERVICES Annex A to Resolution No. 324/13 / CONS)</p> <p>https://www.agcom.it/documents/10179/540039/Allegato+03-05-2013/975b55df-19e8-4a17-9165-8498bc2da009?version=1.0</p> <p>LINEE GUIDA IN MATERIA DI CONTABILITÀ REGOLATORIA E CONTRATTI DI SERVIZIO: SERVIZI DI INTERCONNESSIONE A TRAFFICO</p> <p>Allegato A.1 alle Linee guida di cui alla delibera n. 324/13/CONS</p> <p>(GUIDELINES FOR REGULATORY ACCOUNTING AND SERVICE CONTRACTS: TRAFFIC INTERCONNECTION SERVICES Annex A.1 to the Guidelines set out in resolution no. 324/13 / CONS)</p> <p>https://www.agcom.it/documents/10179/540039/Allegato+03-05-2013+1/0eb3807e-dab0-496b-a6c8-3e289d22af8b?version=1.0</p> <p>LINEE GUIDA IN MATERIA DI CONTABILITÀ REGOLATORIA E CONTRATTI DI SERVIZIO: SERVIZI DI INTERCONNESSIONE A TRAFFICO</p> <p>Allegato A.2 alle Linee guida di cui alla delibera n. 324/13/CONS</p> <p>(GUIDELINES FOR REGULATORY ACCOUNTING AND SERVICE CONTRACTS: TRAFFIC INTERCONNECTION SERVICES Annex A.2 to the Guidelines as per Resolution no. 324/13 / CONS)</p> <p>https://www.agcom.it/documents/10179/540039/Allegato+03-05-2013+2/fec5f18b-0864-45fb-9c08-d009f76479e7?version=1.0</p> <p>LINEE GUIDA IN MATERIA DI CONTABILITÀ REGOLATORIA E CONTRATTI</p>

DI SERVIZIO: SERVIZI DI INTERCONNESSIONE A TRAFFICO
Allegato A.3 alle linee guida di cui alla delibera n. 324/13/CONS
(GUIDELINES FOR REGULATORY ACCOUNTING AND SERVICE
CONTRACTS: TRAFFIC INTERCONNECTION SERVICES
Annex A.3 to the guidelines contained in resolution no. 324/13 / CONS)
<https://www.agcom.it/documents/10179/540039/Allegato+03-05-2013+3/37180d53-3fc2-4bc6-b98f-7b923ab49319?version=1.0>

LINEE GUIDA IN MATERIA DI CONTABILITÀ REGOLATORIA E CONTRATTI
DI SERVIZIO: SERVIZI DI INTERCONNESSIONE A TRAFFICO
Allegato B alla Delibera n. 324/13/CONS
(GUIDELINES FOR REGULATORY ACCOUNTING AND SERVICE
CONTRACTS: TRAFFIC INTERCONNECTION SERVICES
Annex B to Resolution n. 324/13 / CONS)
<https://www.agcom.it/documents/10179/0/Documento/c08d5e05-15c3-4e80-8797-6e1e4f40a7c4>

IL MODELLO DI COSTO DEL SERVIZIO DI TERMINAZIONE DEL TRAFFICO
SU RETE MOBILE DI H3G, TELECOM ITALIA (MOBILE), VODAFONE
OMNITEL E WIND TELECOMUNICAZIONI
Allegato A1 alla Delibera n. 667/08/CONS
(TRAFFIC SERVICE CODE MODEL ON H3G MOBILE NETWORK, TELECOM
ITALIA (MOBILE), VODAFONE OMNITEL AND WIND
TELECOMMUNICATIONS
Annex A1 to Resolution n. 667/08 / CONS)
<https://www.agcom.it/documents/10179/539049/Allegato+26-11-2008+1/2230a6e9-9b36-4bb6-9820-5682b318cec9?version=1.0>

IL MODELLO DI COSTO DEL SERVIZIO DI TERMINAZIONE DEL TRAFFICO
SU RETE MOBILE DI H3G, TELECOM ITALIA (MOBILE), VODAFONE
OMNITEL E WIND TELECOMUNICAZIONI
Allegato A2 alla Delibera n. 667/08/CONS
(TRAFFIC SERVICE CODE MODEL ON H3G MOBILE NETWORK, TELECOM
ITALIA (MOBILE), VODAFONE OMNITEL AND WIND
TELECOMMUNICATIONS
Annex A2 to Resolution n. 667/08 / CONS)
<https://www.agcom.it/documents/10179/539049/Allegato+26-11->

[2008+2/71b00a75-8d05-4ce0-868d-243a8a0c3006?version=1.0](https://www.agcom.it/documents/10179/539721/Allegato+12-12-2011+2/71b00a75-8d05-4ce0-868d-243a8a0c3006?version=1.0)

LINEE GUIDA IN MATERIA DI CONTABILITÀ REGOLATORIA DI RETE FISSA E CONTRATTI DI SERVIZIO

Allegato A alla Delibera n. 678/11/CONS

(GUIDELINES FOR REGULATORY NETWORK ACCOUNTING AND SERVICE CONTRACTS

Annex A to Resolution n. 678/11 / CONS)

<https://www.agcom.it/documents/10179/539721/Allegato+12-12-2011/4a49585a-d543-48ee-94d4-cb6e191be00c?version=1.0>

LINEE GUIDA IN MATERIA DI CONTABILITÀ REGOLATORIA DI RETE FISSA E CONTRATTI DI SERVIZIO

Allegato B alla Delibera n. 678/11/CONS

(GUIDELINES FOR REGULATORY NETWORK ACCOUNTING AND SERVICE CONTRACTS

Annex B to Resolution n. 678/11 / CONS)

<https://www.agcom.it/documents/10179/539721/Allegato+12-12-2011+1/261a2515-c147-4d87-9d57-5cef4c84bc09?version=1.0>

LINEE GUIDA IN MATERIA DI CONTABILITÀ REGOLATORIA DI RETE FISSA E CONTRATTI DI SERVIZIO

Allegato 1 alla Delibera n. 678/11/CONS

(GUIDELINES FOR REGULATORY NETWORK ACCOUNTING AND SERVICE CONTRACTS

Annex 1 to Resolution n. 678/11 / CONS)

<https://www.agcom.it/documents/10179/539721/Allegato+12-12-2011+2/e73b9465-95b0-4d04-82af-f0cf57886a9?version=1.0>

LINEE GUIDA IN MATERIA DI CONTABILITÀ REGOLATORIA DI RETE FISSA E CONTRATTI DI SERVIZIO

Allegato 2 alla delibera n. 678/11/CONS

(GUIDELINES FOR REGULATORY NETWORK ACCOUNTING AND SERVICE CONTRACTS

Annex 2 to Resolution no. 678/11 / CONS)

<https://www.agcom.it/documents/10179/539721/Allegato+12-12->

[2011+3/f8ad8398-722a-403b-acec-d61f05d6ba24?version=1.0](https://www.agcom.it/documents/10179/4606064/Allegato+7-6-2011+3/f8ad8398-722a-403b-acec-d61f05d6ba24?version=1.0)

Pubblicazione della contabilità regolatoria di Telecom Italia S.p.A. e delle relative relazioni di conformità della contabilità regolatoria, del sistema di contabilità dei costi e di separazione contabile, relativa all'esercizio 2013

ALLEGATO A1 alla delibera n. 189/16/CONS

(Publication of Regulatory Accounts of Telecom Italia S.p.A. and the related regulatory compliance accounting, cost accounting and accounting separation reports for the 2013 financial year

ANNEX A1 to Resolution no. 189/16 / CONS)

<https://www.agcom.it/documents/10179/4606064/Allegato+7-6-2016/bf8cdc53-8b0d-4f2c-8871-f4c337f95b2c?version=1.0>

Pubblicazione della contabilità regolatoria di Telecom Italia S.p.A. e delle relative relazioni di conformità della contabilità regolatoria, del sistema di contabilità dei costi e di separazione contabile, relativa all'esercizio 2013

ALLEGATO B1 alla delibera n. 189/16/CONS

(Publication of Regulatory Accounts of Telecom Italia S.p.A. and the related regulatory compliance accounting, cost accounting and accounting separation reports for the 2013 financial year

ANNEX B1 to Resolution no. 189/16 / CONS)

<https://www.agcom.it/documents/10179/4606064/Allegato+7-6-2016+1465305780308/940e349c-95a9-484a-838d-b695142efc57?version=1.0>

Pubblicazione della contabilità regolatoria di Telecom Italia S.p.A. e delle relative relazioni di conformità della contabilità regolatoria, del sistema di contabilità dei costi e di separazione contabile, relativa all'esercizio 2013

ALLEGATO C1 alla delibera n. 189/16/CONS

(Publication of Regulatory Accounts of Telecom Italia S.p.A. and the related regulatory compliance accounting, cost accounting and accounting separation reports for the 2013 financial year

ANNEX C1 to resolution no. 189/16 / CONS)

<https://www.agcom.it/documents/10179/4606064/Allegato+7-6-2016+1465305862029/ea78e646-9f53-4524-884c-75dc3cfd89ac?version=1.0>

	Telecom Italia Annual Report 2013: http://www.telecomitalia.com/content/dam/telecomitalia/en/archive/documents/investors/Annual_Reports/2013/Annual-Report-2013.pdf
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The following characteristics were found to apply in Italy.

Principles

Accounting separation reports are created based on the following models: Top-down FAC HCA, Top-down FAC CCA, Top-down LRIC

Guidelines

WACC

Cost of capital should be calculated by multiplying the mean capital employed by WACC. WACC is determined by the regulator using Capital Asset Pricing Model. Pre-tax nominal WACC is used. Higher WACC for fibre access network is calculated.

Transfer pricing

Transfer charge should be calculated as transfer price multiplied by the volume of services sold internally. Transfer prices are set equal to the prices in Reference Offer where the network components used for internal and external service provision are the same. If the network elements for internal and external service provision differ, the price from Reference Offer is adjusted based on the difference in network element usage.

Reporting

For each service the detailed tables of the regulatory accounting must report the components / activities used to produce the service with their respective coefficients of utilization and unit costs.

Wholesale services used to provide retail services are defined by the regulator up to the level of individual network components used.

Reports:

- Costs of network elements
- Costs of network elements split to markets and services
- Unit transfer charges – unit costs of components used
- Total transfer charges between markets

Timelines

Results of the regulatory accounting must be submitted to the regulator annually within 60 days from the approval of the statutory financial statements.

Audit

The regulator assigns an independent auditor to certify the compliance of the regulatory accounting with the current legislation. After review by the auditor, the regulator shall publish the regulatory accounts.

The regulatory auditor is different from the statutory auditor. The latest regulatory separated accounts of Telecom Italia which were audited are regulatory separated accounts for year 2013. The audit report is dated 25 June 2015. The regulatory audit was performed by a company called Mazars. The statutory audit of the financial accounts of Telecom Italia for the financial year 2013 was performed by PricewaterhouseCoopers.

Annex 4: Poland

Regulatory Authority:	UKE, Urząd Komunikacji Elektronicznej
Regulations/sources used:	<p>DECYZJA DHRT.WORK.6090.1.2015.99 (DECISION DHRT.WORK.6090.1.2015.99) http://www.uke.gov.pl/files/?id_plik=22861</p> <p>INSTRUKCJA W ZAKRESIE PROWADZONEJ PRZEZ ORANGE POLSKA S.A. RACHUNKOWOŚCI REGULACYJNEJ ZA ROK 2015 (Instruction for creating the Orange Polska S.A. regulatory accounts for year 2015) http://www.uke.gov.pl/files/?id_plik=22852</p> <p>Przypisanie procesów modelowych oraz grup środków trwałych i WNiP do działalności rachunkowości regulacyjnej (Assignment of model processes and groups of fixed assets and CIS to regulatory accounting activity) http://www.uke.gov.pl/files/?id_plik=22853</p> <p>OPIS KALKULACJI KOSZTÓW ŚWIADCZENIA DOSTĘPU TELEKOMUNIKACYJNEGO W ZAKRESIE USŁUGI DOSTĘPU SZEROKOPASMOWEGO (RYNEK 5) NA ROK 2017 ORANGE POLSKA S.A. (DESCRIPTION OF CALCULATION OF TELECOMMUNICATION ACCESS COSTS FOR BROADCAST ACCESS SERVICES (MARKET 5) FOR 2017 ORANGE POLSKA S.A.) http://www.uke.gov.pl/files/?id_plik=22854</p> <p>TABELE WYNIKÓW KALKULACJI KOSZTÓW (TABLE OF COST CALCULATION RESULTS) http://www.uke.gov.pl/files/?id_plik=22855</p> <p>OPIS KALKULACJI W ZAKRESIE PRZESZACOWANIA WARTOŚCI SKŁADNIKÓW KAPITAŁU ZAANGAŻOWANEGO NA DZIEŃ 31</p>

	<p>GRUDNIA 2015 ROKU ORAZ WYZNACZANIA WARTOŚCI KOSZTÓW OD ICH WARTOŚCI BIEŻĄCEJ NA POTRZEBY OPISÓW KALKULACJI ZAWARTYCH W DOKUMENTACH NUMER: I, II</p> <p>(DESCRIPTION OF CALCULATION OF REVALUATION OF CAPITAL EMPLOYED COMPONENTS AS OF 31ST OF DECEMBER 2015 AND DETERMINATION OF COST VALUES FROM THEIR CURRENT VALUES FOR THE NEED OF DESCRIPTION OF CALCULATIONS INCLUDED IN DOCUMENTS NUMBER I, II)</p> <p>http://www.uke.gov.pl/files/?id_plik=22860</p> <p>RAPORT Z BADANIA ROCZNEGO SPRAWOZDANIA Z PROWADZENIA RACHUNKOWOSCI REGULACYJNEJ ZA ROK ZAKONCZONY DNIA 31 GRUDNIA 2015 ROKU ORAZ WZNIKOW KALKULACJI KOSZTOW USLUG NA ROK 2017</p> <p>(AUDIT REPORT OF THE ANNUAL REGULATORY ACCOUNTING FOR THE YEAR ENDED 31 DECEMBER 2015 AND THE CALCULATIONS OF THE COST OF THE SERVICES IN 2017)</p> <p>https://www.uke.gov.pl/files/?id_plik=24172</p> <p>Orange Polska Annual Report 2015</p> <p>http://orange-ir.pl/sites/default/files/ORANGE_RA_08042016_ANG_ONLINE.PDF</p>
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The following characteristics were found to apply in Poland.

Principles

Accounting separation reports are created based on following models: Top-down FAC HCA, Top-down FAC CCA, Top-down LRIC.

The models should be constructed using following regulatory accounting principles:

- Causality - Costs and assets should be attributed to the components of the model by the factors that cause them to arise.
- Objectivity and non-discrimination - Assignment should be objective and not intended to benefit or incur losses for both TP and any other operator, thus accounting for costs under non-discriminatory conditions of any operator.
- Consistency - The methodology used should be constant from year to year. When significant changes are made to regulatory accounting policies, attribution methods,

or accounting policies that have a significant impact on reported cost information, TP should change part of the report for the preceding year reflecting the changes.

- Transparency and Coherence - The methodology assumes clear and consistent attribution between the allocated components (costs and assets that are allocated to each service), allowing you to trace the relationship between the booked cost items and the service costs.
- Sampling - Where sampling is used to determine costs, it should be based on generally accepted statistical methods or other methods that should lead to appropriate attribution of costs or assets.

Guidelines

Cost allocation

The regulator defines in detail all allocations.

Asset valuation

The regulator defines in detail the calculation of current costs of assets.

LRIC

The regulator defines in detail the efficiency adjustments, construction of CVRs.

WACC

Cost of capital should be calculated by multiplying the mean capital employed by WACC. WACC is determined by the regulator using Capital Asset Pricing Model. Pre-tax nominal WACC is used. Higher WACC for fibre access network is calculated.

Transfer pricing

Transfer charges are set as equal to the wholesale price offered externally or at costs including cost of capital.

Reporting

Templates of reports and list of services are defined by the regulator. The reports include:

- Mean Capital employed in access network
- Mean Capital employed in transport network
- Mean Capital employed in individual markets
- Profit and Loss statement for individual markets
- Report of transfer charges
- Unit cost of network elements

Reconciliation with financial accounts

Top-down models are based on statutory accounts prepared according to IFRS.

Audit

Regulatory auditor is the same as the statutory auditor. The latest regulatory separated accounts of Orange Polska which were audited are regulatory separated accounts for year 2015. The audit report is dated 12 August 2016. The regulatory audit was performed by Ernst&Young. The statutory audit of the financial accounts of Orange Polska for the financial year 2015 was performed also by Ernst&Young.

Annex 5: United Kingdom

Regulatory Authority:	Ofcom, Office of Communications
Regulations/sources used:	<p>Regulatory financial reporting: a review https://www.ofcom.org.uk/_data/assets/pdf_file/0023/53546/condoc.pdf</p> <p>Directions for Regulatory Financial Reporting https://www.ofcom.org.uk/_data/assets/pdf_file/0018/59112/statement.pdf</p> <p>Regulatory Financial Reporting Final Statement https://www.ofcom.org.uk/_data/assets/pdf_file/0025/78460/financial-reporting-statement-may14.pdf</p>

The following characteristics were found to apply in the United Kingdom.

Principles

Accounting separation reports are created based on following models: Top-down FAC CCA, Top-down LRIC

The models should be constructed using following regulatory accounting principles:

- Priority - the following order of principles to represent the hierarchy of their priority
- Completeness - Regulatory Financial Reporting must encompass all revenues, costs, assets and liabilities of the Markets and Technical Areas, together with residual activities (including wholesale and retail).
- Accuracy - Regulatory Financial Reporting must maintain an adequate degree of accuracy, such that the information included in the Regulatory Financial Statements is free from material errors and double-counting.
- Objectivity - Each element of Regulatory Financial Reporting, so far as is possible, must take account of all the available financial and operational data that is relevant to that element. Where an element of Regulatory Financial Reporting is based on assumptions, those assumptions must be justified and supported by all available

relevant empirical data. The assumptions must not be formulated in a manner which unfairly benefits BT or any other operator or entity, or creates undue bias towards any part of BT's or any other operator's business or product.

- Consistency with regulatory decisions - Regulatory Financial Reporting must be consistent with regulatory decisions as set out in the Regulatory Accounting Guidelines.
- Causality - Regulatory Financial Reporting must ensure that: a) revenues (including revenues resulting from transfer charges); b) costs (including costs resulting from transfer charges); c) assets; and d) liabilities are attributed in accordance with the activities which cause the revenues to be earned, or costs to be incurred, or assets to be acquired, or liabilities to be incurred respectively.
- Compliance with the statutory accounting standards - Regulatory Financial Reporting must comply with the accounting standards applied in BT's statutory accounts; with the exception of any departures as the regulator may direct from time to time (including in the Regulatory Accounting Guidelines).
- Consistency of the Regulatory Financial Statements as a whole and from one period to another - Regulatory Financial Reporting must be applied consistently in all the Regulatory Financial Statements relating to the same period. Regulatory Financial Reporting must be applied consistently from one period to another. All the changes in Regulatory Financial Reporting from one period to another must be justified by reference to the Regulatory Accounting Guidelines and the Regulatory Accounting Principles. If there are material changes in Regulatory Financial Reporting from one period to another, BT must restate the previous period's Regulatory Financial Statements, applying the changes to the Regulatory Financial Statements for that period.

Guidelines

Asset valuation

Asset revaluation methodology is defined by the regulator. This includes options of absolute valuation, revaluation using MEA, indexation, historical valuation. Copper cables and duct are valued using Regulatory Asset Value (RAV).

WACC

Cost of capital should be calculated by multiplying the mean capital employed by WACC. WACC is determined by the regulator using Capital Asset Pricing Model. Pre-tax nominal WACC is used. Higher WACC for fibre access network is calculated.

Reporting

Regulation is only at the wholesale level and has moved further upstream with attention on services provided by Openreach which must be provided on an Equivalence of Inputs basis. Retail Markets data are no longer reported in detail.

Effective reporting regime should be based on following principles:

- relevance - It needs to answer the right questions, in an appropriate way and at the appropriate time;
- reliability – Input data should be capable of reconciliation to the audited statutory accounts. The right rules have to be used in relation to the way costs and revenues are identified, the way assets are valued, the way these assets are allocated to products and services and the way this information is presented. Such rules need to be objective and must not favour the dominant operator. Dominant operator has to obtain an independent audit opinion on the financial statements (a regulatory financial audit) stating whether the financial statements for each relevant market are presented in accordance with the rules. The audit should give stakeholders some confidence that the published financial statements are reasonably reliable.
- transparency - Transparency is essential to ensure that the data can be understood by their target audience and tested and challenged when necessary.
- proportionality - The requirements imposed on the dominant operator should be proportionate to the benefits that are expected to result from those requirements.

Templates of reports are defined by the regulator. List of services and list of network elements are defined by the regulator. The published reports include:

- Statement of Responsibility
- Regulatory Financial Review
- Notes to the Regulatory Financial Statements
- Report of the Regulatory Auditor
- Performance Summary by Market or Technical Area
- Attribution of Wholesale Current Costs
- Attribution of Wholesale Current Cost Mean Capital Employed
- Market/Technical Area Summary
- Market/Technical Area Calculation of FAC based on component costs and usage factors
- BT Reconciliation Statement – Consolidated Profit and Loss Account
- BT Reconciliation Statement – Consolidated Mean Capital Employed
- Consolidated Network Activity Statement
- Adjusted financial performance at a market review level
- Price controls in wholesale markets (Non Confidential Statements).

Not published reports, delivered only to the regulator:

- Cost category (as used within regulatory LRIC model) analysis for network components, increments and relevant layers of common cost
- Summarised activity analysis of components for network activities, increments and the relevant layers of common cost (LRIC basis)
- Cost category (as used within regulatory LRIC model) analysis for network components and increments
- Summarised activity analysis for network components and increments
- Analysis, by asset category and network activities, of the depreciation charge for the year and impact of CCA valuation adjustments on costs for the year

- CCA fixed asset movement statement
- Total mean capital employed and detailed activity analysis for all network components
- Detailed network activity analysis of mean capital employed for all network components
- Graphs over time of the various raw indices, index weightings and composite indices used by BT to revalue assets onto a current cost basis
- Estimated economic useful lives, valuation and depreciation basis, survey used for valuation or index used to revalue , historical cost accounting (HCA) and current cost accounting (CCA) depreciation, gross book values (GBV) by year of acquisition, gross replacement costs (GRC) and net replacement costs (NRC) across asset categories
- Total operating costs and mean capital employed costs (and associated volumes) for each plant group and their individual exhaustion, including the disclosure of relevant usage factors, onto each network activity and/or (sub) component
- Provision of BT 'Data File'
- CCA information to allow Ofcom to re-calculate the regulatory asset value (RAV) for copper assets used in BT's access network
- BT Network Services Reconciliation; xv. Price controls in wholesale markets (Confidential Statements)
- Adjusted financial performance at a market level;
- Time Related Charges Costs Relating to the Fixed Access Markets (Confidential Statements)
- Special Fault Investigation Costs Relating to the Fixed Access Markets (Confidential Statements)
- Provision of FAC, DLRIC and DSAC data per service
- Market summary of individual VULA services
- Calculation of FAC based components costs and usage factors of individual VULA services
- VULA allocation of government grants
- Additional financial information for Electricity Charges
- Comprehensive analysis of the transfer charges where this information is summarised in the published statements
- Wholesale broadband access geographical analysis of costs and assets on a cost accounting and EOI basis
- Provision of DLRIC and DSAC data per service

Regulatory environment where stakeholders are simply informed that the regulator is satisfied that the obligations have been met is likely to be less effective than one where the industry is better informed. Publication of regulatory financial statements demonstrating compliance with price controls, cost-orientation and no undue discrimination obligations provides assurance to other communications providers that the services they are buying from dominant providers are genuinely cost-oriented and non-discriminatory. Further it provides assurance to other communications providers that the regulator has sufficient information to monitor and – if necessary – enforce these obligations; and enables other

communications providers to reach their own judgements on whether they are, for example, being discriminated against by a dominant provider, and if necessary provide them with information to make an evidence-based and well-argued complaint to the regulator. The level of information to be published should be appropriate to provide confidence that an SMP provider is complying with its regulatory obligations. Just because a stakeholder might find certain information useful or interesting, it does not mean that BT should be required to publish that information in the published financial statements

Timelines

Reports are prepared annually within four months after the end of the Financial Year to which they relate.

Audit

LRIC model has not been audited since 2006/7, when the requirement for an audit was removed. Given the inherent limitations on the robustness of LRIC estimates, the regulator considered that the audit of these estimates added little additional assurance, while amounting to a significant proportion of the cost of the regulatory audit.

For FAC CCA the regulator requires BT to obtain an independent audit opinion on the regulatory statements. BT appoints/chooses the auditor and pays the auditor. The auditor reports to BT but acknowledges a duty of care to the regulator via a separate letter. BT currently uses its statutory auditor. BT has used the same auditor – PricewaterhouseCoopers – for over ten years.

Any arrangements whereby the published financial statements were audited by a party other than the statutory auditor might improve perception of the independence of the auditor. However, such an approach could lead to a higher audit fee, while a new auditor recouped the initial fixed costs of familiarising itself with BT's regulatory reporting requirements and systems. The regulator is not convinced that appointing auditors different from the statutory auditors would deliver a more effective audit.

The auditors currently provide opinions on the financial statements as a whole and on some of the individual markets. As much of regulator's and stakeholders' interest is at the product level, the regulator considered whether it might be appropriate to require audit opinions at an individual product level (at least for some of the most material items). Auditing to such a level of granularity is difficult, and would result in significant extra costs, if indeed practicable at all. It would be disproportionate to require audit to the product level.

Annex 6: Romania

Regulatory Authority:	ANCOM, Autoritatea Națională pentru Administrare și Reglementare în Comunicații
Regulations/sources used:	<p>DECISION FOR APPROVING THE REGULATION FOR THE REALIZATION, BY "ROMTELECOM" S.A., OF ACCOUNTING SEPARATION WITHIN THE INTERNAL COST ACCOUNTING SYSTEM</p> <p>http://www.ancom.org.ro/en/uploads/forms_files/800705_decision_2003_1380.pdf</p> <p>DECISION FOR APPROVING THE REGULATION FOR THE REALIZATION OF THE TOP-DOWN LONG RUN INCREMENTAL COSTING MODEL BY „ROMTELECOM” S.A.</p> <p>http://www.ancom.org.ro/en/uploads/forms_files/800710_decision_2003_1381.pdf</p>

The following characteristics were found to apply in Romania.

Principles

Accounting separation reports are created based on following models: Top-down FAC HCA, Top-down FAC CCA

The models should be constructed using following regulatory accounting principles:

- Cost causation - revenues and costs, assets and liabilities will be allocated to cost components, network elements, Businesses and Sub-businesses, in accordance with the activities which cause the revenues to be earned, the costs to be incurred, the assets to be acquired or the liabilities to be incurred. The revenues and the costs include the transfer charges between the Businesses, between the Sub-businesses and between the Businesses and the Sub-businesses
- Objectivity - allocation of costs to Businesses will be objective and will not be intended for the benefit of the Operator or of a third party, for a product, service, network element, Business or Sub-business
- Consistency of treatment - where there are changes in the regulatory accounting principles, in the methodology of cost allocation or in the accounting policies, that

have a material effect on the information included in the current Separated Financial Statements, the financial statements of the previous period will be restated, according to these changes. The effect of the above-mentioned changes upon the information included in the Separated Financial Statements is considered to be material if by non-presentation or faulty presentation of these changes the economic decisions of the users, based on the Separated Financial Statements, might be influenced.

- Transparency - the principles, the accounting policies and the methodology for cost allocation, will be transparent. Publication of the Separated Financial Statements and of the description of the costing system must ensure the observance of this principle.

Guidelines

Cost allocation

General principles and rules for cost allocations are defined by the regulator. This includes definition of direct, indirect and common costs and principles how each of these categories should be allocated to services. Examples of allocations of different assets and operating costs are described.

Asset valuation

Asset revaluation methodology is defined by the regulator. This includes options of absolute valuation, revaluation using MEA, indexation, historical valuation. Asset lives should be the same as in statutory accounts.

LRIC

LRIC methodology is defined by the regulator. This includes definition of variable costs, fixed costs, specific costs, joint costs and common costs.

WACC

Cost of capital should be calculated by multiplying the mean capital employed by WACC. WACC is determined by the regulator using Capital Asset Pricing Model. Pre-tax nominal WACC is used.

Transfer pricing

The transfer charges for network usage should be determined as the actual usage multiplied by the unitary charges for the network elements. The tariffs for the internal use of the network will be equivalent with the tariffs charged for the equivalent services provided to other operators.

Reporting

Templates of reports, list of services and the Businesses and Sub-businesses are defined by the regulator. The reports include:

- Cost of network elements
- Routing table
- Network costs of services (unit cost x routing factor)
- Profit and loss statement per business
- Mean capital employed statement per business
- Statement of transfer charges per service
- Summary of transfer charges between businesses
- Reconciliation statements

Timelines

The Separated Financial Statements will be published within 60 days starting from the publication date of the Operator's annual statutory financial statements, but in any event, not later than six months after the end of the accounting year to which they relate.

Audit

The Separated Financial Statements will be subject to audit, in compliance with the legislation in force and with the national and international audit standards. The auditor will verify:

- whether the Separated Financial Statements reflect, in all material aspects, the information contained in the accounting documents and the relevant financial statements of the Operator
- whether the Separated Financial Statements have been prepared in compliance with the provisions of this regulation
- whether the procedures for collection and processing of accounting information as well as the evaluation and allocation methodologies used for the preparation of the Separated Financial Statements are consistent with the methodology for the calculation and accounting separation of the costs, revenues and capital employed which accompanies the Separated Financial Statements

The auditor will be chosen based upon his resources and experience in such a way as to ensure a high level quality of the audit of the Separated Financial Statements.

Annex 7: Ireland

Regulatory Authority :	ComReg, Commission for Communications Regulation
Regulations/sources used:	<p>Accounting Separation and Publication of Financial Information for Telecommunications Operators</p> <p>Decision Notice D9/00 https://www.comreg.ie/media/dlm_uploads/2015/12/odtr0059.pdf</p> <p>Response to Consultation Document No. 09/75 and Final Direction and Decision: Accounting Separation and Cost Accounting Review of Eircom Limited</p> <p>Decision No. D08/10 https://www.comreg.ie/publication-download/response-to-consultation-document-no-0975-and-final-direction-and-decision-accounting-separation-and-cost-accounting-review-of-eircom-limited</p> <p>Eircom Historical Cost Separated Accounts for the year ended June 30, 2016 https://www.eir.ie/.content/pdf/regulatoryinformation/HCA_Accounts_2016.pdf</p> <p>Eircom Annual Report for the year ended June 30, 2016 https://www.eir.ie/opencms/export/.content/pdf/IR/reports/2015_2016/quarter4/eir_4th_quarter_and_full_year_results_to_30_June_2016_annual_bond_document_1.pdf</p>

The following characteristics were found to apply in Ireland.

Principles

Accounting separation reports are created based on following models: Top-down FAC HCA, Top-down FAC CCA

The models should be constructed using following regulatory accounting principles:

- Cost causality
- Objectivity
- Consistency
- Transparency

Guidelines

Cost allocation

General principles and rules for cost allocations are defined by the regulator. This includes definition of direct, indirect and common costs and principles how each of these categories should be allocated to services. Minimum list of cost categories is also defined.

WACC

Cost of capital should be calculated by multiplying the mean capital employed by WACC. WACC is determined by the regulator using Capital Asset Pricing Model. Pre-tax nominal WACC is used.

Transfer pricing

The transfer charges for internal usage should be determined as the product of usage and unit charges. The charge for internal usage should be equivalent to the charge that would be levied if the product or service were sold externally rather than internally. If there is no direct equivalent Eircom must consider if there is a "nearest equivalent". This would represent a price or combination of prices from Eircom's price lists which most closely represent the technical capabilities of a service or product as if it were an external transaction. Where there is neither a direct equivalent nor a nearest equivalent charge Eircom will then use cost based transfers. This would arise where services are provided within Eircom that are not available to other operators.

Reporting

Templates of reports and list of services are defined by the regulator. The reports include:

- Cost of network elements
- Routing table
- Network costs of services (unit cost x routing factor)

- Profit and loss account per business
- Mean capital employed per business
- Statement of transfer charges

Reports for non-regulated markets are not published, only submitted to the regulator.

Separated accounts shall contain comparative information. Where there are material changes to Regulatory Accounting Principles, Cost Allocation Methodology, Attribution Methods, or to Accounting Policies that have a material effect on the information reported in the separated accounts, the parts of the previous year's separated accounts affected by the changes shall be restated.

Reconciliation with financial accounts

Separated Accounts be reconciled to the statutory financial statements identifying all items (revenue and costs) relating to non regulated businesses and other items which are not relevant to the accounting period that have been excluded from the Separated Accounts.

Timelines

HCA Separated Accounts are to be published within five months after the financial period end, CCA Separated Accounts are to be published within six months after the financial period end.

Audit

The separated accounts shall be subject to an audit, in accordance with the relevant rules of Irish legislation. The auditor should:

- Verify compliance with the requirements of the Decision Instrument
- Review the accounting documentation on an annual basis
- Audit the separated accounts and additional financial information
- Conduct an audit of Eircom's cost allocation systems in accordance with the principles and guidance set out by bodies representative of the Irish accountancy profession
- Review processes and procedures employed by Eircom
- Review statistical sampling processes employed to identify volumes and/or revenues.

The audit report on the separated accounts shall state:

- Whether the separated accounts are fairly presented in accordance with eircom's Accounting Documents
- Whether the Separated Accounts comply with the Decision Instrument
- Whether the Separated Accounts comply with processes and procedures
- Whether the cost allocation and apportionment processes are appropriate

Separate audit opinions should be issued on the HCA and the CCA Separated Accounts.

Auditor is selected by the operator and approved by the regulator. Regulator can appoint its own independent auditor. Regulatory auditor is the same as the statutory auditor. The latest regulatory separated accounts of Eircom which were audited are regulatory separated accounts for year ended June 30, 2016. The audit report is dated 30 November 2016. The regulatory audit was performed by PricewaterhouseCoopers. The statutory audit of the financial accounts of Eircom for the year ended June 30, 2016 was performed also by PricewaterhouseCoopers.

Annex 8: Finland

Regulatory Authority:	FICORA, Finnish Communications Regulatory Authority / Viestintävirasto
Regulations/sources used:	<p>Määräyksen 55 perustelut ja soveltaminen</p> <p>Teleyrityksen kustannuslaskentajärjestelmästä ja järjestelmän kuvauksesta</p> <p>(Justification and application of Rule 55 The telecommunications operator's cost accounting system and system description)</p> <p>https://www.viestintavirasto.fi/attachments/maatarkastukset/Maarayksen_55_perustelut_ja_soveltaminen.pdf</p> <p>Määräyksen 56 perustelut ja soveltaminen</p> <p>Kustannuslaskentajärjestelmän tarkastuksesta teleyrityksessä</p> <p>(Justification and application of Rule 56 Inspection of the cost accounting system at the telecommunications operator)</p> <p>https://www.viestintavirasto.fi/attachments/maatarkastukset/Maarayksen_56_perustelut_ja_soveltaminen.pdf</p> <p>VIESTINTÄVIRASTON TELEYRITYSTEN KUSTANNUSLASKENTAJÄRJESTELMISTÄ JA JÄRJESTELMIEN KUVAUKSISTA ANTAMAN MÄÄRÄYKSEN (55 A/2009 M) PERUSTELUMUISTIO</p> <p>(TELECOMMUNICATIONS AGENCY EXPLANATORY MEMORANDUM ON COST ACCOUNTING SYSTEMS AND DESCRIPTION OF THE SYSTEM (55 A / 2009 M))</p> <p>https://www.viestintavirasto.fi/attachments/maatarkastukset/MPS55.pdf</p> <p>VIESTINTÄVIRASTON KUSTANNUSLASKENTAJÄRJESTELMIEN TARKASTUKSISTA ANTAMAN MÄÄRÄYKSEN (56 A/2009 M) PERUSTELUMUISTIO</p>

	(TELECOMMUNICATIONS AGENCY EXPLANATORY MEMORANDUM ON PROVISIONS CONCERNING INSPECTIONS OF COST ACCOUNTING SYSTEMS (56 A/2009 M)) https://www.viestintavirasto.fi/attachments/maaraykset/MPS56.pdf
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The following characteristics were found to apply in Finland.

Principles

Accounting separation reports are created based on following models: Top-down FAC CCA

The models should be constructed using following regulatory accounting principles:

- Cost causality

Guidelines

Cost allocation

General principles and rules for cost allocations are defined by the regulator.

Asset valuation

Asset revaluation methodology is defined by the regulator.

Reporting

Templates of reports are defined by the regulator. The reports include:

- Total cost of network elements
- Unit cost per minute of traffic (core network) or per line (access network)
- Description of the cost accounting system which shall provide a true and fair view of the cost accounting system used by the telecommunications operator. The description of the cost accounting system should describe step by step the process by which the telecommunications operator establishes product costs. The description of the cost accounting system should clarify how the replacement cost and present value have been established. The description of the cost accounting system shall also include a statement of the telecommunications operator's use of separate calculation models outside the accounting system such as time recording systems and asset management accounting systems.

Reconciliation with financial accounts

Results have to be reconciled with accounting records.

Timelines

The telecommunications operator must submit the results of cost accounting for key regulated products to the regulator annually no later than the end of August after the end of the financial year.

Audit

The results of cost accounting have to be audited. The auditor is chosen by the telecommunications operator. The audit should state:

- Whether the description of the telecommunications operator's cost accounting system provides a true and fair view of how the company's costs have been split step-by-step from the events recorded in the bookkeeping and other background information up to the cost of an individual regulated product.
- Whether there is a clear link between the telecommunications operator's cost accounting system and the pricing of regulated products. If the telecommunications operator has not set the price of the regulated product on the basis of the cost calculation or if the unit cost indicated by the cost calculation differs clearly from the price of the regulated product, the auditor should ascertain the basis on which the telecommunications operator has determined the price of the product and the criteria in the audit report.
- On which information sources are the figures (technical and financial) presented in the calculations based.
- Auditor's findings and the shortcomings identified during the audit.
- The methods and the extent to which the audit has been carried out.

Annex 9: Bulgaria

Regulatory Authority:	CRC, Communications Regulation Commission
Regulations/sources used:	<p>Окончателното решение относно определените форма и методология за въвеждане и прилагане на разделно счетоводство (The final decision on the defined form and methodology for introducing and applying separate accounting) http://www.crc.bg/files/bg/reshenie_1882.pdf</p> <p>Приложението към решението (The appendix to the decision) http://www.crc.bg/files/bg/RA_Methodology_final.pdf</p> <p>Резултатите от проведените обществени обсъждания с отразените становища и позицията на КРС (The results of the public consultation with the views and positions of the CRC) http://www.crc.bg/files/bg/ConsDoc.pdf</p> <p>ПУБЛИЧНА ВЕРСИЯ НА ДОКЛАД ЗА КОНСТАТАЦИИ в изпълнение на договор за възлагане на обществена поръчка № 03-08-28/26.06.2015 г. с предмет: „Проверка за прилагането на одобрената от Комисия за регулиране на съобщенията система за определяне на разходите на „Българска телекомуникационна компания“ ЕАД за 2012 и 2013 финансови години ” (PUBLIC VERSION OF THE REPORT ON FINDINGS in execution of contract no. 03-08-28 / 26.06.2015 with subject: "Verification of the implementation of the system approved by the Communications Regulation Commission for determining the costs of" Bulgarian Telecommunications Company EAD for 2012 and 2013 financial years") http://www.crc.bg/files/bg/Prilojenie- Reports on factual findings - Public Version.pdf</p>

	<p>BULGARIAN TELECOMMUNICATIONS COMPANY EAD</p> <p>CONSOLIDATED AND SEPARATE FINANCIAL STATEMENTS CONSOLIDATED AND SEPARATE ANNUAL ACTIVITIES REPORT INDEPENDENT AUDITOR'S REPORT</p> <p>31 December 2013</p> <p>https://s2.vivacom.bg/files/financial_reports/34/document/(31.12.13)%20Consolidated%20and%20Separate%20Financial%20Statements%20of%20BTC%20for%202013%20(published%20on%20March%202004,%202014).pdf</p>
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The following characteristics were found to apply in Bulgaria.

Principles

Accounting separation reports are created based on following models: Top-down FAC HCA, Top-down FAC CCA

The models should be constructed using following regulatory accounting principles:

- Priority - If there is a conflict between the requirements of some or any of these regulatory accounting principles, they should be applied in the order of priority set out in this document.
- Definitions - A concept or explanation used in accounting documents should have the same meaning as they have in authorizations for the provision of electronic communications networks and / or services, except when the context requires otherwise.
- Causality - Revenues (including transfer revenues), costs (including transfer costs), assets and liabilities should be allocated to the cost components, services and business units or their disaggregated activities according to the causal relationship between the activities and services which leads to generation of the revenues or costs.
- Objectivity - The allocation process should be objective and not provide any benefits for the undertaking with significant market power or other undertaking, product, service, component, business unit or their disaggregated activities.
- Consistency - There should be consistency in the accounting treatment of information over the years. When there are significant changes in regulatory accounting principles and allocation methods and / or accounting policies that affect the information in the business units' regulatory reports, parts of the regulatory reporting for previous years affected by the change should be restated reflecting the change.
- Transparency - The allocation methods used should be transparent. Costs and revenues that are directly attributable to services, business units or activities should

be explicitly distinguished from those to be distributed. The distribution bases applied should be described in detail.

Guidelines

Cost allocation

General principles and rules for cost allocations are defined by the regulator. This includes definition of direct, indirect and common costs and principles how each of these categories should be allocated to services. Minimum list of cost categories is also defined. Examples of allocations of different assets and operating costs are described.

Asset valuation

Asset revaluation methodology is defined by the regulator. This includes options of absolute valuation, revaluation using MEA, indexation, historical valuation.

WACC

Cost of capital should be calculated by multiplying the mean capital employed by WACC. WACC is determined by the regulator using Capital Asset Pricing Model. Pre-tax nominal WACC is used.

Transfer pricing

Transfer costs and revenues should be presented per unit of product / service. The cost of a service provided by one business unit to another (intra-company provision of services on the retail market from the wholesale market) is determined to be equivalent to the revenue that an enterprise would receive if it provided it to an alternative enterprise. The way of determining the transfer price of the service should be consistent over the years.

Reporting

Templates of reports, list of services and markets and business units are defined by the regulator. The reports include:

- Profit and Loss statements per business units
- Operating expenses per business unit
- Capital employed per business units
- Average price per services
- Transfer charges between business units
- Reconciliation statement

Reconciliation with financial accounts

Results have to be reconciled with statutory financial statements. Separated accounts should be based on IFRS.

Timelines

Accounting separation for each financial year should be submitted to the regulator on 30 June of the following year.

Audit

The regulator assigns an independent auditor to audit the results of cost accounting. Regulatory auditor is different from the statutory auditor. The latest cost accounting results of Bulgarian Telecommunications Company which were audited are regulatory separated accounts for year 2013. The audit was performed in year 2015 by Deloitte. The statutory audit of the financial accounts of Bulgarian Telecommunications Company for the financial year 2013 was performed by KPMG.

Annex 10: Sweden

Regulatory Authority:	PTS, Post- och telestyrelsen
Regulations/sources used:	Draft Model Reference Paper (rev c) Guidelines for the LRIC bottom-up and top-down models https://www.pts.se/upload/Remisser/2010/Draft-MRP-2010-02-04.pdf

The following characteristics were found to apply in Sweden.

Principles

In Sweden, there is no accounting separation. This is the reason why the text in this chapter does not cover all topics mentioned in other benchmarked countries.

In Sweden the regulator creates hybrid model based on bottom-up and top-down LRIC which is used to set regulated wholesale prices.

Guidelines

Cost allocation

General principles and rules for cost allocations are defined by the regulator. This includes definition of direct, indirect and common costs and principles how each of these categories should be allocated to services.

Asset valuation

Asset revaluation methodology is defined by the regulator. This includes options of absolute valuation, revaluation using MEA, indexation, historical valuation. Asset lives should be the same as in statutory accounts.

LRIC

LRIC methodology is defined by the regulator. This includes definition of variable costs, fixed costs, specific costs, joint costs and common costs. Construction of CVRs is described.

WACC

Cost of capital should be calculated by multiplying the mean capital employed by WACC. WACC is determined by the regulator using Capital Asset Pricing Model. Pre-tax nominal WACC is used.

Reporting

List of services is defined by the regulator.

Reconciliation with financial accounts

Model results should be reconciled with audited statutory accounts.

Annex 11: Czech Republic

Regulatory Authority:	CTO, Czech Telecommunication Office / Český telekomunikační úřad
Regulations/sources used:	<p>Opatření obecné povahy č. OOP/4/03.2006-3, kterým se stanoví metodika účelového členění nákladů a výnosů a jejich přiřazování a určuje se struktura vykazovaných informací.</p> <p>(Measure of a general nature OOP / 4 / 03.2006-3 which establishes the methodology for the purpose driven breakdown of costs and revenues and their assignment and defines the structure of reported information)</p> <p>https://www.ctu.cz/sites/default/files/obsah/ctu-online/74041/soubory/oop-04-03.2006-3.pdf</p> <p>Opatření obecné povahy č. OOP/4/02.2008-1, kterým se mění opatření obecné povahy č. OOP/4/03.2006-3, kterým se stanoví metodika účelového členění nákladů a výnosů a jejich přiřazování a určuje se struktura vykazovaných informací.</p> <p>(Measure of a general nature OOP/4/02.2008-1 which changes the measure of a general nature OOP / 4 / 03.2006-3 which establishes the methodology for the purpose driven breakdown of costs and revenues and their assignment and defines the structure of reported information)</p> <p>https://www.ctu.cz/sites/default/files/obsah/ctu-online/74041/soubory/oop040220081.pdf</p> <p>Opatření obecné povahy č. OOP/4/12.2011-19, kterým se mění opatření obecné povahy č. OOP/4/03.2006-3, kterým se stanoví metodika účelového členění nákladů a výnosů a jejich přiřazování a určuje se struktura vykazovaných informací, ve znění opatření obecné povahy č. OOP/4/02.2008-1.</p> <p>(Measure of a general nature OOP/4/12.2011-19 which</p>

	<p>changes the measure of a general nature OOP / 4 / 03.2006-3 which establishes the methodology for the purpose driven breakdown of costs and revenues and their assignment and defines the structure of reported information as amended by measure of a general nature OOP/4/02.2008-1)</p> <p>https://www.ctu.cz/sites/default/files/obsah/ctu-online/74041/soubory/oop04-122011-19.pdf</p> <p>Opatření obecné povahy č. OOP/4/11.2012-15, kterým se mění opatření obecné povahy č. OOP/4/03.2006-3, kterým se stanoví metodika účelového členění nákladů a výnosů a jejich přiřazování a určuje se struktura vykazovaných informací, ve znění opatření obecné povahy č. OOP/4/02.2008-1 a č. OOP/4/12.2011-19.</p> <p>(Measure of a general nature OOP/4/11.2012-15 which changes the measure of a general nature OOP / 4 / 03.2006-3 which establishes the methodology for the purpose driven breakdown of costs and revenues and their assignment and defines the structure of reported information as amended by measure of a general nature OOP/4/02.2008-1 and OOP/4/12.2011-19)</p> <p>https://www.ctu.cz/cs/download/oop/oop_04/oop_04-11_2012-15.pdf</p> <p>Opatření obecné povahy č. OOP/4/08.2013-3, kterým se mění opatření obecné povahy č. OOP/4/03.2006-3, kterým se stanoví metodika účelového členění nákladů a výnosů a jejich přiřazování a určuje se struktura vykazovaných informací, ve znění opatření obecné povahy č. OOP/4/02.2008-1, opatření obecné povahy č. OOP/4/12.2011-19 a opatření obecné povahy č. OOP/4/11.2012-15.</p> <p>(Measure of a general nature OOP/4/08.2013-3 which changes the measure of a general nature OOP / 4 / 03.2006-3 which establishes the methodology for the purpose driven breakdown of costs and revenues and their assignment and defines the structure of reported information as amended by measure of a general nature OOP/4/02.2008-1, measure of a general nature OOP/4/12.2011-19 and measure of a general nature OOP/4/11.2012-15)</p>
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	<p>https://www.ctu.cz/cs/download/oop/oop_04/oop_04-08_2013-03.pdf</p> <p>Opatření obecné povahy č. OOP/4/09.2014-6, kterým se stanoví metodika účelového členění nákladů a výnosů a jejich přiřazování a určuje se struktura vykazovaných informací.</p> <p>(Measure of a general nature OOP/4/09.2014-6 which establishes the methodology for the purpose driven breakdown of costs and revenues and their assignment and defines the structure of reported information)</p> <p>https://www.ctu.cz/cs/download/oop/oop_04/oop_04-09_2014-06.pdf</p> <p>Opatření obecné povahy č. OOP/4/12.2015-7, kterým se mění opatření obecné povahy č. OOP/4/09.2014-6, kterým se stanoví metodika účelového členění nákladů a výnosů a jejich přiřazování a určuje se struktura vykazovaných informací.</p> <p>(Measure of a general nature OOP/4/12.2015-7 which changes the measure of a general nature OOP/4/09.2014-6 which establishes the methodology for the purpose driven breakdown of costs and revenues and their assignment and defines the structure of reported information)</p> <p>https://www.ctu.cz/sites/default/files/obsah/ckeditor/oop_04-12_2015-07.pdf</p>
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The following characteristics were found to apply in the Czech Republic.

Principles

Accounting separation reports are created based on following models: Top-down FAC HCA, Top-down FAC CCA

The models should be constructed using following regulatory accounting principles:

- Objectivity
- Efficiency
- Transparency
- Use of Activity Based Costing

Guidelines

Cost allocation

General principles and rules for cost allocations are defined by the regulator. This includes definition of direct, indirect and common costs and principles how each of these categories should be allocated to services.

Asset valuation

Asset revaluation methodology is defined by the regulator. This includes options of absolute valuation, revaluation using MEA, indexation, historical valuation.

WACC

Cost of capital should be calculated by multiplying the mean capital employed by WACC. WACC is determined by the regulator using Capital Asset Pricing Model. Pre-tax nominal WACC is used. Higher WACC for fibre access network is calculated.

Reporting

Templates of reports and list of network elements and reported services are defined by the regulator. The reports include:

- Profit and Loss statement per service
- Service costs composition – costs of network elements, activities
- Network element costs and capital employed
- Common costs – values of predefined components
- Other costs and revenues – penalties, sale of assets, financial costs etc.

Audit

Accounting separation reports are not audited. The operator has to submit together with the accounting separation reports also the statutory financial reports and the report from the statutory audit.

Annex 12: Evaluation of operators' remarks and inputs

We had a meeting with the Turkish operators on 11th of September 2017 where we introduced the project to them and asked them for their inputs. The operators sent their inputs in writing after the meeting. In this Annex, we briefly comment on the inputs received.

Vodafone

Vodafone asked for:

- Reaction from ICTA that their reports are in alignment with the legislation.
- A guideline for the distribution of common expenses to different services (i.e. voice/data/sms) and an identification of a common conversion key between voice/data/sms.
- A period for adaptation for the preparation of 2017 reports in 2018 if there is going to be a change in the legislation.
- Clarification as to whether the underlying financial statements used for accounting separation and cost accounting should be statutory or IFRS.

Our reaction:

Based on the request from Vodafone we propose to clarify in the accounting separation guidelines that the accounting separation should be based on national statutory financial accounting and to add a description of the allocation of common costs and conversion of different traffic types (voice, sms, data) into common unit.

Because no significant changes are planned, the adaptation period is not necessary. ICTA is not required to confirm to Vodafone, that their reports are in line with the requirements but we recommend that from now on, the process of audits and compliance reviews leads to a clear communication of conclusions.

Türk Telekom

Türk Telekom provided the following feedback:

- Pre-tax nominal WACC should be used.
- Findings from academic papers in determining Market Risk Premium should be used.
- Costs other than interest such as commission and insurance premiums should be included in cost of debt calculation.
- Market value of equity should be used in WACC calculation.
- Risk premium for NGA based products should be added.
- Operators should calculate their WACC ratios.

Our reaction:

We agree that pre-tax nominal WACC should be used. We agree that if some commissions and insurance premiums have to be paid when taking debt, these should be included in the cost of debt. It is not clear which findings from academic papers should be used to determine the market risk premium, so we cannot react on this point. We agree that market value of equity should be used in WACC calculation. We do not think that a risk premium for NGA is necessary. NGA products are already established in the market and the operators can assess the demand and prices which they can achieve. New investment in copper is no less risky than new investment in fibre. Of course new investment in fibre is more risky than using existing copper, because when using existing copper no investment is needed. So the risk is simply connected to any new investment and not to the usage of copper or fibre. We do not agree that operators should calculate their WACC.

Turkcell

Turkcell prepared the following written comments.

As is known, competition in the Turkish fixed broadband market is still far from the desired level. According to ICTA 2017 Q2 Market Report; Turk Telekom Group dominates the fixed broadband market with 67 % subscriber market share and has a market share of 74 % in xDSL product which is currently the only regulated fixed broadband technology. Turk Telekom Group has the highest market share among European incumbents. As an inevitable consequence, Turkey remains the last in OECD rankings in terms of market indicators such as fixed broadband competition and penetration levels, speed, high-speed broadband penetration, etc.

In order for Turkey to reach its tough national broadband targets, broadband penetration and speed compatible with European countries, there is a need to focus on regulations that will promote both competition and next generation network investments in the fixed broadband market. Nevertheless, it is of great importance that regulations are transparent, fair and predictable and that periodic regulatory impact analyses are carried out to assess the effects/contribution on the market. Otherwise, regulations may have different results from their intended purpose. As a matter of fact, the implementation of "fiber regulatory holiday" decision is a concrete example for this kind of situation. Fiber regulatory holiday, which is still implemented in practice although the 5 years duration has expired at the end of October 2016, has not motivated Turk Telekom to increase its investments to desired level.

As explicitly stated in the Recommendation of the EU Commission entitled "Consistent non-discrimination obligations and costing methodologies to promote competition and enhance the broadband investment environment"; attention should be paid to the following aspects in the policies and regulations to be implemented, in order to ensure sector development and sustainability, promote all operators to invest and increase broadband penetration;

Encouraging alternative operators to take advantage of scope and scale economies by taking them to the upper steps in the investment ladder (Adoption of access methods such as VULA instead of approaches that encourage the Resell or sale of non-naked broadband

services)

Evaluation of current wholesale access pricing with “ladder of investment” perspective in the fixed broadband market,

Ensuring that the retail tariffs of the incumbent operator are technically and economically replicable,

Transparent and close supervision of incumbent operator’s obligations such as non-discrimination and quality of service

Otherwise; the vertically integrated incumbent operator in Turkey may pose anti-competitive behavior through either price discriminatory or non-price discriminatory activities, and possible changes on wholesale tariffs may result in devastating consequences for alternative operators; may even cause them to exit the market.

Opinions on Cost Methodologies and Weighted Average Cost of Capital (WACC):

Country specific conditions such as penetration and competition level in the market should be taken into consideration by regulators while defining the costing methodologies. Different costing methods, which play an important role in defining wholesale access fees, are being used by European telecoms regulators. Indeed, regulators’ choice for costing methodologies is both a technical and strategic decision involving the evaluation of parameters such as consumer welfare, competition and investments.

BEREC states in its “Regulatory Accounting in Practice 2016” benchmark report that, strict cost orientation is a commonly used instrument in Europe to promote competition, stimulate investments and increase consumer welfare.

As WACC calculations to be made are specific for each company and may change according to company financials, the costs of the related technology should be calculated by examining the related company's infrastructure building methods.

In Turkey, Turk Telekom has crucial economic and operational advantages in fiber infrastructure when compared to alternative operators. Since Turk Telekom is building its fiber network also via replacing its current copper lines with fiber, Turk Telekom is not subject to very high permit and construction costs that alternative operators are being exposed to while building from scratch. Also, Turk Telekom gets additional economic benefit from the scrap copper that is exchanged with fiber.

According to European WACC calculation benchmarks, it has been observed that Bitstream / LLU access products have the same WACC level while fiber access products’ WACC might be calculated by applying a risk premium depending on the choice of regulators.

Regarding WACC calculations, Turkcell believes that the relevant cost components should be analyzed in detail and published transparently.

Our reaction:

The first part of Turkcells comments is related to market analysis and definition of remedies which is not relevant for accounting separation. The accounting separation is used to set cost based prices, so it is in line with strict cost orientation as Turkcell requires. We do not agree that WACC calculations should be influenced by the company's infrastructure building methods. WACC deals with costs of obtaining capital and not with the usage of capital. The difference in costs for building fibre network is reflected in the service costs through the allocation of the real costs from financial accounts to services and not through changes in WACC. We do not think that a risk premium for NGA should be applied. NGA products are already established in the market and the operators can assess the demand and prices which they can achieve. New investment in copper is not less risky than new investment in fibre. Of course new investment in fibre is more risky than using existing copper, because when using existing copper no investment is needed. So the risk is simply connected to any new investment and not to the usage of copper or fibre.

Turknet

Turknet provided the following inputs:

Turknet said that WACC is the key element in setting wholesale access tariffs. It added following points about necessity of differentiation of WACC in legacy networks and NGAs.

- The investment costs derive from NGA rollout and NGA related risks, should not affect legacy network products's prices, LLU. Accordingly, NGA networks need a higher WACC than legacy copper networks.
- NGA networks' encompasses different technologies and configurations, including FTTC, FTTB and FTTH. Because of the different cost of capital for each configuration, WACC should also differ.
- Additionally, we would like to highlight that Türk Telekom's NGA network implementation method is mainly replacing copper cable with the fiber in the same duct. Therefore, investment cost of NGA in brownfield is lower than greenfield areas, it should be considered, in WACC calculations.

Our reaction:

We do not think that risk premium for NGA should be applied. NGA products are already established in the market and the operators can assess the demand and prices which they can achieve. New investment in copper is not less risky than new investment in fibre. Of course new investment in fibre is more risky than using existing copper, because when using existing copper no investment is needed. So the risk is simply connected to any new investment and not to the usage of copper or fibre. We do not agree that WACC calculations should be influenced by NGA configurations (FTTC, FTTB, FTTH) and by the NGA network implementation method. WACC deals with costs of obtaining capital and not with the usage of capital. The difference in costs for building fibre network is reflected in the service costs through the allocation of the real costs from financial accounts to services and not through changes in WACC.

Annex 13: Examples of different approaches to WACC from across the EU

Approach to WACC across EU

All NRAs in EU member states use nominal pre-tax WACC to calculate the cost of capital. The cost of capital is calculated as mean capital employed multiplied by the nominal pre-tax WACC.

All NRAs in EU member states use Capital Asset Pricing Model (CAPM) to calculate the cost of equity.

However the determination and the values of the individual parameters differ between the EU member states. The individual parameters are as follows:

- Risk free rate
- Cost of debt
- Beta
- Market risk premium
- Gearing

Risk free rate

The Risk free rate is the expected return of an asset, which bears in theory no risk at all. For the risk free rate NRAs in EU member states usually use the average of a mid to long term time line of interest of country bond. Within this common methodology following options exist:

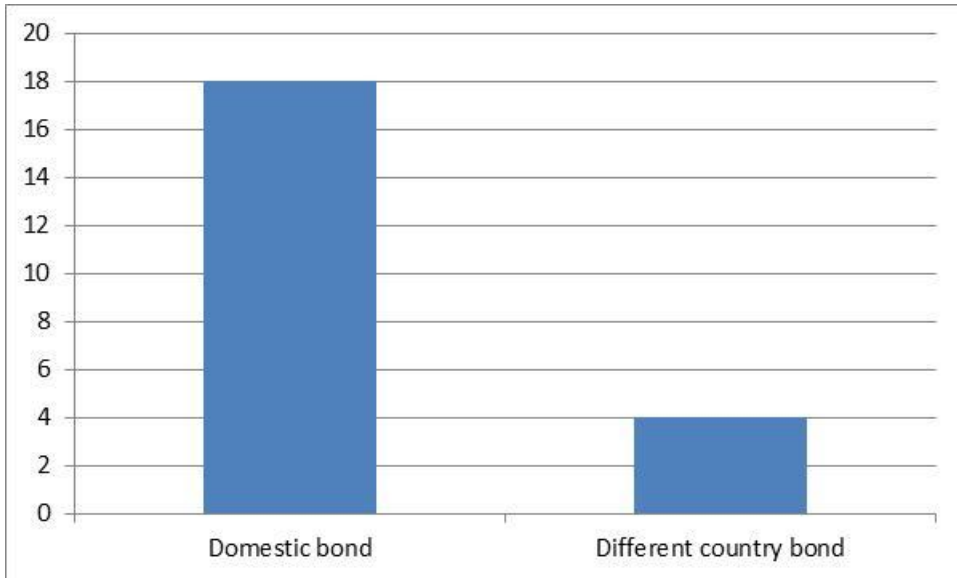
- Domestic or different country bond
- Length of the bond
- Sampling frequency (daily, weekly, monthly)
- Length of the series included in the average
- Type of average (arithmetic, moving average, median)

Fixed market

The risk free rate overview below describes the options used by NRAs in EU member states when calculating the risk free rate for the year 2015.

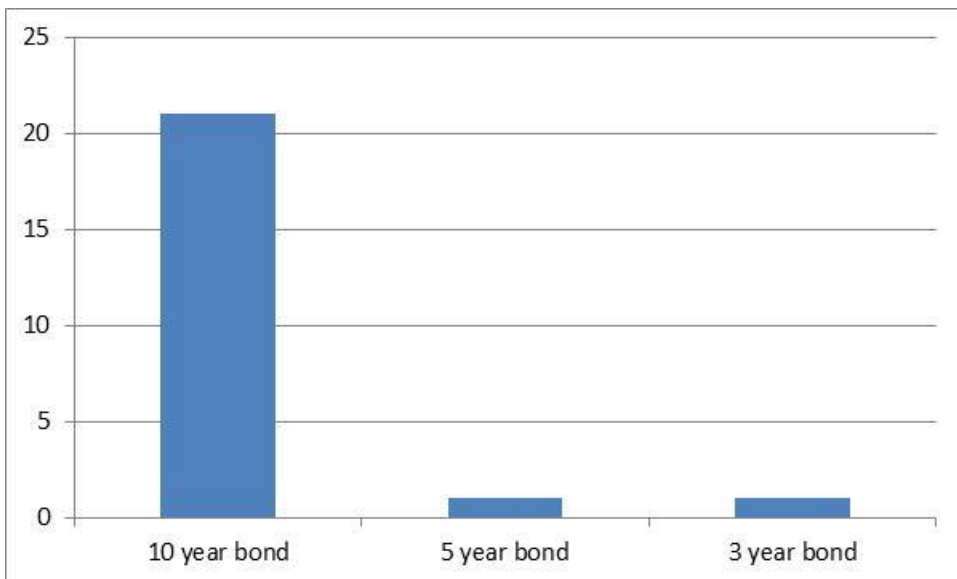
Domestic or different country bond:

- 18 countries use domestic bond
- 4 countries use different country bond – German or average Eurozone government bonds



Length of the bond:

- 21 countries use 10 year bond
- 1 country uses 3 year bond
- 1 country uses 5 year bond



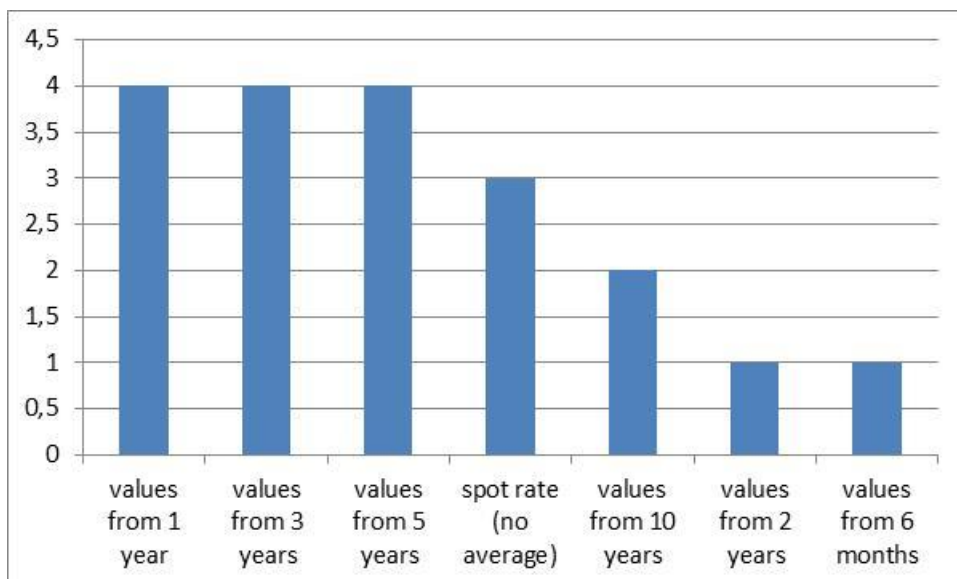
Sampling frequency:

- 11 countries use daily values
- 7 countries use monthly values



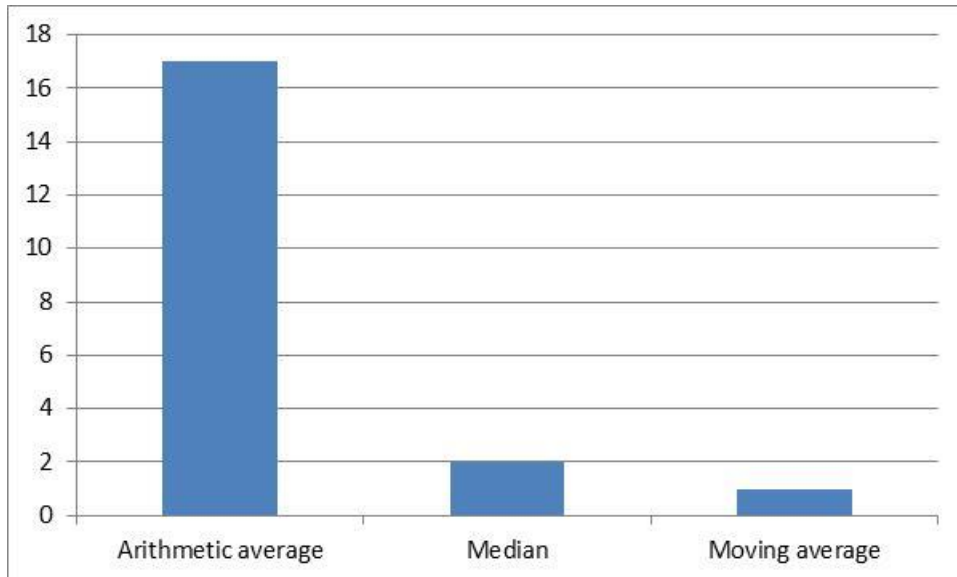
Length of the series included in the average:

- 4 countries use values from 1 year
- 4 countries use values from 3 years
- 4 countries use values from 5 years
- 3 countries use spot rate (no average)
- 2 countries use values from 10 years
- 1 country uses values from 2 years
- 1 country uses values from 6 months



Type of average:

- 17 countries use arithmetic average
- 2 countries use median
- 1 country uses moving average



Fixed market results for risk free rate used in WACC calculations by NRAs in EU member states for the year 2015:

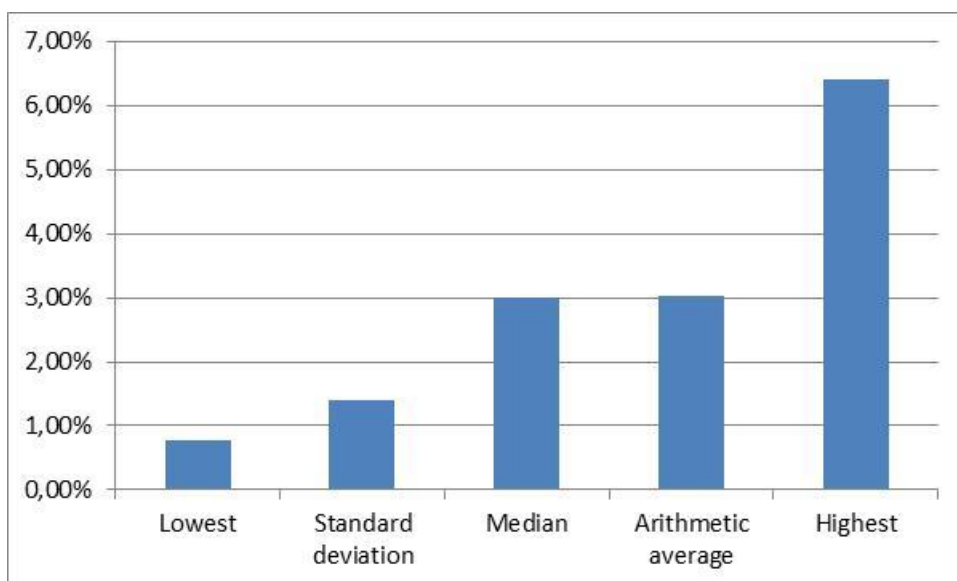
Lowest 0.77%

Highest 6.41%

Arithmetic average 3.03%

Median 3%

Standard deviation 1.4%

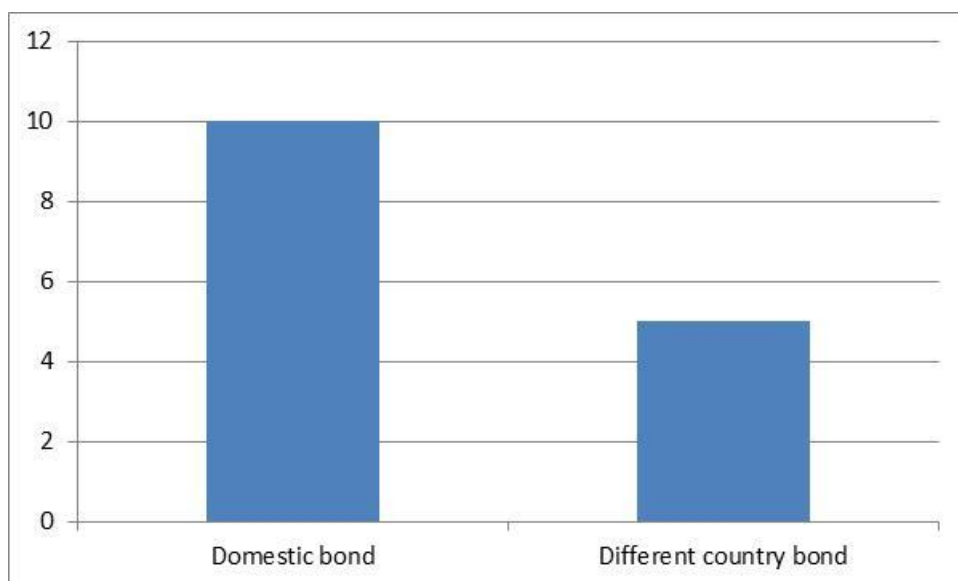


Mobile market

The risk free rate overview below describes the options used by NRAs in EU member states when calculating the risk free rate for the year 2015.

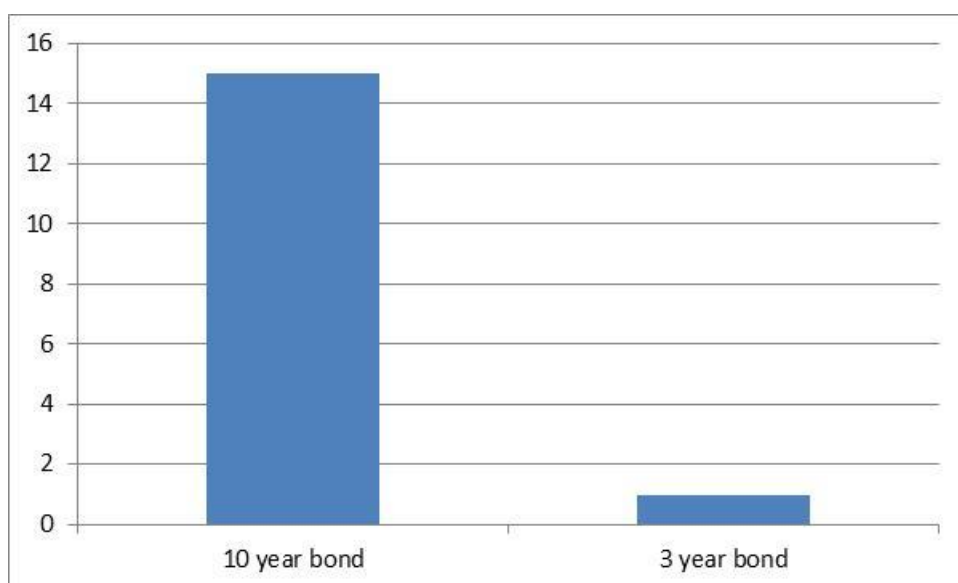
Domestic or different country bond:

- 10 countries use domestic bond
- 5 countries use different country bond



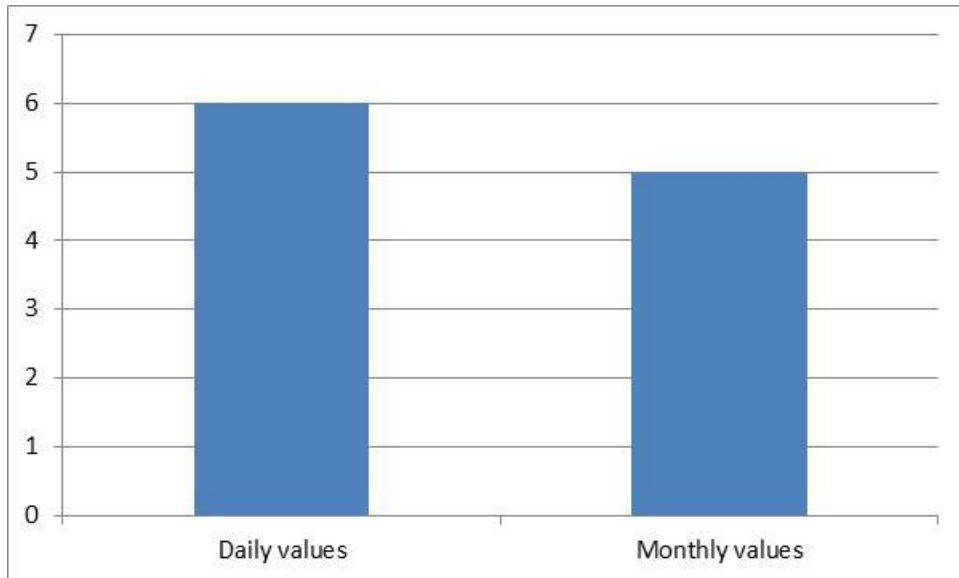
Length of the bond:

- 15 countries use 10 year bond
- 1 country uses 3 year bond



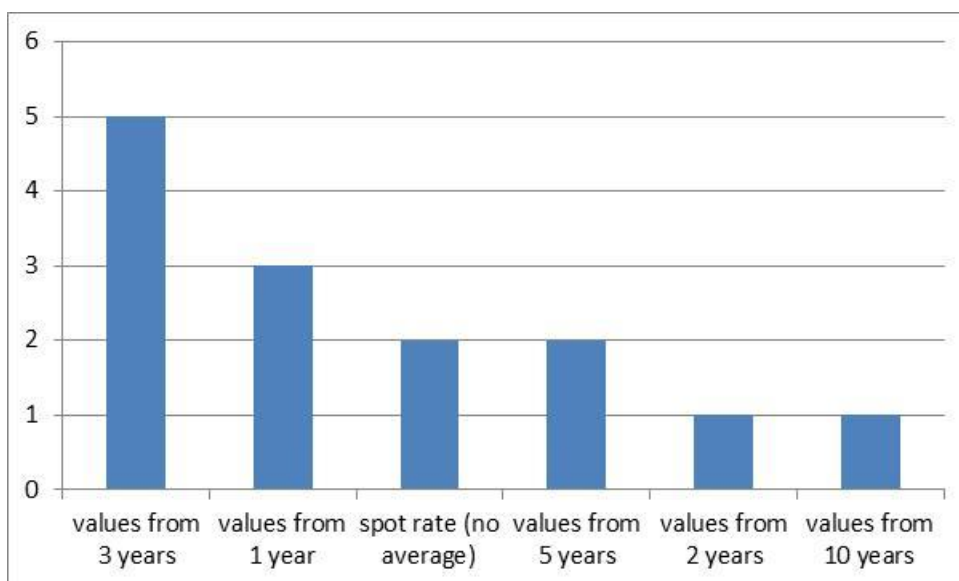
Sampling frequency:

- 6 countries use daily values
- 5 countries use monthly values



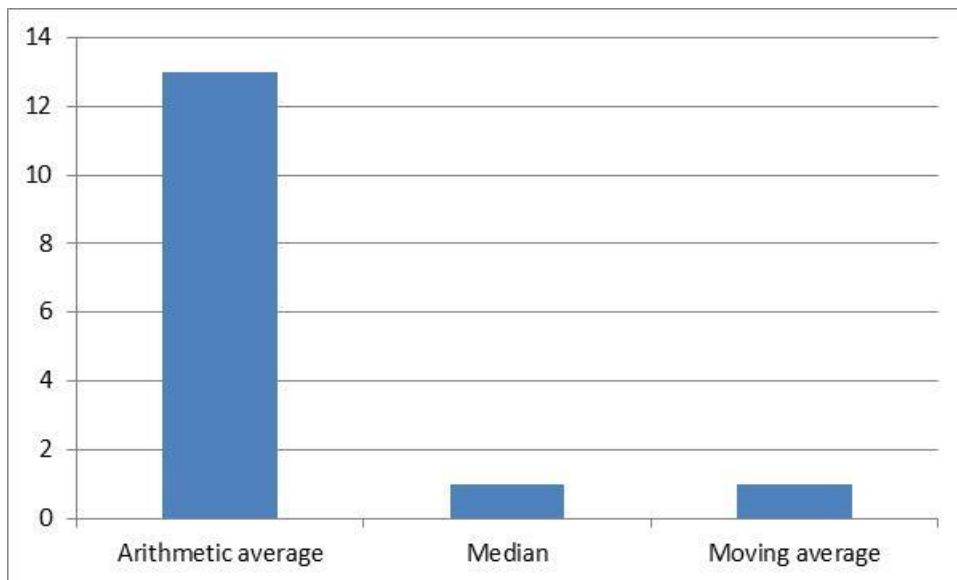
Length of the series included in the average:

- 5 countries use values from 3 years
- 3 countries use values from 1 year
- 2 countries use spot rate (no average)
- 2 countries use values from 5 years
- 1 country uses values from 2 years
- 1 country uses values from 10 years



Type of average:

- 13 countries use arithmetic average
- 1 country uses median
- 1 country uses moving average



Mobile market results for risk free rate used in WACC calculations by NRAs in EU member states for the year 2015:

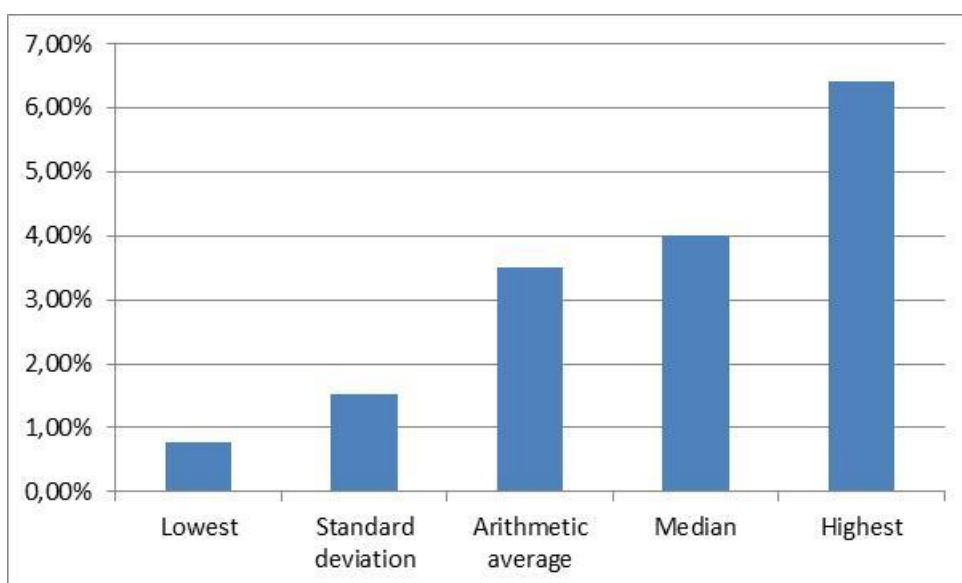
Lowest 0.77%

Highest 6.41%

Arithmetic average 3.50%

Median 4%

Standard deviation 1.52%



Cost of debt

The cost of debt is the cost that a company pays to finance its activities by third party capital (bond, bank loan etc.).

The pre-tax cost of debt can be estimated using directly the corporate bond yields or as a sum of two variables the risk-free rate and the debt risk premium. Following options for calculating the cost of debt exist:

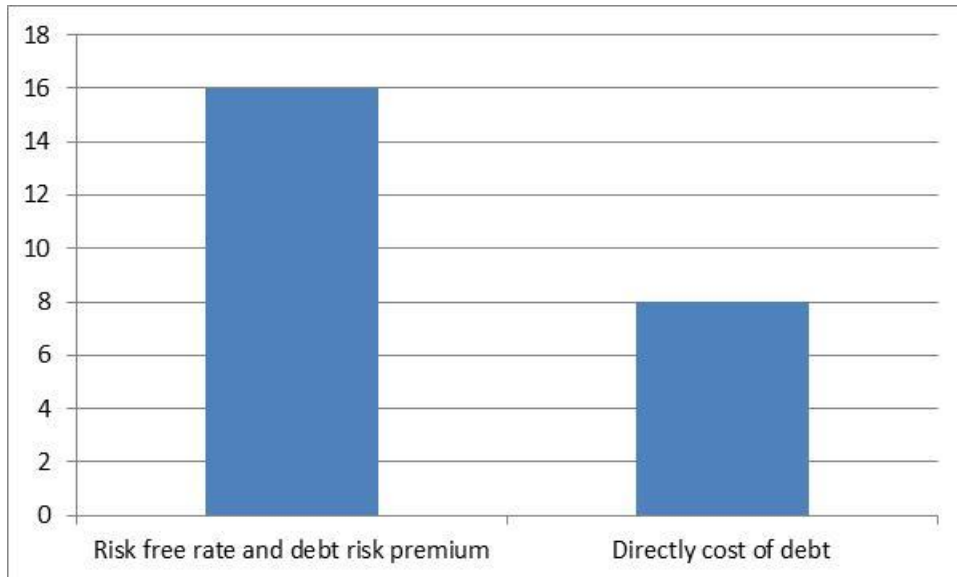
- Risk-free rate and the debt risk premium or directly the cost of debt
- Market value or a book value
- Nominal bond yield or yield on secondary market
- Length of the bond
- Length of the series included in the average
- Type of average (arithmetic, moving average, median)

Fixed market

The cost of debt overview below describes the options used by NRAs in EU member states when calculating the cost of debt for the year 2015.

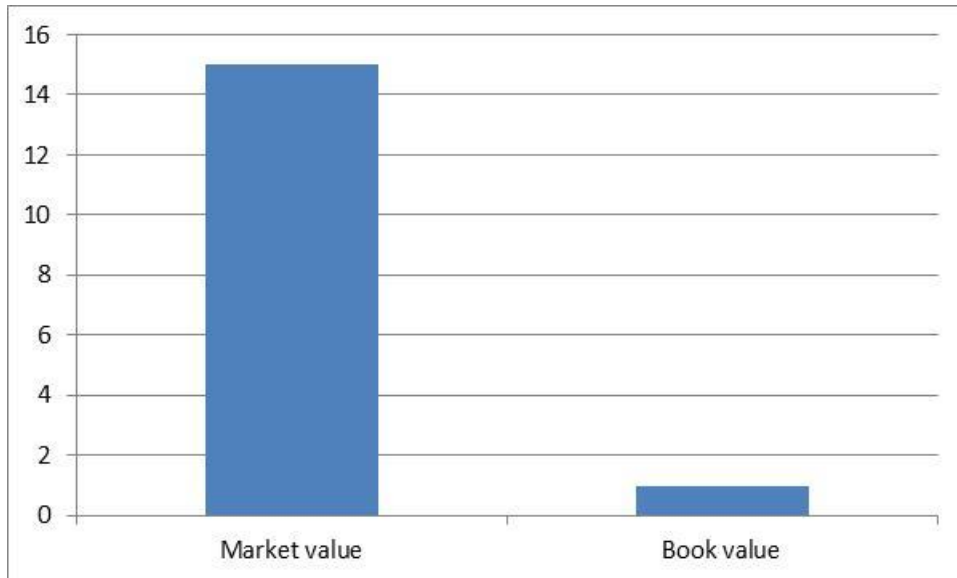
Risk-free rate and the debt risk premium or directly the cost of debt:

- 16 countries use risk free rate and debt risk premium
- 8 countries use directly cost of debt



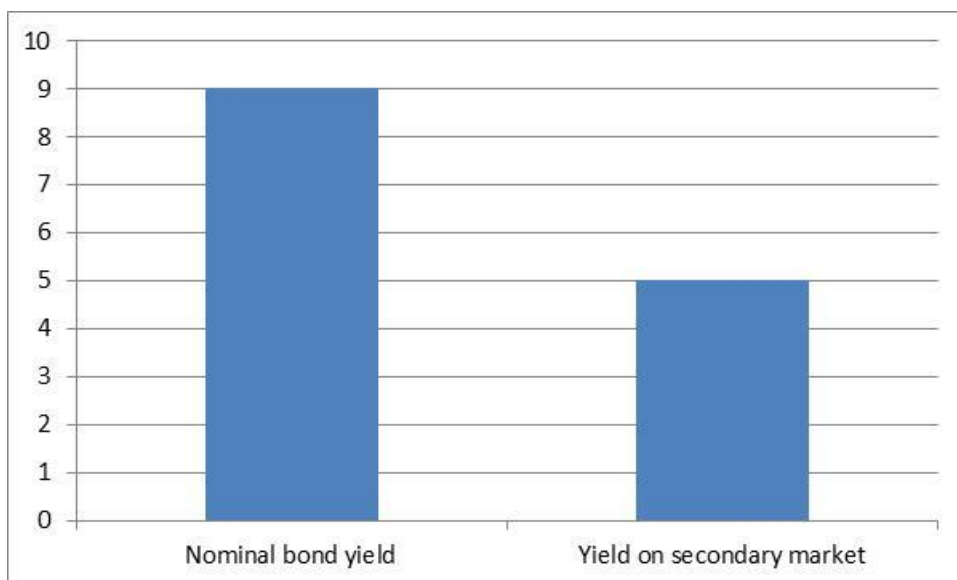
Market value or a book value:

- 15 countries use market value
- 1 country uses book value



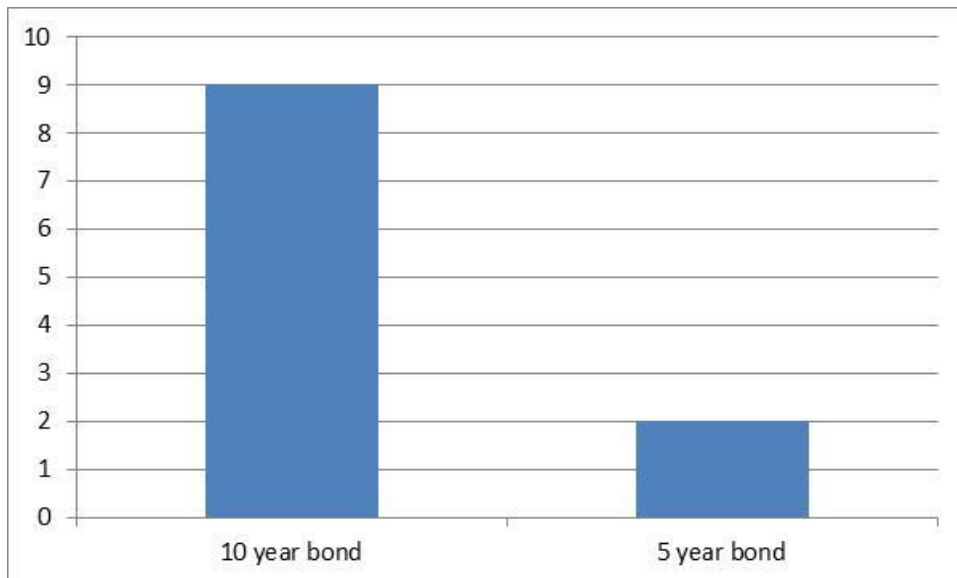
Nominal bond yield or yield on secondary market :

- 9 countries use nominal bond yield
- 5 countries use yield on secondary market



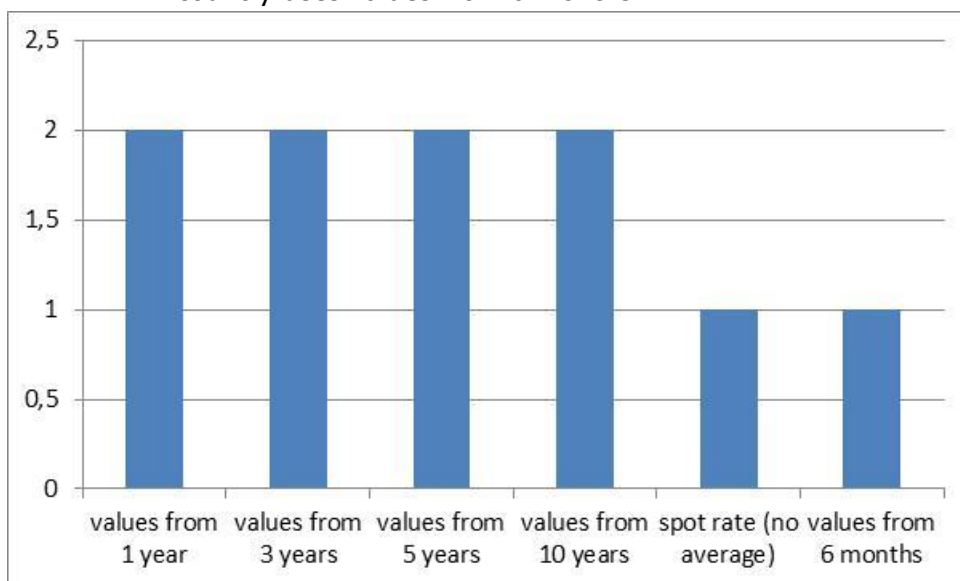
Length of the bond:

- 9 countries use 10 year bond
- 2 countries use 5 year bond



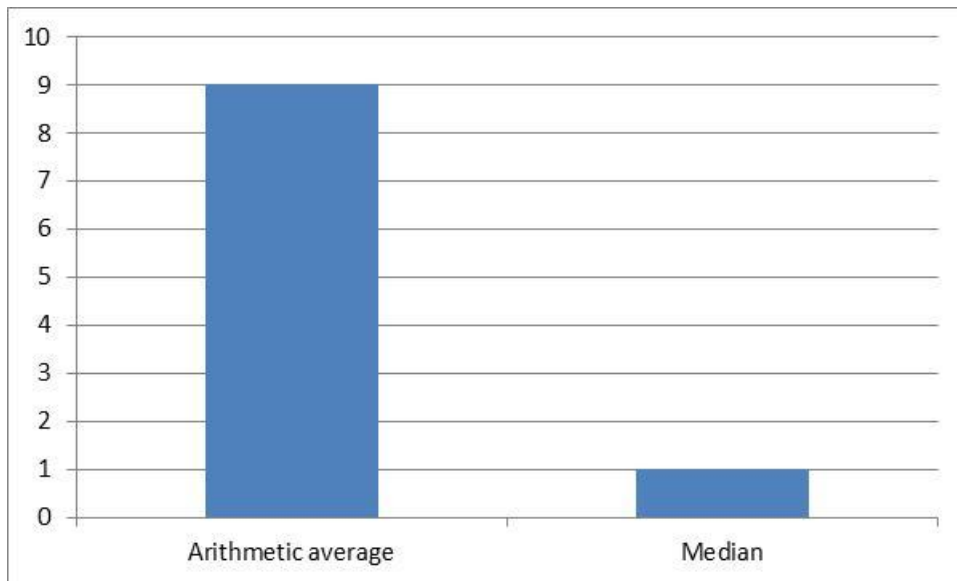
Length of the series included in the average:

- 2 countries use values from 1 year
- 2 countries use values from 3 years
- 2 countries use values from 5 years
- 2 countries use values from 10 years
- 1 country uses spot rate (no average)
- 1 country uses values from 6 months



Type of average:

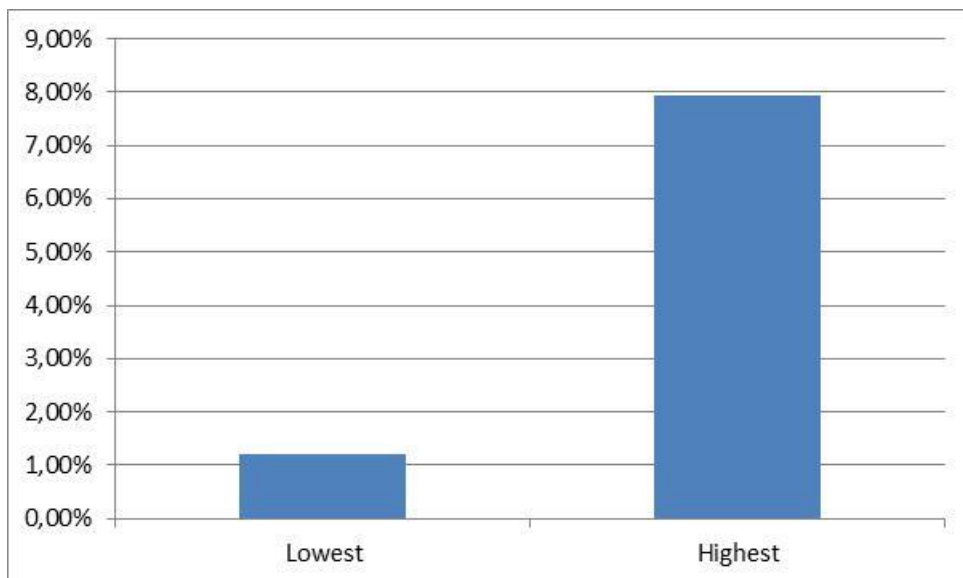
- 9 countries use arithmetic average
- 1 country uses median



Fixed market results for cost of debt used in WACC calculations by NRAs in EU member states for the year 2015:

Lowest 1.2%

Highest 7.94%

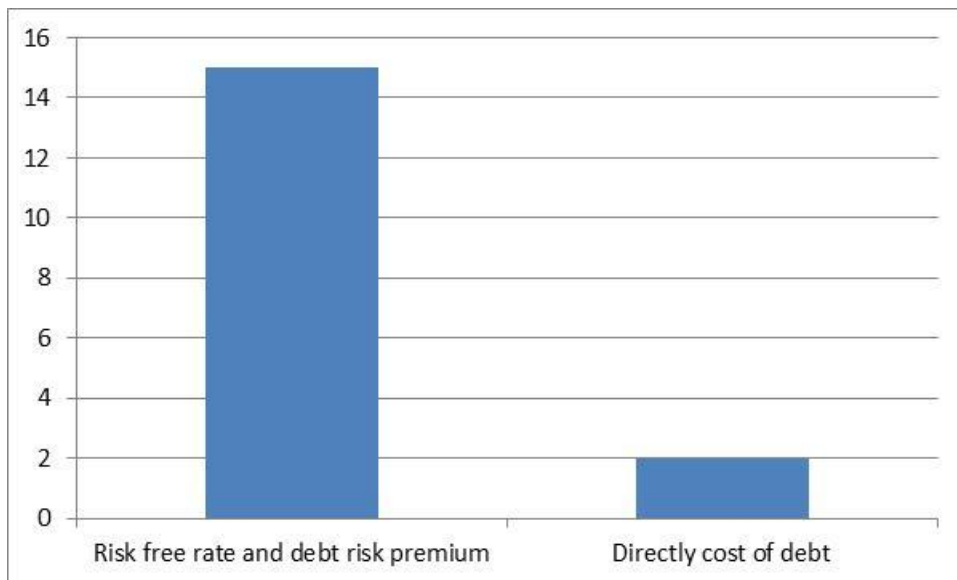


Mobile market

The cost of debt overview below describes the options used by NRAs in EU member states when calculating the cost of debt for the year 2015.

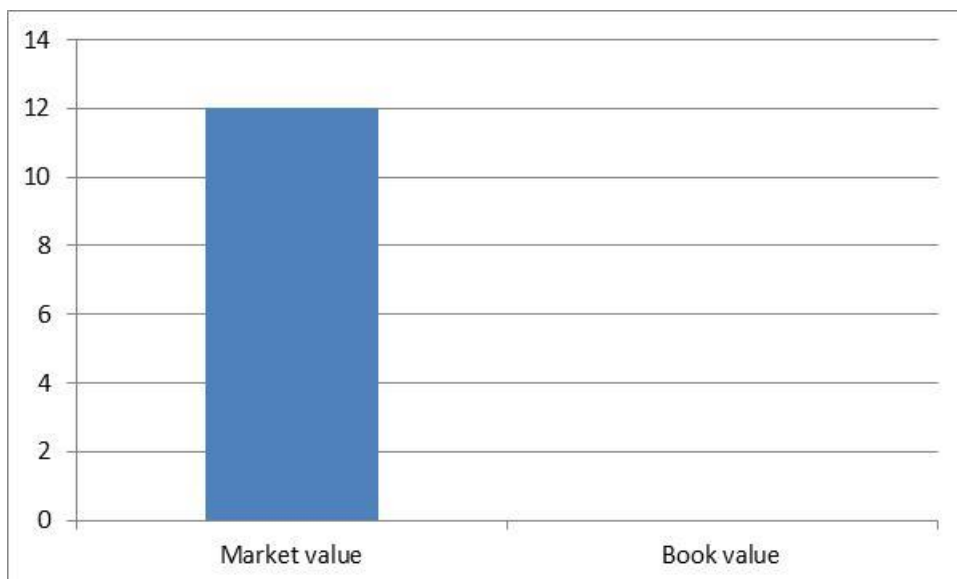
Risk-free rate and the debt risk premium or directly the cost of debt:

- 15 countries use risk free rate and debt risk premium
- 2 countries use directly cost of debt



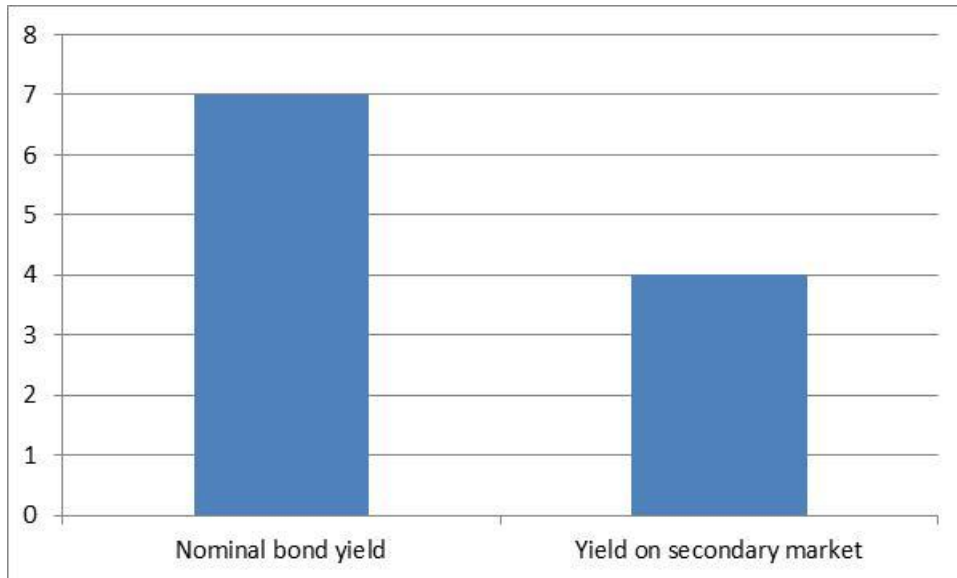
Market value or a book value:

- 12 countries use market value
- no country uses book value



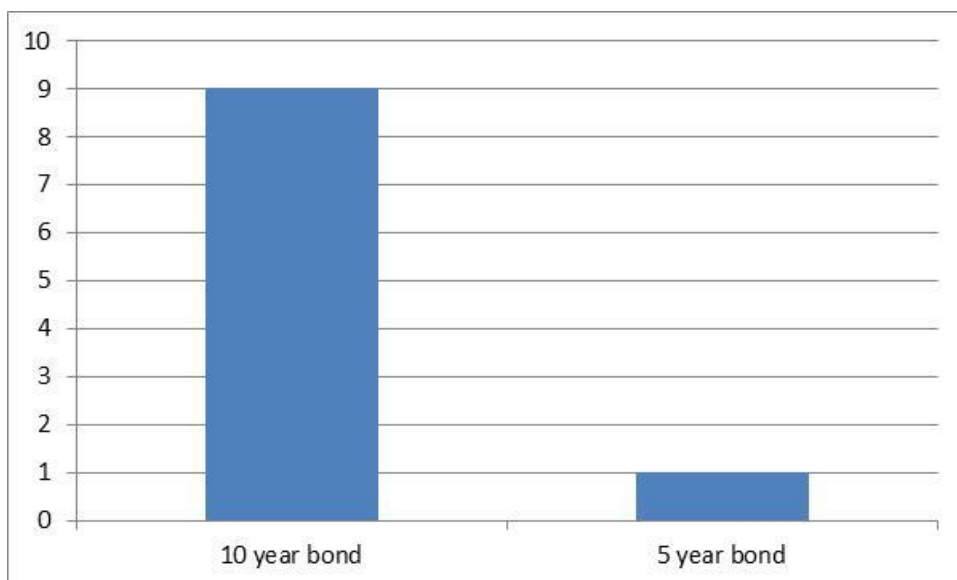
Nominal bond yield or yield on secondary market :

- 7 countries use nominal bond yield
- 4 countries use yield on secondary market



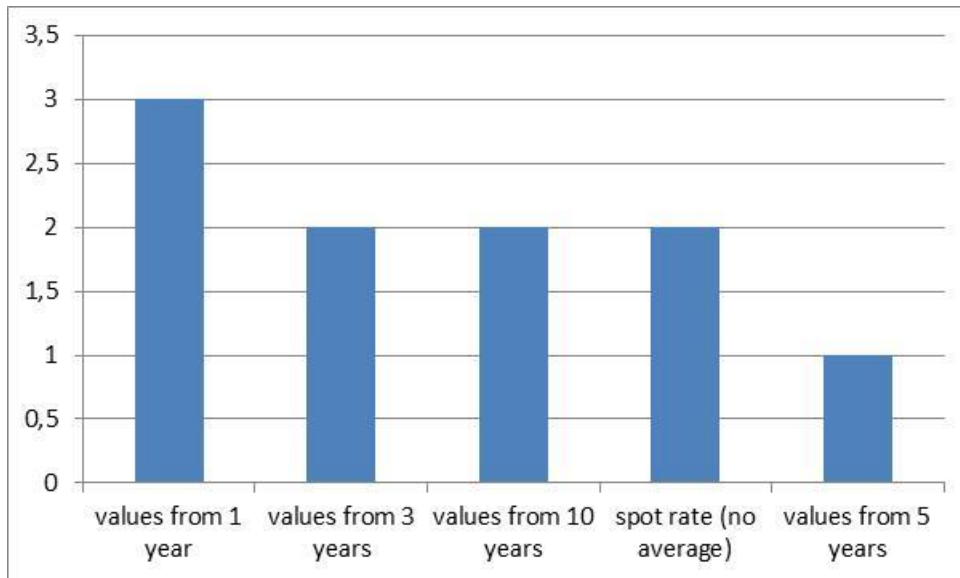
Length of the bond:

- 9 countries use 10 year bond
- 1 country uses 5 year bond



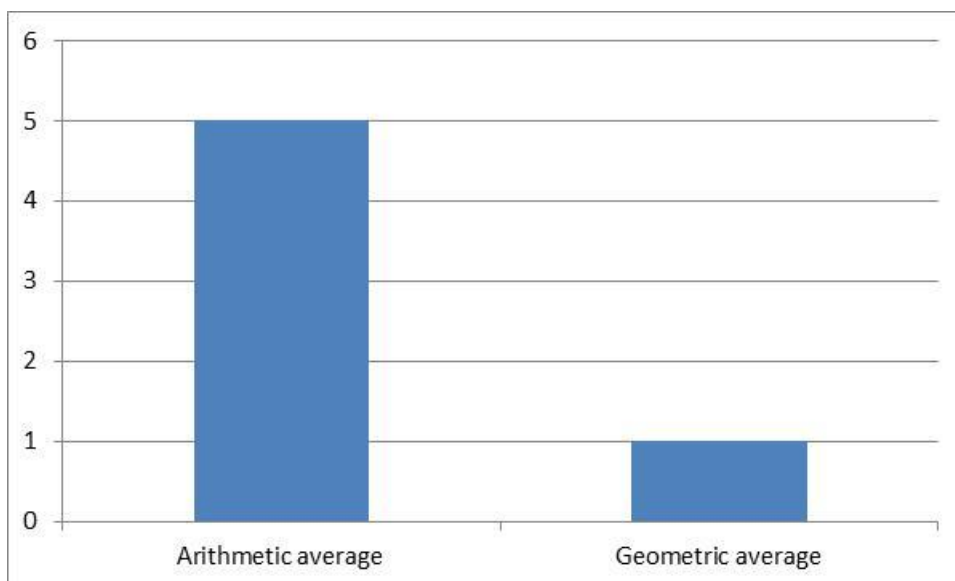
Length of the series included in the average:

- 3 countries use values from 1 year
- 2 countries use values from 3 years
- 2 countries use values from 10 years
- 2 countries use spot rate (no average)
- 1 country uses values from 5 years



Type of average:

- 5 countries use arithmetic average
- 1 country uses geometric average



Mobile market results for cost of debt used in WACC calculations by NRAs in EU member states for the year 2015:

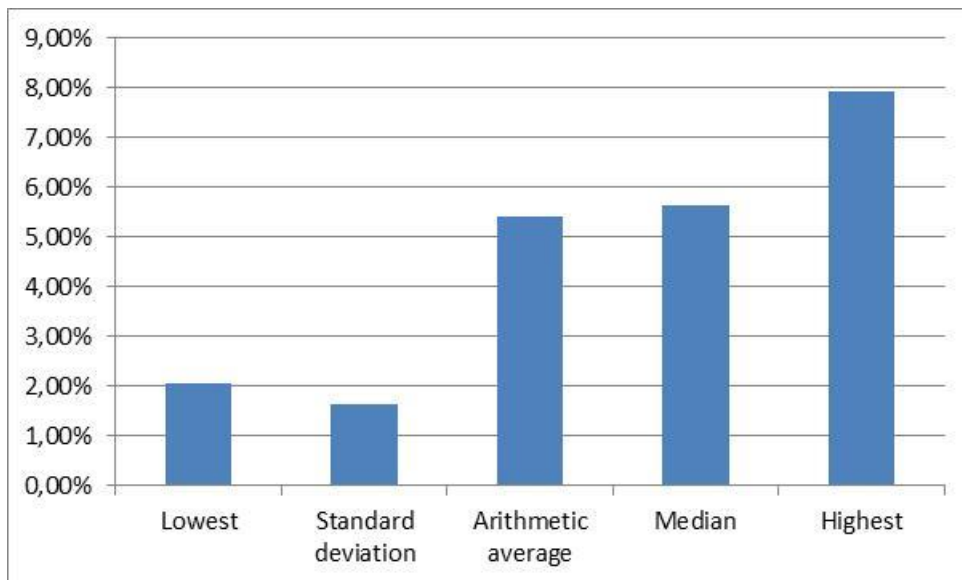
Lowest 2.05%

Highest 7.93%

Arithmetic average 5.4%

Median 5.62%

Standard deviation 1.65%



Beta

Beta indicates how the stock yield of a company varies with respect to the general market return.

The levered beta (equity beta) includes also the capital structure of the undertaking.

Following options for calculating the beta exist:

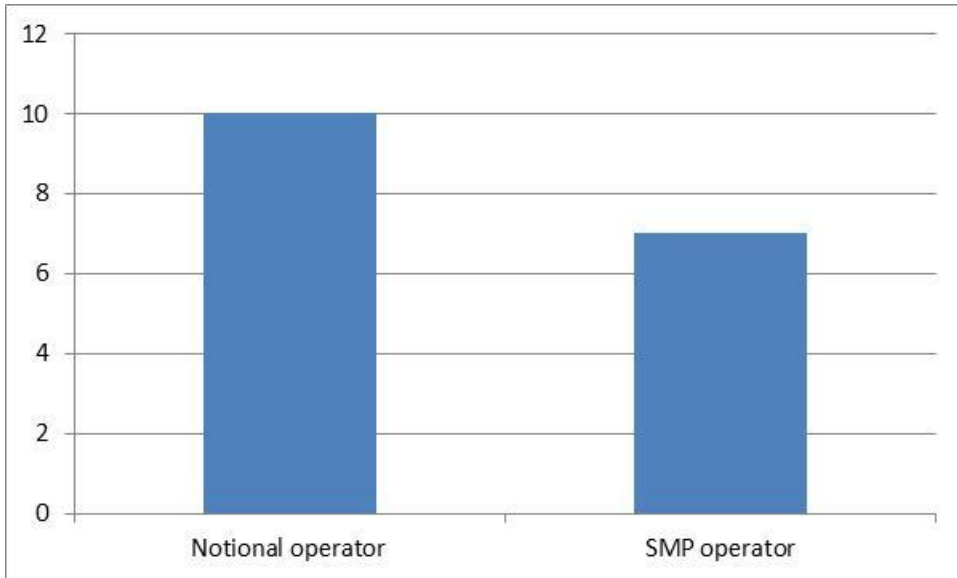
- Notional operator or SMP operator
- Sampling frequency (daily, weekly, monthly)
- Length of the series
- Adjustments
- Unlevering of beta

Fixed market

The beta overview below describes the options used by NRAs in EU member states when calculating the beta for the year 2015.

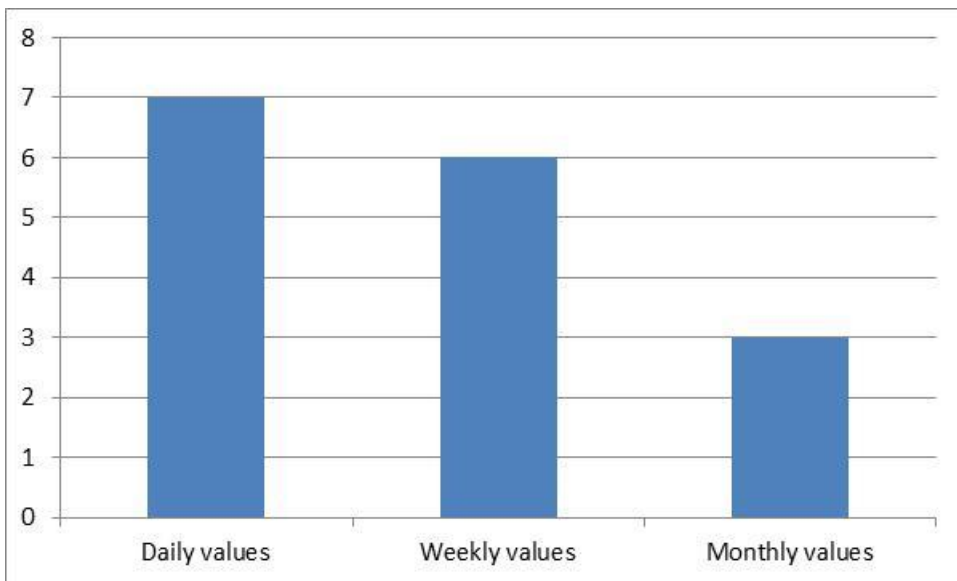
Notional operator or SMP operator:

- 10 countries use notional operator
- 7 countries calculate values for SMP operator



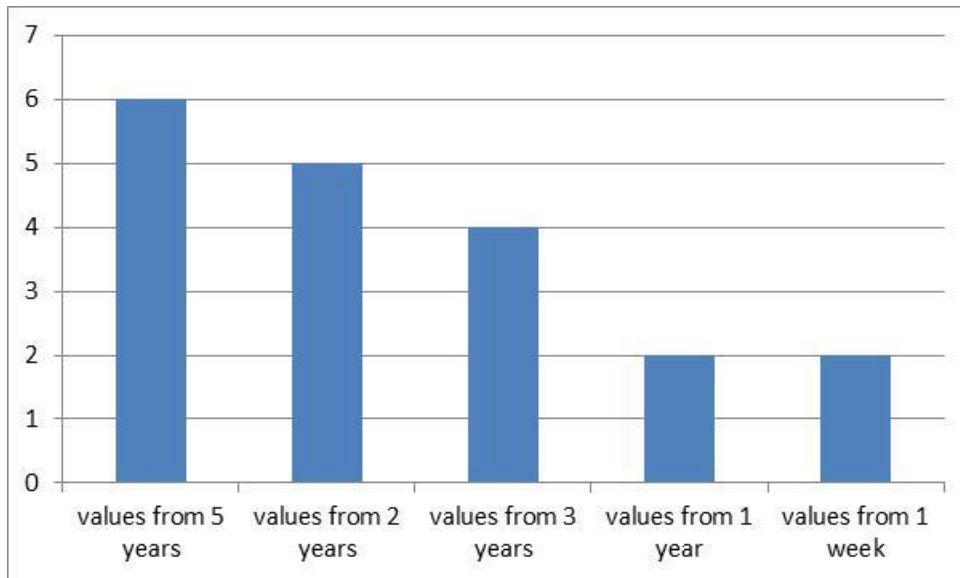
Sampling frequency:

- 7 countries use daily values
- 6 countries use weekly values
- 3 countries use monthly values



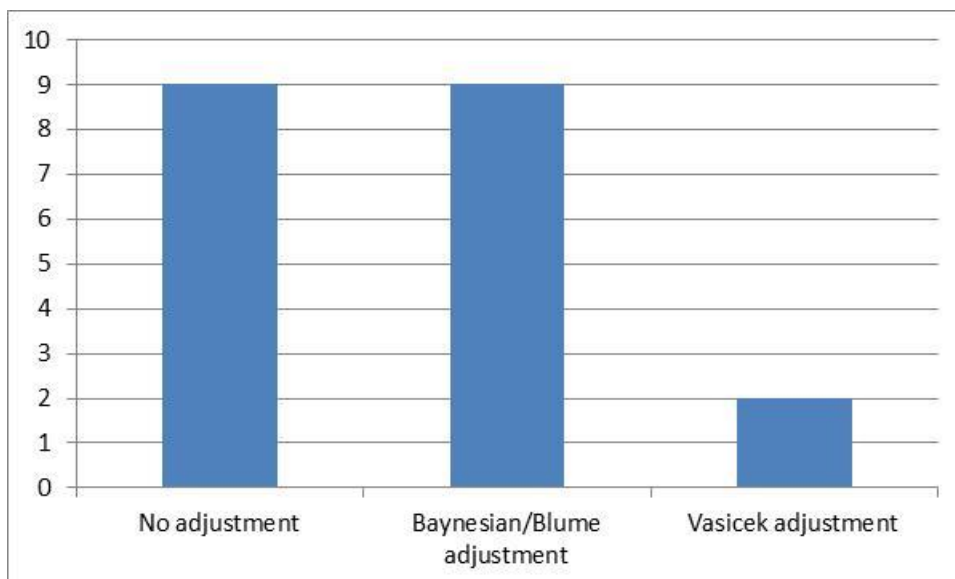
Length of the series:

- 6 countries use values from 5 years
- 5 countries use values from 2 years
- 4 countries use values from 3 years
- 2 countries use values from 1 year
- 2 countries use values from 1 week



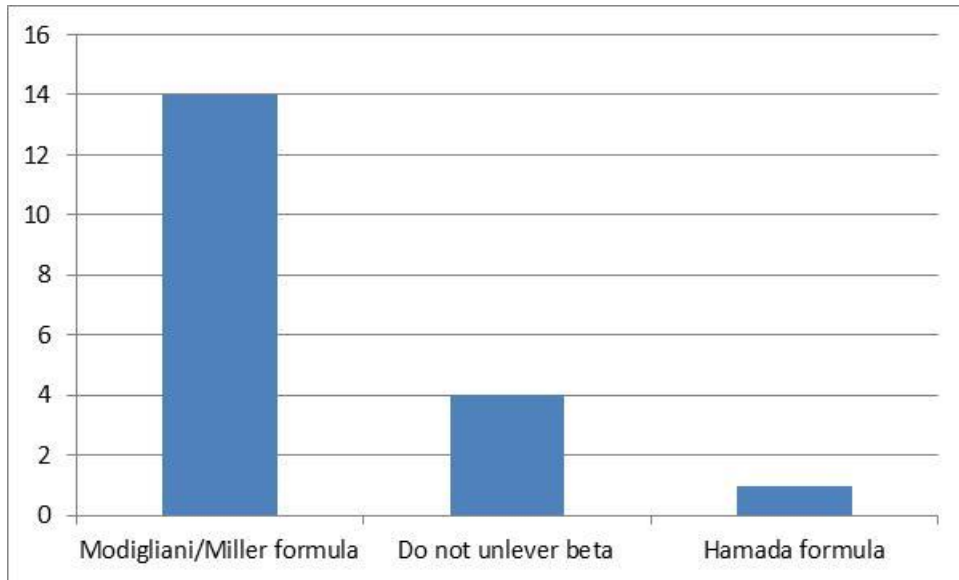
Adjustments:

- 9 countries use no adjustment
- 9 countries use Bayesian/Blume adjustment
- 2 countries use Vasicek adjustment



Unlevering of beta:

- 14 countries unlever beta using Modigliani/Miller formula
- 4 countries do not unlever beta
- 1 country unlevers beta using Hamada formula



Fixed market results for equity beta (levered beta) used in WACC calculations by NRAs in EU member states for the year 2015:

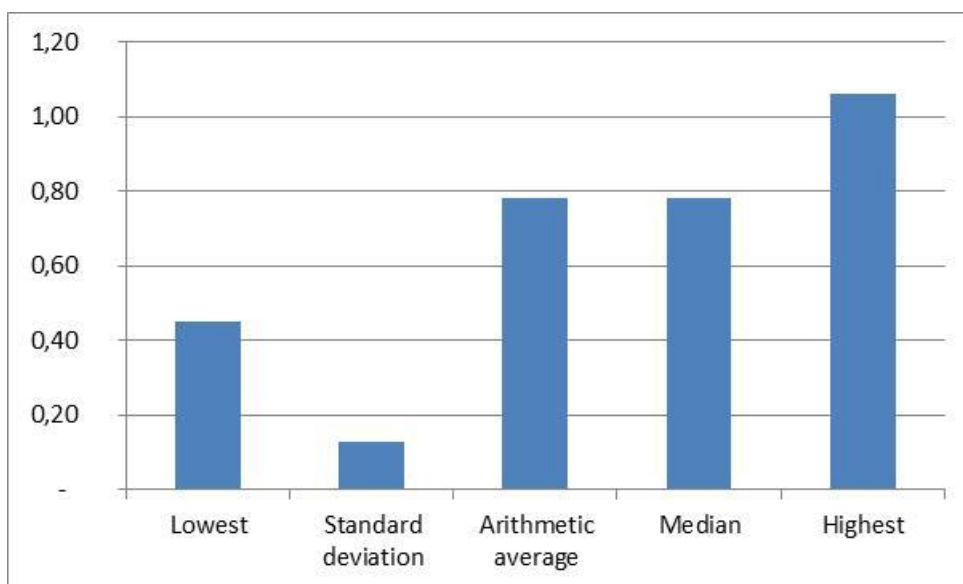
Lowest 0.45

Highest 1.06

Arithmetic average 0.78

Median 0.78

Standard deviation 0.13



Fixed market results for asset beta (unlevered beta) used in WACC calculations by NRAs in EU member states for the year 2015:

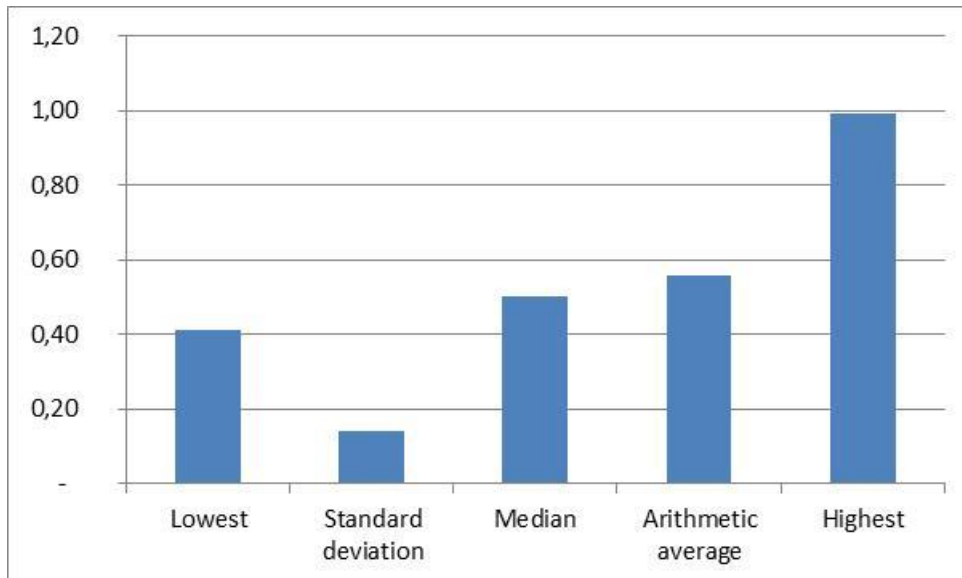
Lowest 0.41

Highest 0.99

Arithmetic average 0.56

Median 0.50

Standard deviation 0.14

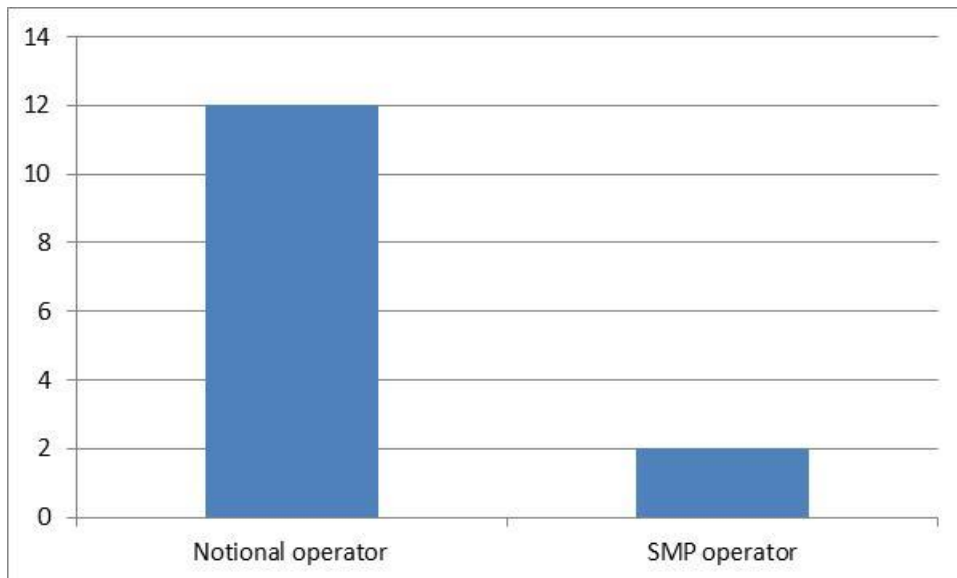


Mobile market

The beta overview below describes the options used by NRAs in EU member states when calculating the beta for the year 2015.

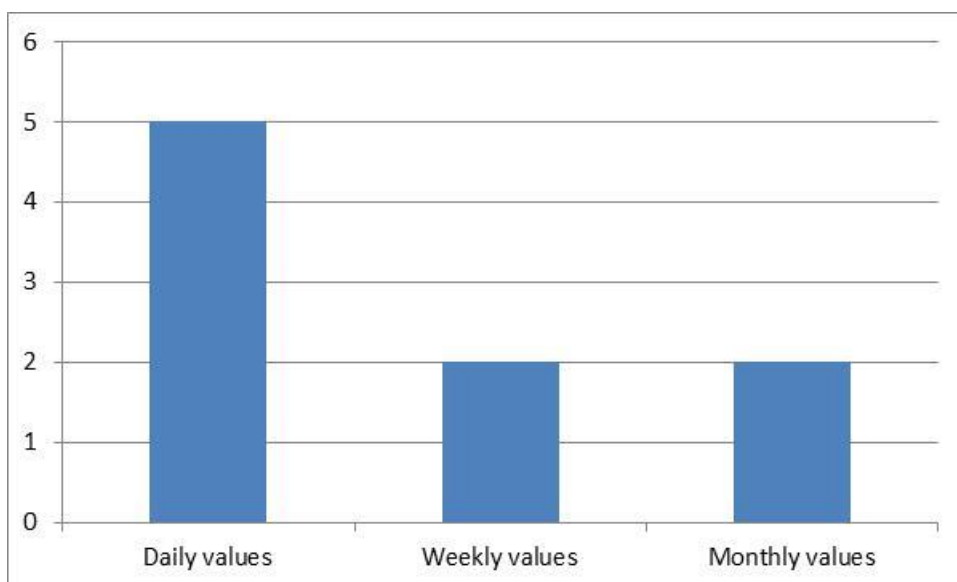
Notional operator or SMP operator:

- 12 countries use notional operator
- 2 countries calculate values for SMP operator



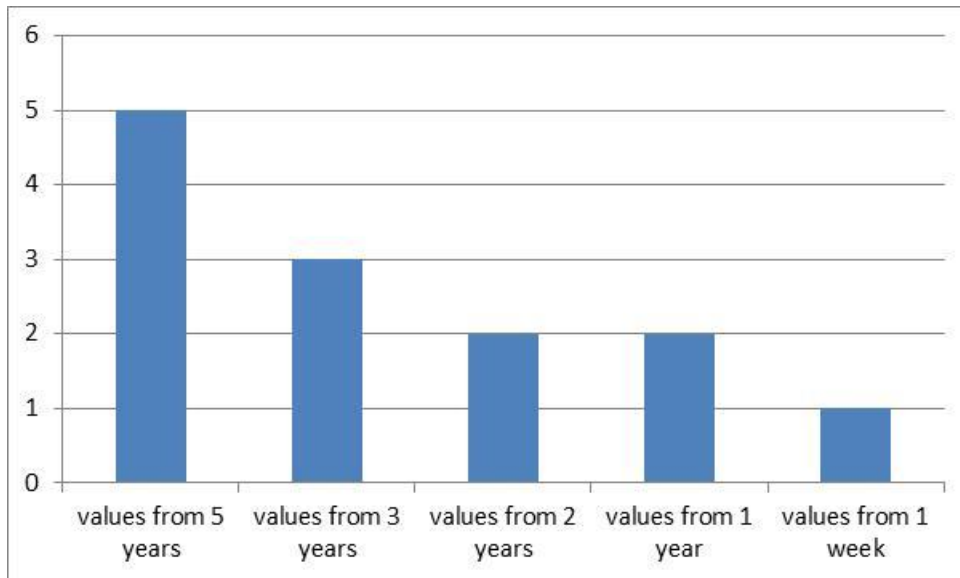
Sampling frequency:

- 5 countries use daily values
- 2 countries use weekly values
- 2 countries use monthly values



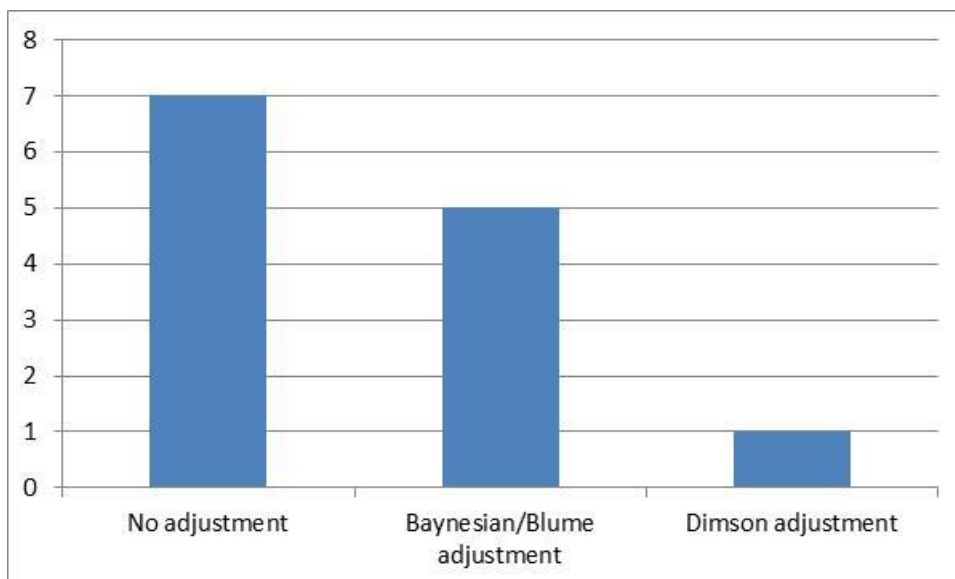
Length of the series:

- 5 countries use values from 5 years
- 3 countries use values from 3 years
- 2 countries use values from 2 years
- 2 countries use values from 1 year
- 1 country uses values from 1 week



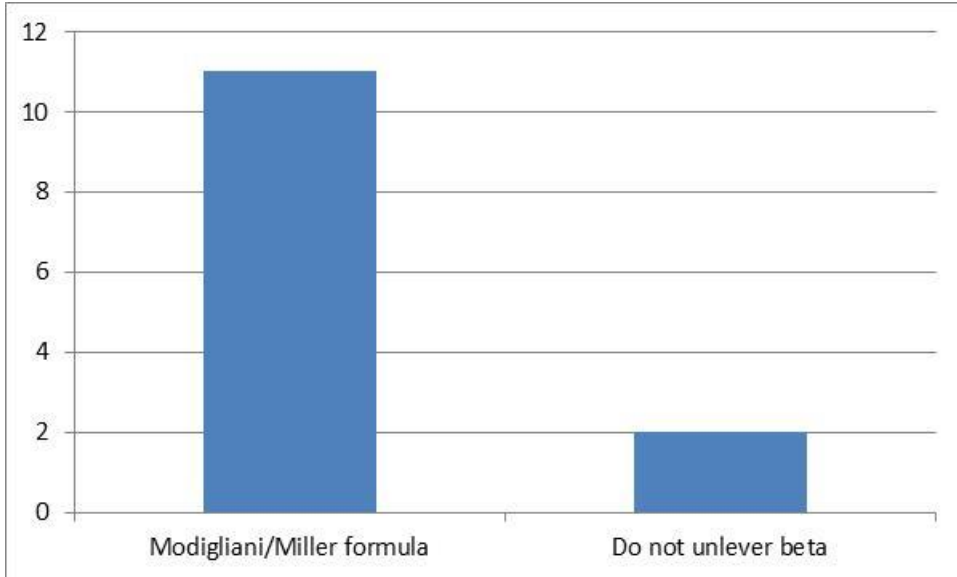
Adjustments:

- 7 countries use no adjustment
- 5 countries use Bayesian/Blume adjustment
- 1 country uses Dimson adjustment



Unlevering of beta:

- 11 countries unlever beta using Modigliani/Miller formula
- 2 countries do not unlever beta



Mobile market results for equity beta (levered beta) used in WACC calculations by NRAs in EU member states for the year 2015:

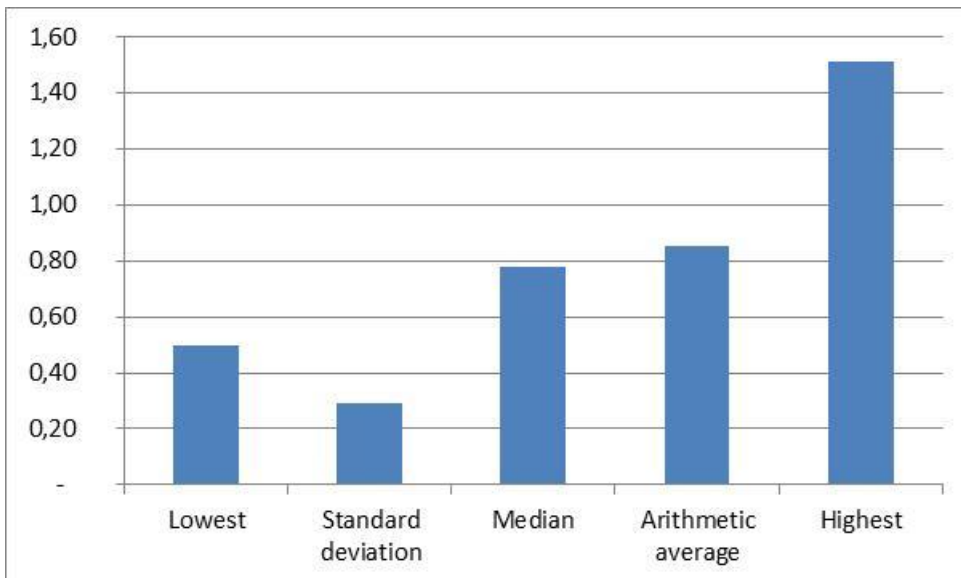
Lowest 0.5

Highest 1.51

Arithmetic average 0.85

Median 0.78

Standard deviation 0.29



Mobile market results for asset beta (unlevered beta) used in WACC calculations by NRAs in EU member states for the year 2015:

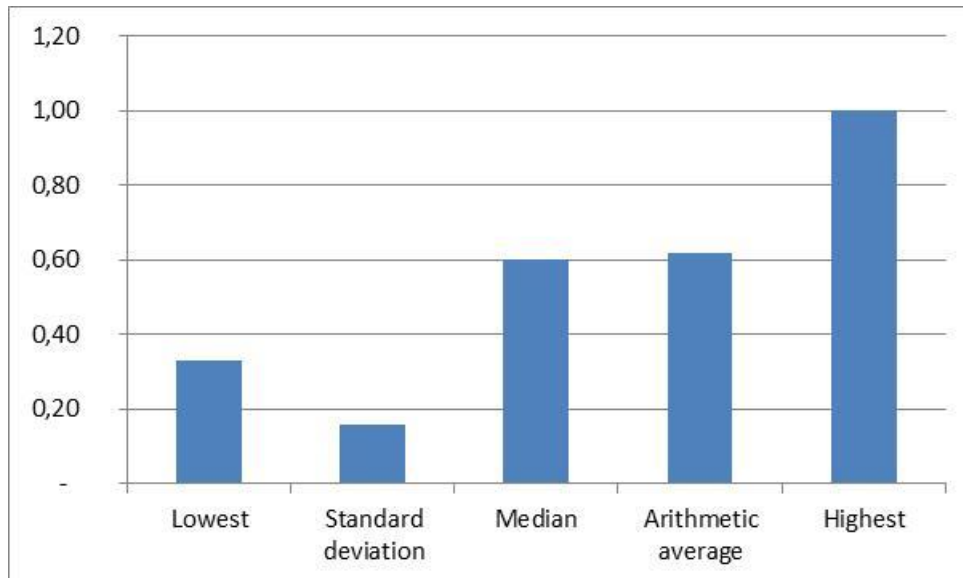
Lowest 0.33

Highest 1

Arithmetic average 0.62

Median 0.60

Standard deviation 0.16



Market risk premium

The market risk premium is the difference between the yield of the market and the risk free rate. Following options for calculating the market risk premium exist:

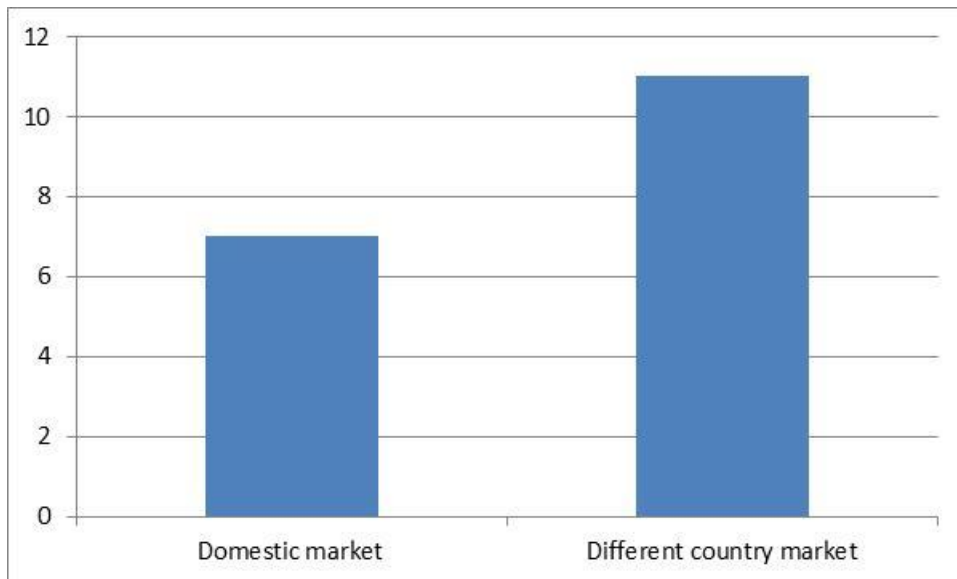
- Domestic or different country market
- Sampling frequency (daily, weekly, monthly)
- Length of the series included in the average
- Type of average (arithmetic, moving average, median)

Fixed market

The market risk premium overview below describes the options used by NRAs in EU member states when calculating the market risk premium for the year 2015.

Domestic or different country market:

- 11 countries use different country market
- 7 countries use domestic market



Sampling frequency:

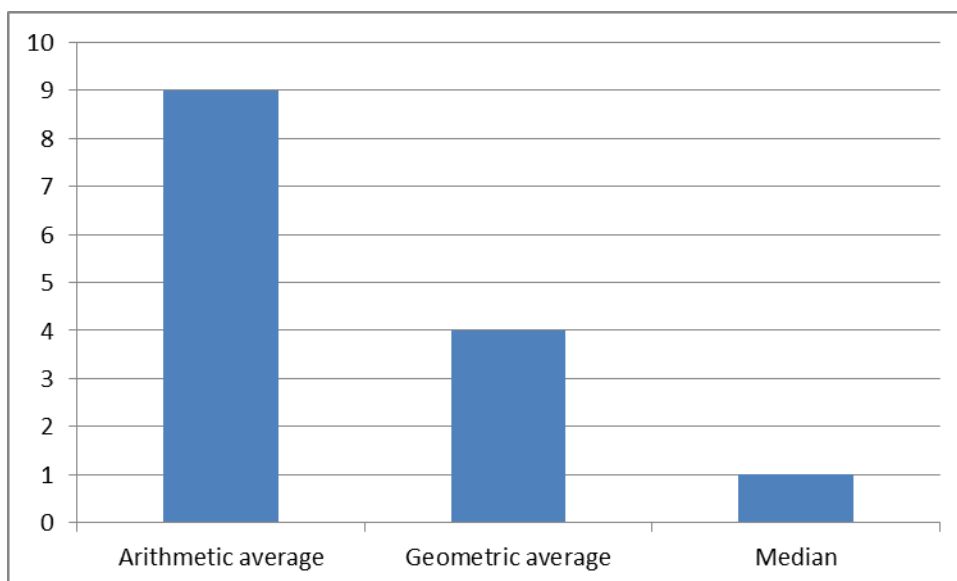
- Not specified

Length of the series included in the average:

- Long time series, sometimes starting from year 1900

Type of average:

- 9 countries use arithmetic average
- 4 countries use geometric average
- 1 country uses median



Fixed market results for market risk premium used in WACC calculations by NRAs in EU member states for the year 2015:

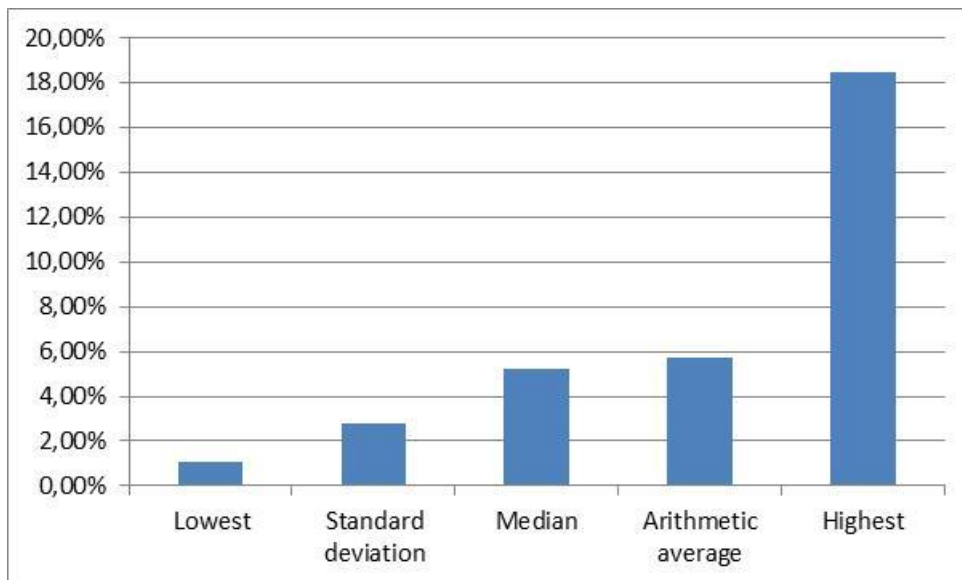
Lowest 1.06%

Highest 18.48%

Arithmetic average 5.69%

Median 5.25%

Standard deviation 2.79%

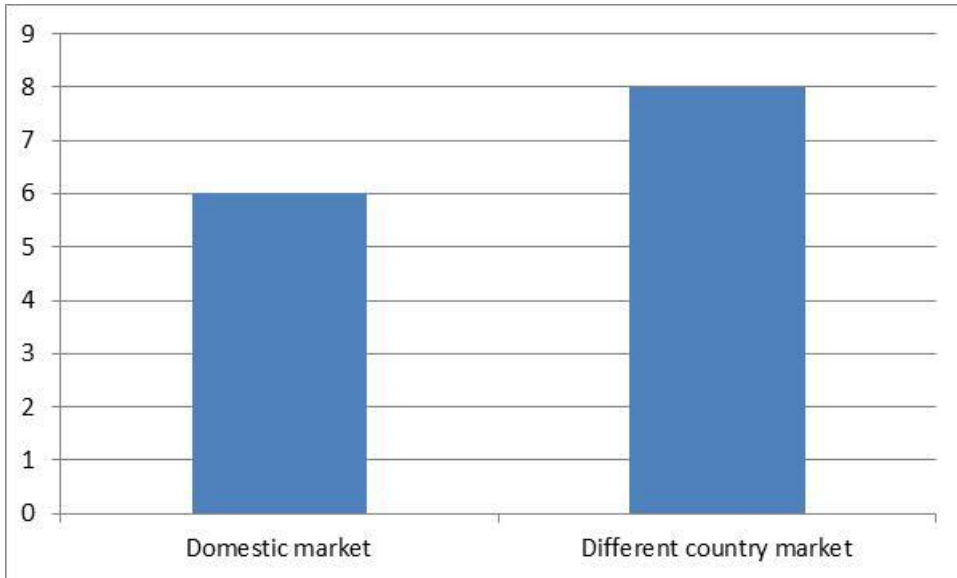


Mobile market

The market risk premium overview below describes the options used by NRAs in EU member states when calculating the market risk premium for the year 2015.

Domestic or different country market:

- 8 countries use different country market
- 6 countries use domestic market



Sampling frequency:

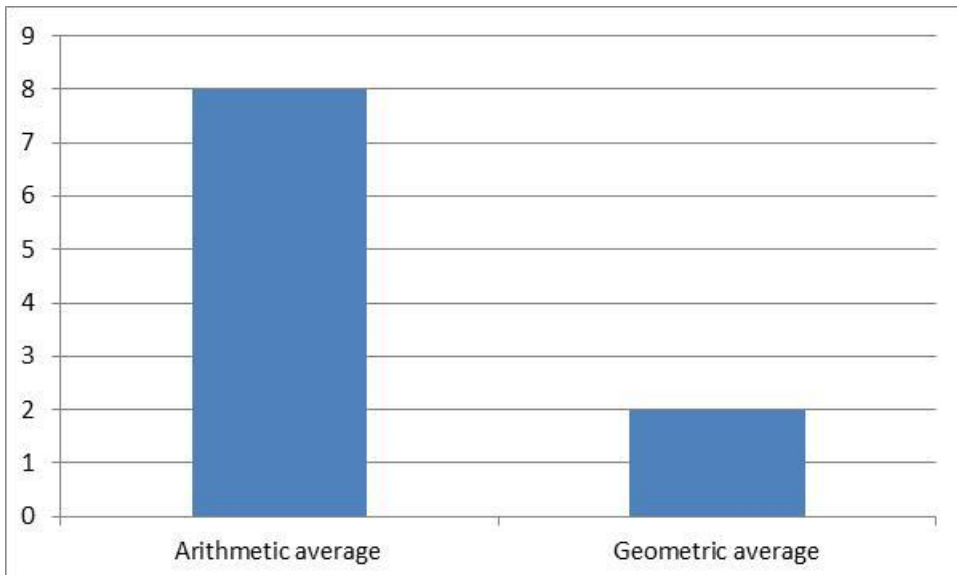
- Not specified

Length of the series included in the average:

- Long time series, sometimes starting from year 1900

Type of average:

- 8 countries use arithmetic average
- 2 countries use geometric average



Mobile market results for market risk premium used in WACC calculations by NRAs in EU member states for the year 2015:

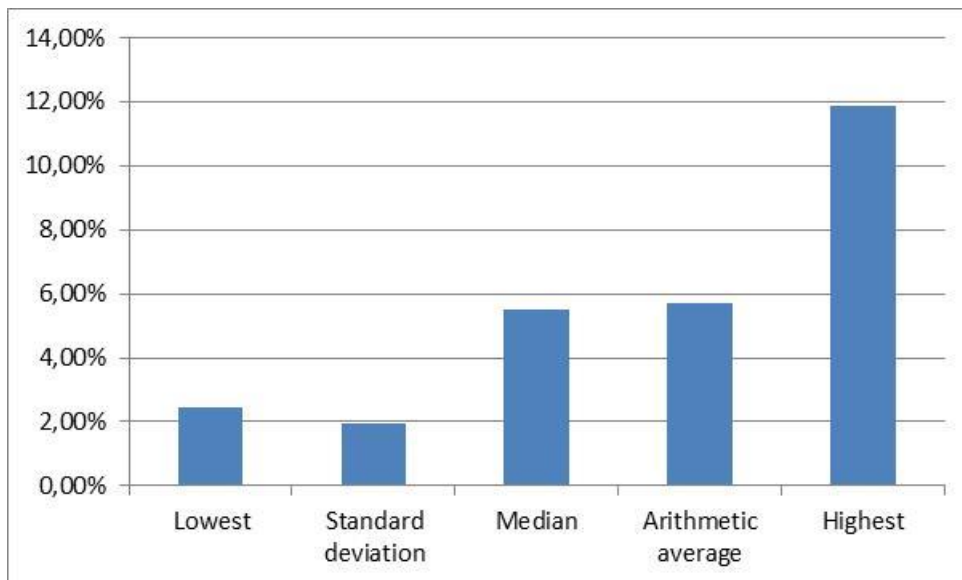
Lowest 2.45%

Highest 11.88%

Arithmetic average 5.69%

Median 5.53%

Standard deviation 1.94%



Gearing

The gearing ratio is the ratio between the debt and the sum of equity and debt.

It can be calculated from the book values of the company, or can be evaluated from the market value of equity and debt. Following options for calculating the gearing ratio exist:

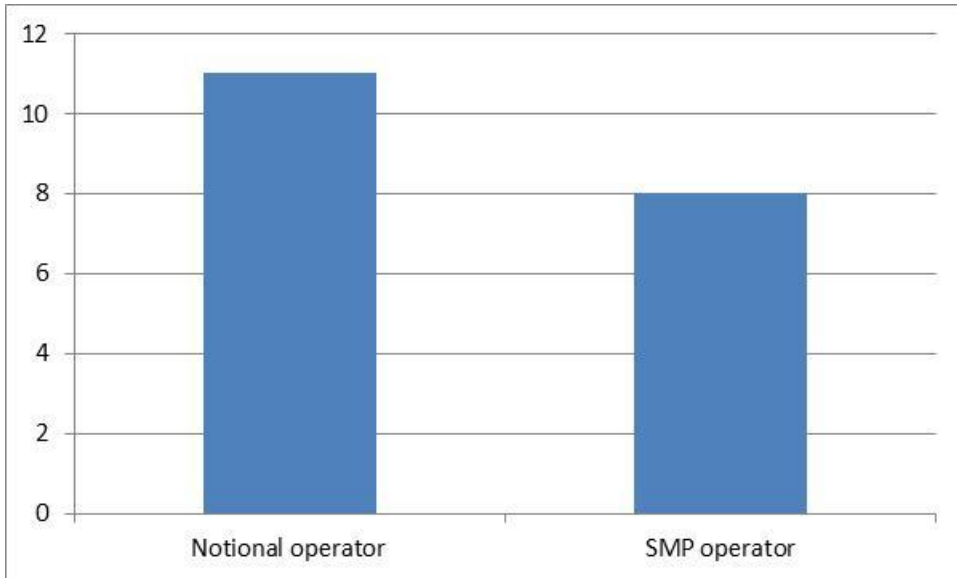
- Notional operator or SMP operator
- Market value or a book value
- Type of average when calculating the notional operator

Fixed market

The gearing ratio overview below describes the options used by NRAs in EU member states when calculating the gearing ratio for the year 2015.

Notional operator or SMP operator:

- 11 countries use notional operator
- 8 countries calculate values for SMP operator



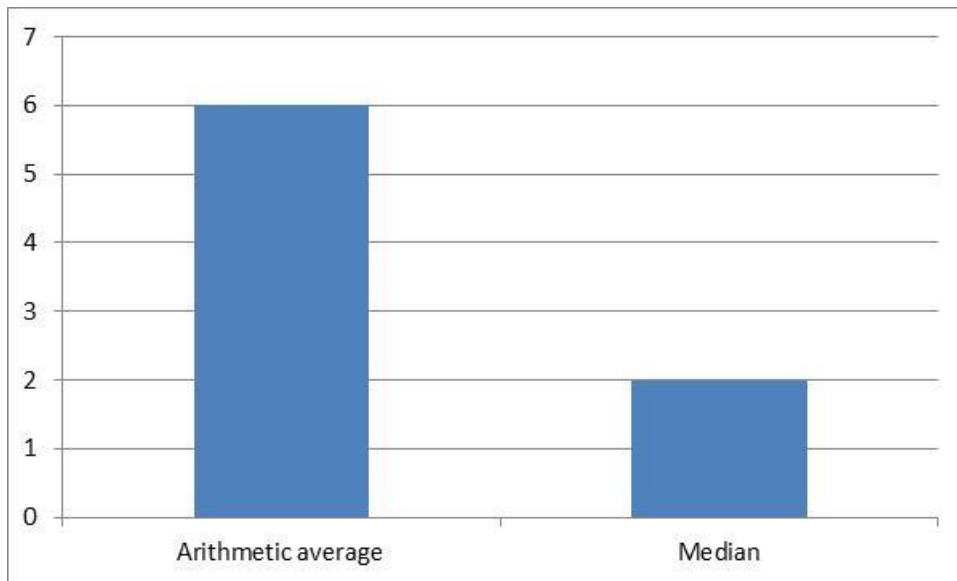
Market value or a book value:

- 12 countries use market value
- 4 countries use book value



Type of average when calculating the notional operator:

- 6 countries use arithmetic average
- 2 countries use median



Fixed market results for gearing ratio used in WACC calculations by NRAs in EU member states for the year 2015:

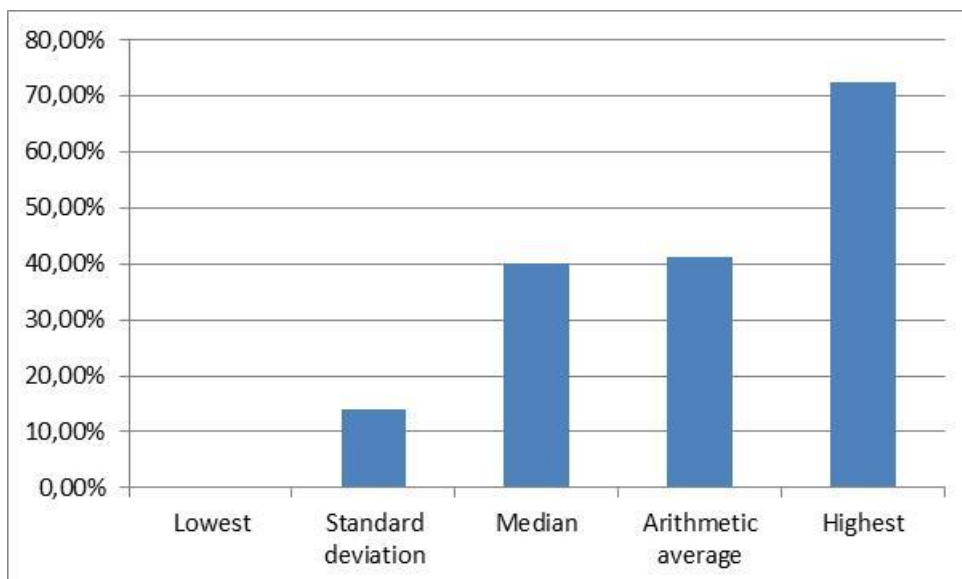
Lowest 0.008%

Highest 72.47%

Arithmetic average 41.10%

Median 40%

Standard deviation 14.14%

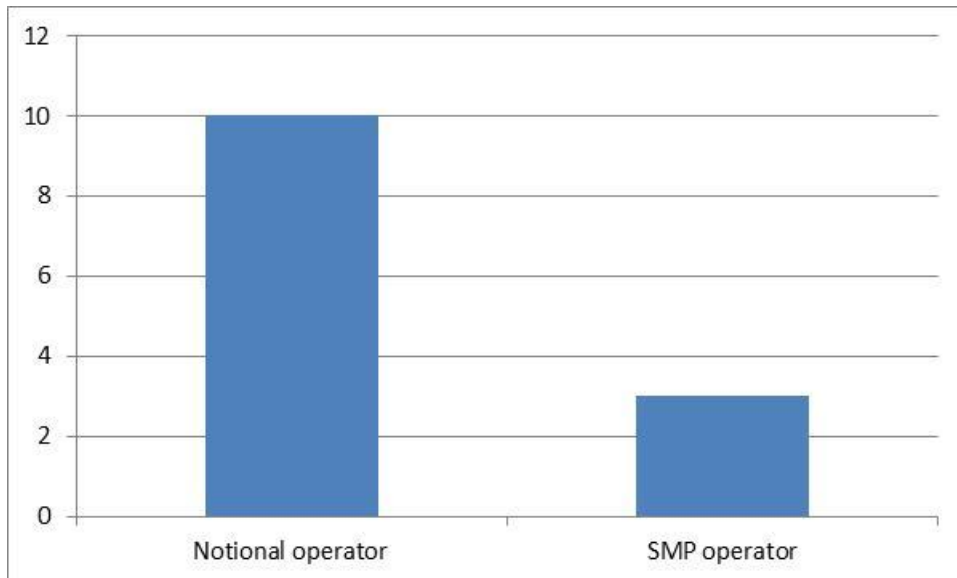


Mobile market

The gearing ratio overview below describes the options used by NRAs in EU member states when calculating the gearing ratio for the year 2015.

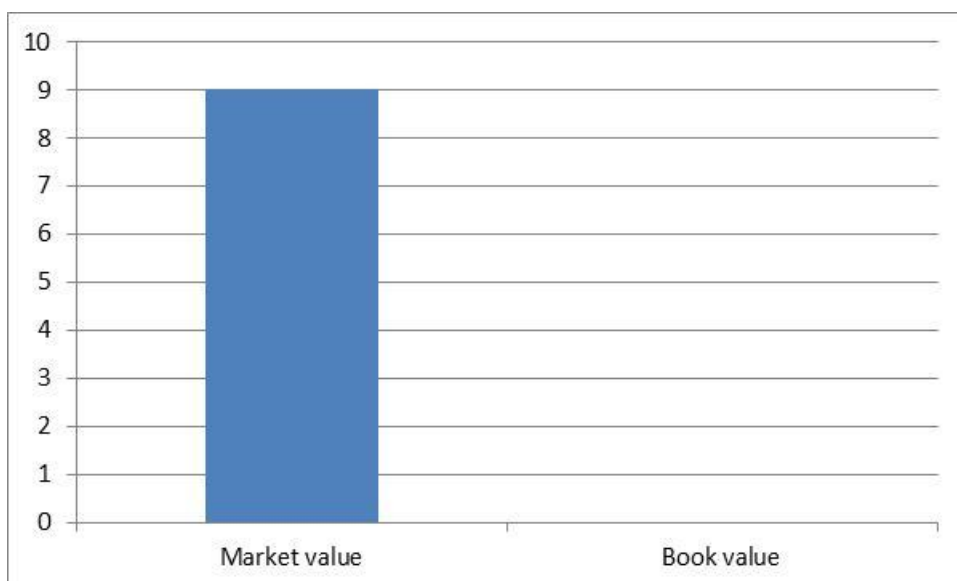
Notional operator or SMP operator:

- 10 countries use notional operator
- 3 countries calculate values for SMP operator



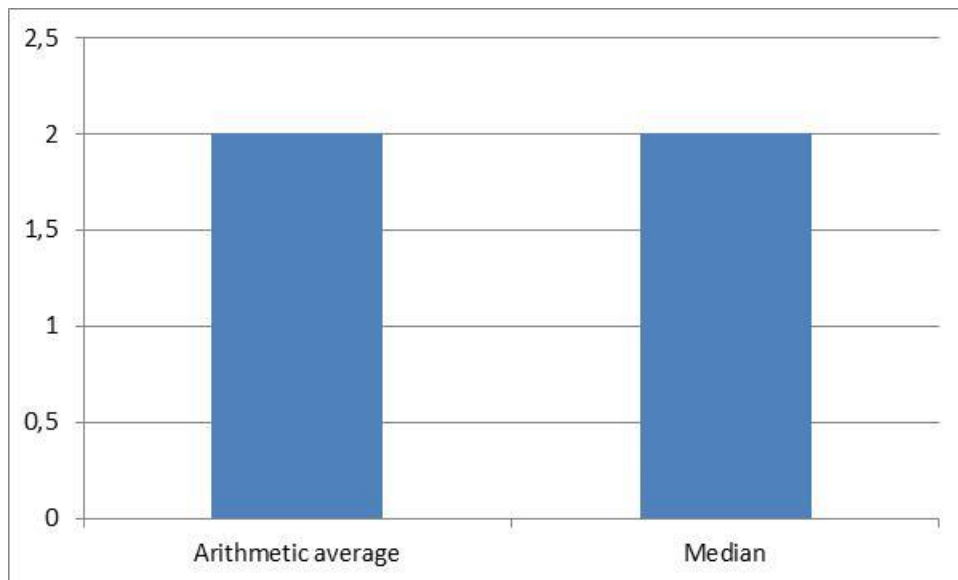
Market value or a book value:

- 9 countries use market value
- no country uses book value



Type of average when calculating the notional operator:

- 2 countries use arithmetic average
- 2 countries use median



Mobile market results for gearing ratio used in WACC calculations by NRAs in EU member states for the year 2015:

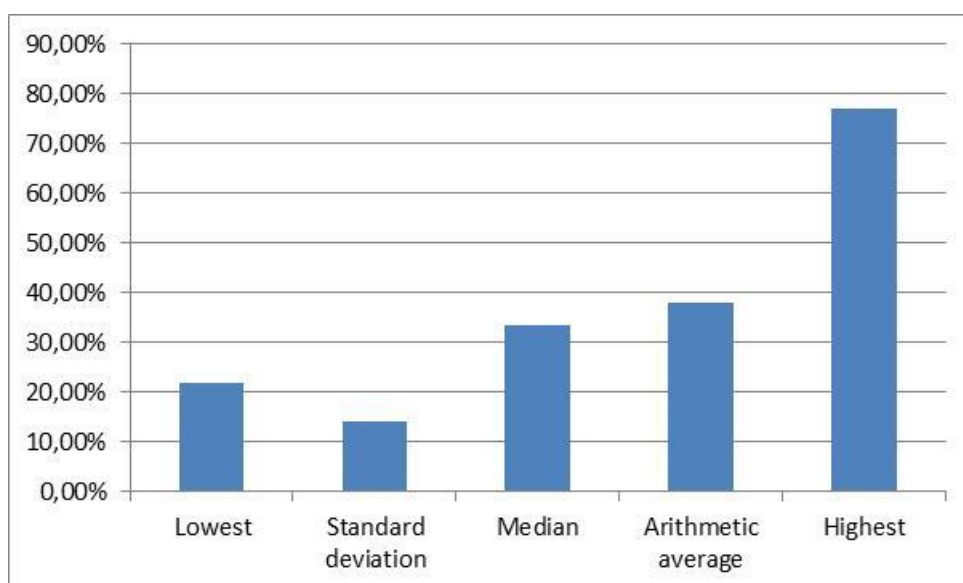
Lowest 22%

Highest 77%

Arithmetic average 37.82%

Median 33.62%

Standard deviation 14.01%



WACC results

All NRAs in EU member states use nominal pre-tax WACC to calculate the cost of capital.

Fixed market

The overview below shows the summary of the nominal pre-tax WACC values for fixed market calculated by NRAs in EU member states for the year 2015:

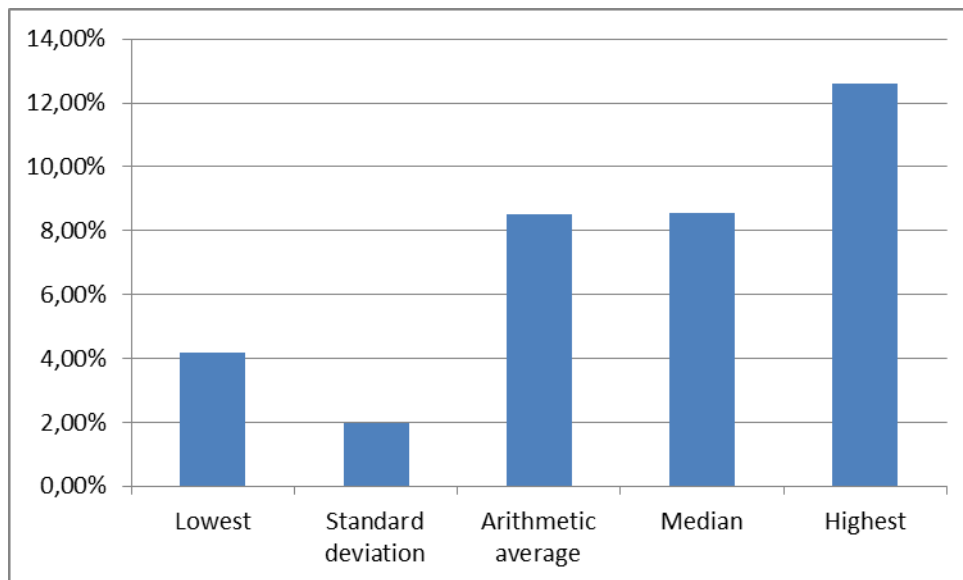
Lowest 4.2%

Highest 12.6%

Arithmetic average 8.52%

Median 8.55%

Standard deviation 1.99%



Mobile market

The overview below shows the summary of the nominal pre-tax WACC values for mobile market calculated by NRAs in EU member states for the year 2015:

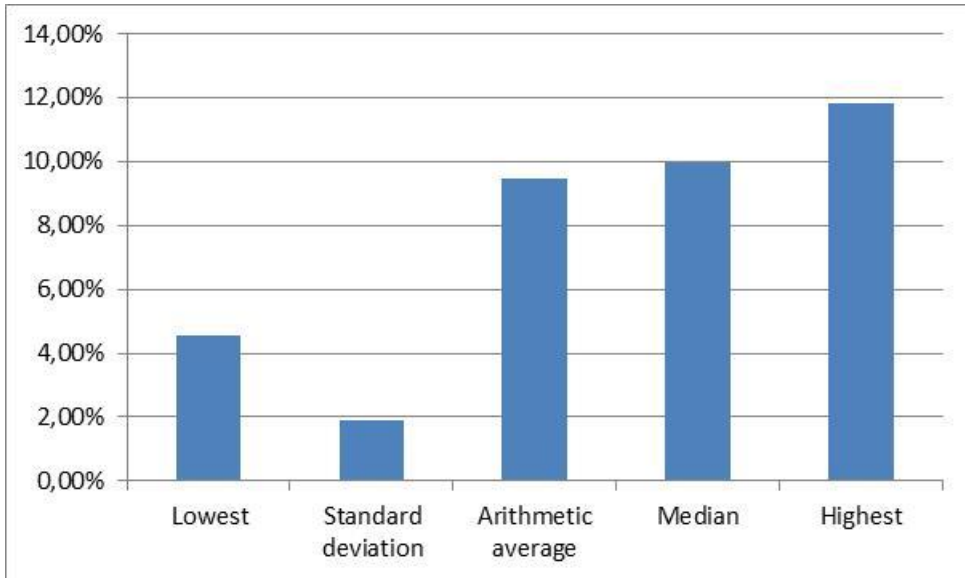
Lowest 4.58%

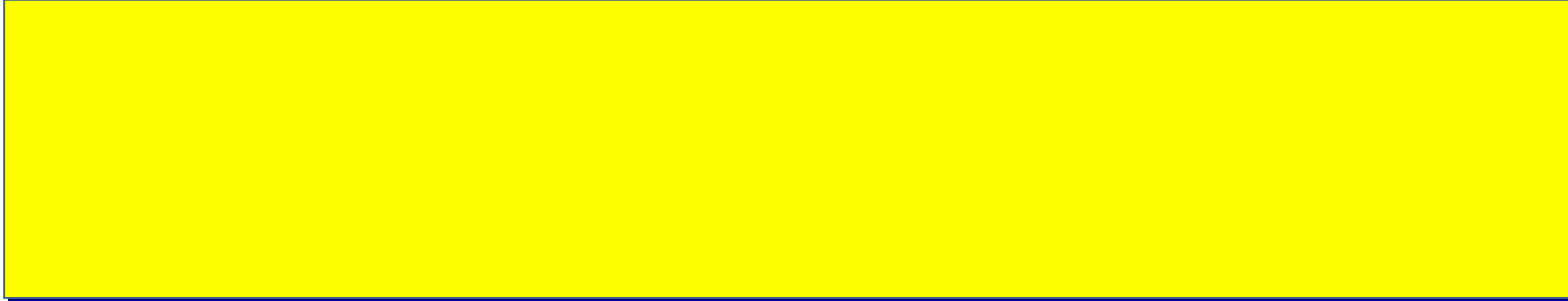
Highest 11.83%

Arithmetic average 9.46%

Median 9.97%

Standard deviation 1.92%





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