

ERG (08) 47 final RA in Practice 081016

ERG Report Regulatory Accounting in Practice 2008 September 2008

CONTENTS

1. EXECUTIVE SUMMARY	3
2. INTRODUCTION	5
2.1 Background	5
2.2 Current report	6
2.3 The data collection process	6
3. OUTLINE OF THE RESULTS	8
3.1 Summary of results	8
3.2 A snapshot of 2008 data 3.2.1. Price control method 3.2.2. Cost Base	12 12 13
3.3 Cost base and accounting methodology over time 3.3.1 Fixed call termination (Market 3, previously Market 9) 3.3.2 Wholesale network infrastructure access at fixed location (Market 4, previously Market 11) 3.3.3 Wholesale broadband access (Market 5, previously Market 12) 3.3.4 Leased Lines Terminating Segment (Market 6, previously Market 13) 3.3.5 Mobile call termination (Market 7, previously Market 16)	14 14 16 18 20 22
4. THE WEIGHTED AVERAGE COST OF CAPITAL	25
4.1 WACC in fixed and mobile networks	25
4.2 The gearing ratio	26
4.3 The risk-free rate	28
4.4 The debt premium and its relation with the gearing ratio	29
4.5 The cost of equity	31
4.6 The asset beta	32
5. THE AUDITING PROCESS	35
6. CONCLUSIONS	36
APPENDIX	37
A.1 COUNTRIES PARTICIPATING TO 2008 SURVEY	37
A. 2 REFERENCES	37

1. Executive Summary

This report provides an overview of the regulatory accounting systems across Europe. It is prepared annually and updates the previous versions published by the ERG in the years 2005, 2006 and 2007.

The report aims at monitoring the level of harmonisation in regulatory accounting systems and their application across Europe. It also monitors the evolution in the Weighted Average Cost of Capital (WACC) values in the different countries. Its purpose is not to critique the appropriateness or efficacy of the chosen methodologies and systems and, therefore, the data should not be taken as a source of evidence for correct or incorrect application by an NRA of the regulatory framework.

The data collected for this year's report are updated to June 2008. They have been compared, where possible, with data collected in 2006 and 2007. The data comparison confirms the important trends already observed in last years, that is to say a further consolidation in the use of Current Cost Accounting (CCA) as the preferred cost base for wholesale markets, both fixed and mobile (with the only exception of the market for terminating segments of leased lines) accompanied by an always more extensively use of Long Run Average Incremental Cost (LRIC/LRAIC) methodologies both in the fixed and in mobile wholesale markets.

Overall there would appear to be clear and continued indicators that the trend to more consistent and harmonised approaches to regulatory accounting has been maintained. The consistent application of costing methodologies promotes the development of the internal market, as it provides the same entry conditions across Europe that may enhance cross-border investment of operators.

The information given in this report is based on those market analyses already completed or under consultation in 2008¹. It therefore also includes measures which are currently proposed but subject to the completion of the consultation process. Such measures often refer to the second round of market analysis.

¹ Based on data collected from NRAs in June 2008.

In order to simplify the data presentation and also to respect the confidentiality request made by NRAs for certain data, this report does not present and comment all the data collected. Instead, it concentrates on the markets listed in the European Commission Recommendation n. 2007/879/EC. These are markets typically more susceptible to regulatory accounting remedies and, in most countries, the market analyses have been completed and remedies implemented².

Finally, a commentary on WACC data is presented reflecting the widely recognised importance of this topic.

 $^{^{2}}$ As not all countries delivered data on all markets the number of answers differs from the number of answers for single markets.

2. Introduction

2.1 Background

In September 2003 the IRG Regulatory Accounting Working Group (RA WG, now the Regulatory Accounting Project Team) started an internal data gathering process aimed at describing how regulatory accounting systems were implemented in member states with respect to cost-orientation or non-discrimination obligations or to assist price control decisions.

The first results of this process were summarised in the report on Regulatory Accounting in Practice, prepared by the RA WG in April 2005³. At the time the report showed a range of accounting methodologies used across Europe⁴.

The report was then updated in 2006 and 2007⁵ in order to monitor whether the level of harmonisation in regulatory accounting systems across Europe had improved. By the end of the first 2006 quarter several countries had completed the market reviews, therefore it was possible to start evaluating how various member states implemented the obligations provided for by articles 10, 11 and 13 of the Access Directive (for wholesale markets), by article 17 of the Universal Service Directive (for retail markets) and the principles contained in the new European Commission Recommendation on Cost Accounting and Accounting Separation of September 2005⁶. The 2006 and 2007 reports showed a clear trend towards an increasingly harmonised approach to regulatory accounting obligation among ERG countries. This trend is further confirmed by 2008 data.

³ IRG (05) 24 RA in practice 2005 (available on:

http://www.irg.eu/template20.jsp?categoryId=260350&contentId=543311).

⁴ The great majority of countries had not yet finished the market reviews imposed by the new regulatory framework. As a result, data collection referred to the old framework, and, consequently, communication services were divided in the following three categories: "Fixed", "Mobile" and "Other". Each member state was using a different mix of accounting methodologies to comply with their own national situations. While Current Cost Accounting (CCA) and Long Run Incremental Cost (LRIC) methodologies were by far the preferred methods for imposing cost orientation when regulating fixed networks, Historical Cost and Fully Allocated Cost methodologies (also referred to as Fully Distributed Cost) were primarily used for mobile networks regulation.

⁻ ERG (06) 23 Regulatory accounting in practice 2006.

⁻ ERG (07) 22 Regulatory accounting in practice 2007.

⁶ Recommendation 2005/698/EC replacing Recommendation 98/960/EC on Accounting Separation and Cost Accounting of ⁸ April 1998. In September 2005 the ERG published a Common Position containing "Guidelines on implementing the EC Recommendation 2005/698/EC", cf. document ERG (05) 29.

2.2 Current report

This year's report is a further update of the regulatory accounting systems status across Europe. It monitors how regulatory accounting methods and models changed as a consequence of the adoption by National Regulatory Authorities (NRAs) of decisions regarding market analyses. This year's report confirms the harmonisation trend already observed in last years.

The report benefits from information collected from 26 authorities⁷. A detailed list of countries that participated to this year's survey can be found in Annex 1.

The information provided in this report refers to those markets for which the market analyses are either concluded or under consultation. The report reflects, therefore, also measures which are planned to be implemented in 2008, although the final decisions may be still subject to outstanding consultations and may therefore be part of the second market analysis round.

2.3 The data collection process

NRAs can use a variety of objective and appropriate regulatory accounting methodologies depending on their market analysis⁸.

In order to obtain a general view of accounting systems across Europe, the Regulatory Accounting Project Team (RA PT) is collecting a broad range of data since 2005, including, *inter alia*, a comparison between the cost-base (e.g. historical cost versus current cost) and the costing methodology (e.g. fully distributed cost - FDC- or long run average incremental cost -LRIC) chosen by different NRAs.

Such data, providing a valuable source of information, form an IRG database, which is an informal data exchange tool among member states⁹. It includes, for each of the 18 markets identified by the old EC Recommendation as susceptible of *ex ante* regulation, the following information:

- cost base;
- accounting system;
- price control method;
- auditing process;
- WACC calculation methodology; and
- remedies imposed to SMP operators.

⁷ Cyprus did not send data for 2008 therefore Cyprus' data are referred to year 2007.

⁸ For an exhaustive explanation of how to implement a regulatory accounting system see the ERG (05) 29 "Common position on EC Recommendation on Cost accounting and accounting separation".

The database contains confidential information and it is not published.

In order to improve data comparability the following pre-defined options were included in the data request:

- For the Cost base:
 - HCA Family (Historical Cost Accounting and Forward Looking Historical Cost Accounting¹⁰)
 - CCA Family (Current Cost Accounting and Forward Looking Current Cost Accounting)
 - Other cost base methodologies that do not appear in the above definitions.
- For the Accounting System / Cost Model¹¹:
 - FDC (Fully Distributed Costs)
 - LRIC (Long Run Incremental costs)
 - LRAIC (Long Run Average Incremental costs)
 - FL-LRIC (Forward Looking LRIC)
 - FL-LRAIC (Forward Looking LRAIC)
 - EDC (Embedded Direct Costs)
 - Combination of the above mentioned systems
 - Other accounting systems that do not appear in the above definitions.
- For the Price control method:
 - Price Cap
 - Retail Minus
 - Cost orientation/Cost accounting¹²
 - Benchmarking
 - Other price methods that do not appear in the above definition

Moreover, the survey included all the parameters used for the weighed average cost of capital (WACC) calculation such as the cost of equity, level of taxation, risk free rate and risk premium in addition to the final WACC value. In this year's report IRG WACC data have been used along with WACC data gathered in 2007 for the ERG document PIBs on WACC¹³.

Besides the abovementioned data, some countries provided further information regarding the approach used to develop a cost model (e.g. Top-Down).

¹⁰ FL-HCA, as a cost base, is derived from HCA accounts and represents a forecast of historical costs, given certain hypotheses on future volumes and costs trend. They are typically used in a context of future tariff approval for services valued at HCA.

¹¹ According to Recommendation 2005/698/ EC "The purpose of imposing an obligation to implement a cost accounting system is to ensure that fair, objective and transparent criteria are followed by notified operators in allocating their costs to services in situations where they are subject to obligations for price controls or cost-oriented prices."

¹² Although various price control methods, for example benchmarking and price cap, may in practice result in cost oriented prices, a category "cost orientation" as a price control method has been created to indicate price regulation based on regulatory accounting data and costing model.

¹³ ERG (07) 05.

Finally, in order to simplify the data presentation and also to respect the confidentiality request made by NRAs for certain data, this report, as in the previous years, does not present and comment all the data collected. More precisely, this year's report concentrates on those markets listed in the new EC Recommendation as susceptible of *ex ante* regulation. These are markets typically subject to regulatory accounting remedies and, in most countries, the market analyses have been completed and remedies implemented.

3. Outline of the Results

3.1 Summary of results

The information collected this year and in the previous years is referred to the 18 markets listed in Commission Recommendation 2003/311/EC. On December 2007, this Recommendation was substituted by a new Recommendation (2007/879/EC) which, following the evolution observed in electronic communication markets over recent years, revised the list of relevant markets of the previous one and sensibly reduced the number of markets susceptible to *ex ante* regulation. Seven markets are now identified, one at the retail level¹⁴ and the other six at the wholesale level¹⁵.

For this reason, in this year's report the summary of main results has been split in two tables. Table 1 refers to data regarding the seven markets still susceptible of *ex ante* regulation whereas

¹⁴ Market 1: "Access to the public telephone network at a fixed location for residential and non-residential customers".

¹⁵ Market 2: "Call origination on the public telephone network provided at a fixed location"; Market 3: "Call termination on individual public telephone networks provided at a fixed location"; Market 4: "Wholesale network infrastructure access at a fixed location"; Market 5: "Wholesale broadband access"; Market 6: "Wholesale terminating segments of leased lines" and Market 7: "Voice call termination on individual mobile networks".

Table 2 refers to those markets that were listed in the 2003 EC Recommendation which, according to the Commission, are not anymore susceptible of *ex ante* regulation¹⁶. As the remedies referred to these markets where adopted before the new Recommendation became effective, data referred to them have been still collected and monitored.

Table 1 below indicates, the markets listed in the new EC Recommendation (first column) and thecorrespondingmarketsintheoldone(secondcolumn),whereas

 $^{^{16}}$ NRAs deciding to maintain/modify/eliminate existing remedies in these markets have to run the so called three criteria test to proof the relevant market is still susceptible of *ex ante* regulation. See ERG (08) 21 Report on Guidance on the application of the three criteria test.

Table 2 reports in the first column the markets listed in the old Recommendation.

In both tables the following columns show respectively the number of countries in which some price control¹⁷ and/or accounting obligations¹⁸ have been imposed so far, the most common "Cost Base", the "Accounting Methodology" and the "Price Control Method" (indicating the percentage of countries adopting it). Table 1 indicates that the most commonly used cost base is CCA for all markets still susceptible of *ex ante* regulation.

Markets Rec. 2007/879/EC	Markets Rec. 2003/311/EC	#of countries with price control and/or accounting obligation	Most common Cost Base	Most common Accounting Methodology	Most common Price Control Method	Summary
Market 1 Fixed Call Access Residential and non Residential	Market 1 Fixed Call Access Residential	21	38% CCA	71% FDC	38% Cost Orientation	Beside Cost Orientation, Price Cap remains widely used. A few countries do not have any regulation on this market or have regulation only on WLR
	Market 2 Fixed Call Access Non- Residential	19	32% CCA	63% FDC	37% Cost Orientation	Beside Cost Orientation, Price Cap remains widely used. A few countries do not have any regulation on this market or have regulation only on WLR
Market 2 Fixed Call Origination Wholesale	Market 8 Fixed Call Origination Wholesale	25	84% CCA	64% LRIC/LRAIC	88% Cost Orientation	
Market 3 Fixed Call Termination Wholesale	Market 9 Fixed Call Termination Wholesale	26	75% CCA	61% LRIC/LRAIC	79% Cost Orientation	see following text
Market 4 Unbundled Access Wholesale	Market 11 Unbundled Access Wholesale	26	65% CCA	50% LRIC/LRAIC	77% Cost Orientation	In most countries regulation in place
Market 5 Broadband Access Wholesale	Market 12 Broadband Access Wholesale	18	61% CCA	44% LRIC/LRAIC	56% Cost Orientation	Cost Orientation has become once again the most used Price control method on this market.

Table 1 - Summary of results in the 7 markets identified by Rec. 2007/879/EC

 ¹⁷ Art. 13 Access Directive, art.17 Universal Service Directive.
 ¹⁸ Art. 11 and Art. 13 Access Directive.

						Nevertheless Retail Minus is frequently used by NRAs. LRIC/LRAIC Accounting methods surpassed FDC in 2008
Market 6 Terminating Segments Wholesale	Market 13 Terminating Segments Wholesale	21	52% CCA	57% FDC	56% Cost Orientation	see following text
Market 7 Mobile Call Termination Wholesale	Market 16 Mobile Call Termination Wholesale	23	61% CCA	48% LRIC/LRAIC	65% Cost Orientation	see following text
Source: IRG 2008 RA database						

As far as the accounting methodology is concerned, in 2008 FDC is, by far, the most commonly used in retail access markets. LRIC is widely used in all wholesale markets.

In terms of Price Control Method, Cost Orientation remains in 2008 the most frequently adopted remedy.

Markets Rec. 2003/311/EC	#of countries with price control and/or accounting obligation	Most common Cost Base	Most common Accounting Methodology	Most common Price Control Method	Summary
Market 3 National fixed services residential	15	47% CCA	80% FDC	40% Cost Orientation	Movement towards a wider adoption of Cost Orientation. A few countries do not have any regulation (or are removing regulation) on this market
Market 4 International fixed Services Residential	9	56% CCA	78% FDC	44% Cost Orientation	Price Cap and Cost Orientation become more used. More countries than in Mkt 1-3 do not have any regulation (or are removing regulation) on this market
Market 5 National fixed Services Non- Residential	13	38% CCA	69% FDC	46% Cost Orientation	Beside Cost Orientation, Price Cap and Other Methods are more and more accepted. A few countries do not have any regulation (or are removing regulation) on this market
Market 6 International fixed Services Non- Residential	10	40% HCA	70% FDC	50% Cost Orientation	This market is the most competitive, in many countries there is no regulation in place due to effective competition
Market 7 Leased Lines	17	59% HCA	76% FDC	82% Cost Orientation	
Market 10 Fixed Transit Services Wholesale	19	79% CCA	58% LRIC/LRAIC	58% Cost Orientation	Beside Cost Orientation, Price Cap and Benchmarking are also used. LRIC/LRAIC becomes more and more popular
Market 14 Trunk Segments Wholesale	12	58% CCA	67% FDC	67% Cost Orientation	see following text
Market 15 Mobile Access and Origination Wholesale	3				In most countries no regulation due to competition
Market 17 International Roaming	1				Not regulated or Market Analyses not finished
Market 18 * Broadcast	13	69% HCA	92% FDC	77% Cost Orientation	More and more countries are moving to HCA as cost base and FDC as an accounting method

 Table 2 - Summary of results in the 11 markets identified by Rec. 2003/311/EC

Source: IRG 2008 RA database.

*Market 18 data are referred both to analogue and digital broadcast.

Table 2 shows that the most commonly used cost base is CCA in fixed retail markets except for markets 6 and 7 where HCA remains the most common cost base.

As far as the accounting methodology is concerned, also in 2008 FDC is the most commonly used in retail markets.

In terms of Price Control Method, Cost Orientation remains the most frequently adopted remedy.

This rest of this chapter show data for markets where market reviews are either complete or are under public consultation.

While the first two paragraphs illustrate a picture of the "Price control method" and the "Cost base" used for all the 18 markets listed in the old EC Recommendation for the year 2008, the following paragraphs show how the choice of the price control method and of the cost base changed over time only for the markets listed in the new EC Recommendation as still susceptible of *ex ante* regulation. In this last case, in order to guarantee data comparability across years, data has only been included where respondent NRAs provided information for at least two years. Therefore the number of countries analysed may vary from figure to figure¹⁹ and may differ from the number of countries taken into account in the first two paragraphs of the following section.

3.2 A snapshot of 2008 data

3.2.1. Price control method

Figure 1 below gives an overview of the price control methods used in IRG countries in the year 2008. The figure shows that cost orientation remains the most commonly used price control method in almost all markets, followed by price cap and other methodologies²⁰.





¹⁹ The actual number of countries considered is reported in the footnote below each figure.

²⁰ The numbering of markets in this Figure and in the following one is that of the old Recommendation.

It is interesting to observe that Price Cap continues to be mainly used in retail markets while Cost Orientation is the prevailing method used in wholesale markets. For market 1 and 2 (currently market 1) the use of retail minus as price control method is mainly referred to Wholesale Line Rental (WLR) regulation. Cost orientation is the most used price control method on market 12, nevertheless Retail Minus continues to be largely adopted by NRAs (39% countries). The reason that retail minus is used for WBA may be that it is perceived to be easier to implement than cost orientation. Another reason may be that retail minus is preferred in order to prevent wholesale squeeze.

3.2.2. Cost Base

Figure 2 below gives an overview of the different cost bases used in member states. Even if in the past CCA was by far the most common method for fixed networks and HCA was primarily used for mobile networks regulation, a strong trend towards the adoption of CCA (including mobile) can be observed.



Figure 2 - Cost base grouped per market in 2008

3.3 Cost base and accounting methodology over time

As explained above, the following paragraphs show how the choice of the price control method and of the cost base changed over time for the majority of markets listed in the new EC Recommendation as still susceptible of *ex ante* regulation.

3.3.1 Fixed call termination (Market 3, previously Market 9)

The new EC Recommendation on relevant markets defines Market 3 (previously Market 9) as the market for "*call termination on individual public telephone networks provided at a fixed location*" and identifies a relevant market for each operator. This implies that generally in all countries both incumbents and alternative operators have been notified as SMP operators.

However, as clearly explained in the ERG Common Position on symmetry²¹, in all countries for this market a clear distinction can be observed between remedies imposed on incumbents on the one side, and remedies imposed on other authorised operators (OAOs) on the other side. In particular, OAOs are regulated less strictly than the incumbent and usually are not subject to accounting separation, price control and cost accounting obligations, as the obligations related to tariff setting for OAOs often take the form of "*fair and reasonable*", "*non-abusive*" prices or "delayed reciprocity".

For this reason this paragraph reports data on cost base and price control evolution over time, referred to incumbent operators. Unlike Figure 2, which shows data for 26 countries, the figures below show data for those NRAs that provided the relevant information for three years, therefore they show data for 20 countries.

Summary

CCA is the preferred cost base for this market combined with LRIC as the costing methodology.

Trend analysis:

Cost base

Figure 3 shows the percentage of countries adopting CCA, HCA or a combination of accounting methodologies to set incumbent's fixed terminating charges in 2006, 2007 and 2008.

²¹ ERG (07) 83 Common Position on symmetry of fixed call termination rates and symmetry of mobile call termination rates.

It results that the most common cost base for fixed networks is CCA (above 75% in the three years analysed). It has to be noticed that this is the fourth consecutive year in which such a result is observable, as in fixed networks HCA had already been replaced with CCA by the majority of member states since 2005. On the contrary, the number of countries using HCA decreased from 20% in 2006 to 10% in 2007 and 2008. This means that 2 additional countries adopted CCA in the last year. Only one country declared to use, since 2006, another type of $cost base^{22}$.





Source: IRG 2008 RA database Number of countries: 20

Accounting methodology

Figure 4 shows the percentages of countries using LRIC, FDC or other mixed methodologies for fixed termination services from 2006 to 2008.

The figure shows a significant increase in countries using LRIC for determining fixed termination tariffs since 2006 so that it is now the prevailing accounting methodology (70%). As consequence of this trend, a sharp reduction in the percentage of countries using FDC is observed (FDC passed from 45% in 2006 to 25% in 2008). Only one country declared to use other methodologies²³.

²² In particular this Country uses CCA method for network assets and HCA method for non network assets (vehicles, real estate, machinery, liquid assets, etc.) and operating expenditure (labour, electricity, materials and supplies, etc.). ²³ The accounting methodology declared was EDC.

Figure 4 - Accounting Methodologies Fixed Call Termination (Mkt 3, previously Mkt 9)



Source: IRG 2008 RA database Number of countries: 20

3.3.2 Wholesale network infrastructure access at fixed location (Market 4, previously Market 11)

The new EC Recommendation on relevant markets defines Market 4 (previously Market 11) as the market for "wholesale (physical) network infrastructure access (including shared or fully unbundled access) at a fixed location".

In this market all countries notified at least one operator. Typically the SMP operator is the incumbent with the exceptions of Finland and Hungary that defined sub-national geographic market identifying the corresponding local incumbent operators as having SMP.

Unlike Figure 2, which shows data for 24 countries, the figures below show data for those NRAs that provided the relevant information for two years, therefore they show data for 22 countries.

Summary

Also for this market CCA is the preferred cost base combined with LRIC as the costing methodology.

Trend analysis:

Cost base

Figure 5 shows that also in the unbundling market CCA is by far the most commonly used cost base methodology and its use increased from 59% to 73% in the last year, whereas HCA shows an

associated reduction in the same time frame (from 32% to 23%). Only one country declared to adopt another methodology²⁴.

It is important to observe that the change of cost base (from HCA to CCA) is particularly relevant for this market. Unlike other markets where a high percentage of total costs is represented by network equipment subject to technical progress, in the ULL market the highest percentage of costs is related to duct civil engineering that do not become obsolete over time. Broadly speaking this may imply that the usual reduction in costs, which is normally observed in other markets when adopting CCA cost base, is not necessarily observed in the unbundled access market. In addition to that, it has to be taken into account that copper price has been and is still significantly increasing over time; this price increase could be a further element determining higher service prices when moving from HCA to CCA. While such considerations apply to the PSTN world, their validity has yet to be assessed in a NGN environment. In this regard, according to some observers the use of CCA might be relevant in a time of roll-out of fibre access networks and could promote infrastructure-based competition as well as investment in infrastructure.





Source: IRG 2008 RA database Number of countries: 22

²⁴ In particular this Country uses CCA method for network assets and HCA method for non network assets (vehicles, real estate, machinery, liquid assets, etc.) and operating expenditure (labour, electricity, materials and supplies, etc.).

Accounting methodology

Figure 6 shows the percentages of countries using LRIC, FDC or other mixed methodologies in the unbundling market since 2007.

It can be observed an increase in the percentage of countries using LRIC (passing from 55% in 2007 to 64% in 2008), meaning that two countries adopted LRIC in 2008. Correspondingly, a slight reduction in the percentage of countries using FDC is observed (passing from 36% in 2007 to 32% in 2008). The percentage of countries declaring other methodologies decreased so that in 2008 only one country declared to have another methodology in use²⁵.





Source: IRG 2008 RA database Number of countries: 22

3.3.3 Wholesale broadband access (Market 5, previously Market 12)

The new EC Recommendation on relevant markets defines Market 5 (previously Market 12) as the market for "*wholesale broadband access*"²⁶.

Also in this market all countries notified at least one operator in the first round of market analysis²⁷. Typically the notified operator is the incumbent with the exceptions of Finland and Hungary that defined sub-national geographic market identifying the corresponding local incumbent operators as having SMP in these markets.

²⁵ The accounting methodology declared is EDC.

²⁶ The Recommendation clarifies that "This market comprises non-physical or virtual network access including bit-stream" access at a fixed location. This market is situated downstream from the physical access covered by market 4 listed above, in that wholesale broadband access can be constructed using this input combined with other elements".

²⁷ Netherland notified KPN only in the high quality wholesale broadband access market.

The following figures show data respectively for 14 and 13 countries that provided the relevant information for 2007 and 2008. On the contrary, the number of countries considered in Figure 2 for this market is 15.

Summary

CCA is, by far, the most common cost base in 2008 (71%), while LRIC is the prevalent accounting methodology (54%).

Trend analysis:

Cost base

Figure 7 shows that the market for wholesale unbundled access shows a similar trend in terms of the cost base used to that of the unbundling market. Also in this case it can be observed that CCA is by far the most commonly used cost base methodology and its use increased from 50% to 71% in the last year, whereas HCA shows an associated reduction in the same time frame (from 43% to 29%). However this market is characterised by the prevailing use of network elements subject to rapid technological change, whose valuation consequently should decrease passing to CCA cost base.



Figure 7 - Cost Base Wholesale Broadband Access (Mkt 5, previously Mkt 12)

Accounting methodology

Figure 8 shows the accounting methodology used in the wholesale broadband access market. Also in this case it can be observed a huge increase from 2007 (38%) to 2008 (54%) in the percentage of countries using LRIC and a corresponding decrease in the percentage of countries using FCD, passing from 54% to 46%.





3.3.4 Leased Lines Terminating Segment (Market 6, previously Market 13)

The new EC Recommendation on relevant markets defines Market 6 (previously Market 13) as the market for "Wholesale terminating segments of leased lines, irrespective of the technology used to provide leased or dedicated capacity".

All countries notified at least one operator in the first round of market analysis²⁸. Typically the notified operator is the incumbent with the exceptions of Finland that defined sub-national geographic market identifying the corresponding local incumbent operators as having SMP in this markets.

Unlike Figure 2, which shows data for 20 countries, the figures below show data for those NRAs that provided the relevant information for three years, therefore they show data for 11 countries.

²⁸An exception is Lithuania where the NRA notified the incumbent only in the market of wholesale terminating segments of low speed leased lines, whereas did not find any SMP operator in the market of wholesale terminating segments of high speed leased lines.

Summary

CCA is the most common cost base method while FDC is the prevailing accounting methodology since 2006.

Trend analysis:

Cost base

Figure 9 shows the percentage of countries adopting CCA, HCA or a combination of other accounting methodologies to set leased line charges for the terminating segments from 2006 to 2008. In 2006 the most commonly used cost base was HCA (55%, representing six countries), but its usage has decreased since 2007 (45%, representing five countries) in favour of CCA. The percentage of countries declaring using CCA is fix to 55% (six countries) since 2007.

As far as the cost base is concerned, in this market considerations similar to those made for the wholesale ULL market apply.



Figure 9 - Cost Base Leased Lines Terminating Segment (Mkt 6, previously Mkt 13)

Accounting methodology

Figure 10 shows the percentages of countries adopting LRIC, FDC or other mixed allocation methodologies in the leased line (LL) wholesale terminating segment for the three year under analysis.

The most common accounting methodology in the leased line wholesale terminating market is FDC (55%), this percentage is stable since 2006. At the same time, the percentage of countries using LRIC or mixed methodologies is stable over time and is fix respectively to 27% and $18\%^{29}$.



Figure 10 - Accounting Methodology LL Terminating Segment (Mkt 6, previously Mkt 13)

3.3.5 Mobile call termination (Market 7, previously Market 16)

The new EC Recommendation on relevant markets defines Market 7 (previously Market 16) as the market for "*Voice call termination on individual mobile networks*" and identifies a relevant market for each operator. This implies that in all countries all mobile operators have SMP in the termination market.

Unlike Figure 2 which, for Market 16 shows data for 23 countries, the figures below show data for those NRAs that provided the relevant information for three years, therefore they show data for 15 countries.

Summary

CCA is the preferred cost base for this market combined with LRIC or LRIC variant as the costing methodology. The trend analysis suggest that the development of costing tools is still relatively new

²⁹ As far as the other methodologies are concerned, one country declared to use EDC, while another one declared to use adjusted FDC, taking into account efficiency adjustments.

and NRAs will first use established cost data (HCA) and more straightforward costing methods (FDC) before moving on to the more technically challenging concepts of CCA and LRIC.

Trend analysis:

Cost base

Figure 11 shows the percentage of countries adopting CCA, HCA or a combination of accounting methodologies to set mobile interconnection terminating charges in 2006, 2007 and 2008. Since 2006 the most commonly used cost base for mobile networks is CCA. In 2008 the percentage of countries using CCA further increased, passing from 67% (10 countries) in 2007 to 73% (11 countries) in 2008. On the other hand, the percentage of countries using HCA decreased from 27% (4 countries) in 2006 and 2007 to 20% (3 countries) in 2008, while the percentage of countries using other mixed methodologies remained unchanged in 2008 (only 1 country³⁰). Consistent application of costing methodologies promotes the internal market as it provides for the same market entry conditions across Europe.



Figure 11 - Cost Base Mobile Call Termination (Mkt 7, previously Mkt 16)

³⁰ In particular this Country uses CCA method for network assets and HCA method for non network assets (vehicles, real estate, machinery, liquid assets, etc.) and operating expenditure (labour, electricity, materials and supplies, etc.).

Accounting methodology

Figure 12 shows the percentages of countries using LRIC, FDC or other mixed methodologies as the costing methodology for call termination in mobile networks in the three years.

In the mobile sector the most commonly used accounting methodology is LRIC. The percentage of countries using this methodology further increased in 2008, passing from 53% (8 countries) in 2006 to 67% (10 countries) in 2008. In the same time frame, the percentage of countries using FDC decreased from 40% (6 countries) in 2006 and 2007 to 33% (5 countries) in 2008.





Source: IRG 2008 RA database Number of countries: 15

4. The weighted average cost of capital

4.1 WACC in fixed and mobile networks

This year's WACC data do not present significant changes compared to last year³¹. Generally speaking it can be observed that NRAs use a different WACC value for regulated companies in the fixed and mobile markets and that the WACC used for the latter is usually higher than the one used for the former. Figure 13 shows that there is a general coherence in the IRG countries in terms of gap between the decisions on WACC for fixed networks and the decision on WACC for mobile networks.



Figure 13 - Pre-tax Wacc for fixed and mobile networks

Source: RA PT Wacc data collection (last update January 2008)

However, the cross-country differences in terms of WACC level are attributable mostly to national specificities like risk free rates and tax rates levels representing exogenous factors for operators.

Some NRAs also introduced a WACC for broadcasting and its value is usually higher than the one adopted for fixed networks, but generally lower than the one adopted for mobile networks. In the UK

³¹ Data reported in this chapter are an update not only of last year RA report but also of the document ERG (07) 05 PIBs on WACC.

then, Ofcom also calculates a divisional WACC for the copper access assets, based on its assessment that this part of the network bears a lower level of risk compared with the rest of BT's network³².

Almost all the NRAs calculate a pre-tax cost of capital. In general in IRG countries WACC calculation may refer to two main targets: the regulated operator and a mix of regulated and efficient operator. NRAs are used to recalculate the WACC every year even if in some countries the WACC is updated following price cap validity or market analyses.

As observed in the introduction to this report data on WACC and on the parameters used for its calculation have been collected for internal use only as some NRAs consider this information confidential. Individual NRAs may however publish this information as part of their own consultation processes.

4.2 The gearing ratio

As shown in Figure 14 and 15 below, the average ratio of debt on companies value (gearing ratio³³) in member states was 44,2% in 2007 for fixed networks and 34,3% for mobile networks. This difference, apparently due to the higher cost of fixed networks deployment compared to mobile networks deployment, reflects in truth a large set of effects, as in the book value method for gearing estimation, beside investments, debt can also include the result of acquisitions, of intra-company financing (for companies owning both a fixed and a mobile subsidiary) and of many other specific factors.

³² In France, five years ago ARCEP has abandoned a divisional approach to set WACC in favour of a single corporate WACC.

³³ The gearing ratio is a measure of the ratio of debt to company value (the latter being equivalent to the sum of debt (D) and equity (E)) and is defined as: Gearing = D/(D+E) (See ERG Pibs on WACC page 8).



Figure 14 - Gearing Ratio (%) (fixed networks)

Source: RA PT Wacc data collection (last update January 2008)



Figure 15 - Gearing Ratio (%) (mobile networks)

Source: RA PT Wacc data collection (last update January 2008)

Three main methods are used by NRA to estimate the gearing ratio: a method based on market values, a method based on book values, and optimal/efficient gearing method.

As shown in Figure 16, in 2007 the main method used to estimate the gearing ratio for fixed networks as well as for mobile networks and broadcasting was the optimal/efficient gearing method.

Figure 16 - Methods used to determine the gearing level for fixed networks, mobile networks and broadcasting (%)



The preference for this estimation method comes probably from the fact that its outcomes generally appear as more consistent with the relevant cost base³⁴.

4.3 The risk-free rate

The risk-free rate depends on general market conditions and is not influenced by any company specific factors. Most NRAs use the government bond yields as a reference to estimate the risk-free rate. This is because in mature and well-developed economies, governments zero coupon bonds are considered a good risk-free asset reference and their expected returns can be seen as a good proxy for the true risk-free rate.

Many different time horizons can be used in order to choose the appropriate bond maturity for risk-free rates calculation. However, three major conceptual time horizons adopted by NRAs for choosing risk-free rate maturity can be identified:

- the "investment horizon" links the maturity of the risk-free rate to the relevant asset depreciation period and states that the maturity of the risk-free rate should match the period expected by investors to generally be compensated for making long term investments;
- the "planning horizon" links the maturity of the risk-free rate to the average life of projects that are to be assessed using the estimate of the cost of capital;
- the "time-horizon of the periodic review" links the risk-free rate maturity with the regulatory review period validity.

³⁴ PIB 2 on gearing estimation method included in document "Principles of Implementation and Best Practices for Wacc calculation" (February 2007) stated: "the level of gearing should be determined using a method consistent with the relevant cost base and the availability of information although some adjustments may be introduced, if required".

Figure 17 shows that most NRAs adopt an investment horizon or a planning horizon and choose a 10year maturity for assessing the risk-free rate. Some NRAs however prefer to estimate the risk-free rate using a maturity period consistent with the validity of market analyses.



Figure 17 - Maturity of the risk free rate

4.4 The debt premium and its relation with the gearing ratio

The debt premium is the additional return expected by debt investors to invest in corporate debt compared to government debt. Three main methods are adopted to estimate the debt premium by NRAs: the use of historical data on corporate bonds premia, the use of the optimal/efficient method and the use of benchmarks of companies financially similar to the regulated company. The figure below (Figure 18) shows that 45% percent of countries use historical data to estimate the debt premium.



Figure 18 - Methods used to calculate the debt premium

Source: RA PT Wacc data collection (last update January 2008)

The figure below (Figure 19) shows the relationship between the gearing ratio and debt premium in some member states. It is normally accepted that higher gearing (an increasing proportion of debt in a company's capital structure) will increase equity risk which will be reflected in a higher risk premium.

As can be seen from the graph, benchmark data from IRG members slightly supports this relationship as there are many country-specific issues (including differences in calculation period, maturity of the financial markets etc.) causing a considerable variability around a possible linear relationship. However, comparing the following graph with the corresponding graph in 2007³⁵, the level of variability seems to have decreased in the last year.



Figure 19 - Gearing and debt premium (fixed and mobile networks)

Source: RA PT Wacc data collection (last update January 2008)

The debt premium average in the IRG is 1,35% for fixed networks (Figure 20) and 1,58% for mobile networks (Figure 21).

³⁵ See ERG Pibs on WACC.



Figure 20 - Debt premium (fixed networks) (%)

Source: RA PT Wacc data collection (last update January 2008)





4.5 The cost of equity

Even if many different methodologies are available to calculate the cost of equity, the Capital Asset Pricing Model (CAPM) is largely the preferred one in IRG countries. However some countries use different methods, such as the Balance Sheet method, whose main specificity is to use book values instead of market values to calculate the equity and debt ratios.

Under the CAPM, the equity risk premium (ERP) reflects the extra return that investors require as a reward for investing in equities rather than a risk-free asset. It is a market, rather than company-specific factor.

Figure 22 shows the levels of the equity risk premium in some member states. In 2007 the average value used in the WACC calculation for fixed networks was $5,3\%^{36}$. As can be seen from the graph, there are significant differences among countries. These differences can be determined by different estimation methods, but also by country-specific reasons (development of stock markets, differences in country risk, etc.).

The most common approach to estimating the risk premia used in financial asset pricing models is to base it on historical data as the traditional historic approach considers the past as a reliable indicator of how the market will behave in the future. NRAs then generally base their ERP estimations on historical means³⁷, international benchmarks, empirical studies and economic papers.



Figure 22 - Equity risk premium (used in the WACC calculation for fixed networks) (%)

Source: RA PT Wacc data collection (last update January 2008)

³⁶ The average value of the equity risk premium, calculated for the same group of countries and reported in the equivalent figure of the 2007 RA Report, is 5,45% for 2008.

³⁷The historic equity risk premium can be estimated using arithmetic or geometric means and the issue of whether it should be estimated using either has been the subject of much debate.



Figure 23 - Equity risk premium (used in the WACC calculation for mobile networks) (%)

4.6 The asset beta

An important measure of the risk of the risky asset relative to the market risk is given by beta³⁸. This parameter reflects the degree of co-movement between the company's returns and the market returns. The higher the value of beta, the greater the systematic risk faced by holders of the firm's equities³⁹. Since financial leverage is a determinant of beta, it is common to de-lever (i.e. stripping out the gearing component) comparable betas to arrive at an un-levered beta⁴⁰.

The following graphs show the unadjusted asset betas in the different IRG countries for fixed networks (Figure 24) and for mobile networks (Figure 25).

 $^{^{38}}$ In theory, the only risk that is captured by beta is systematic risk, which is the risk that cannot be eliminated by the investor through diversification.

³⁹ Several approaches can be used in estimating beta: *i*) historical beta; *ii*) adjusted historical beta; *iii*) bottom-up beta.

⁴⁰ The asset beta is obtained with the following formulas: Miller Formula: $b_{asset} = b_{equity} / (1 + D/E)$

or Modigliani - Miller Formula: basset = bequity / (1+(1 - t)*(D/E)).

Where β_{asset} corresponds to the un-levered β and the β_{equity} to the levered β .

The impact of using either formula is small, however the Miller Formula is simpler because it does not require estimation of forward-looking effective tax rates for telecommunications companies.



Figure 24 - Asset betas in selected countries (fixed networks)

Source: RA PT Wacc data collection (last update January 2008)





The most used formula by NRAs to calculate the asset beta is the Modigliani – Miller formula, even if in some countries the Miller formula is used and in some others the asset beta is not calculated.

5. The auditing process

As the 2002/19/EC Directive prescribes, the compliance of the incumbent's accounting system should be verified by a qualified independent body (Article 13 [4]). In this year's data gathering process only one of the NRAs that answered this question has not started the audit procedures, but it predicts to start reporting from year 2006.

In terms of the audit process, several national and international firms were identified as the independent auditor to the last set of audited financial statements. Figure 26 shows the last year audited in the several countries. For about half counties it results that the last audited year is 2006; for 13% countries it is updated to 2007.



Figure 26 - Last year audited

Source: IRG 2008 RA database Number of countries: 23

The choice of the auditor firm varies from country to country and in 55% of the cases it is up to the operator to choose it. In around 10% cases the auditor firm is subject to approval of NRA or it is chosen jointly by the operator and the NRA.

Simultaneously 58% of the NRAs do not have access to the incumbents' operative cost accounting system in use, although some of them can ask specific detailed information to the incumbent with respect of information needed.

6. Conclusions

This year's data confirm the results already obtained in last year's Reports, namely an increase in the number of countries using CCA as the relevant cost base and LRIC/LRAIC as accounting methodology. As far as the cost base is concerned, the adoption of CCA is observable for wholesale markets, both fixed and mobile, with the only exception of the market for terminating segments of leased lines.

The ERG welcomes the overall trend observed of a gradually increasing level of harmonisation of the application of the regulatory accounting system in ERG member states. NRAs are demonstrating much closer alignment with the 2005 EC Recommendation on Regulatory Accounting, which could indicate that the use of the ERG Common position on EC Recommendation on Cost accounting and accounting separation helps in promoting a consistent application of the EC Recommendation.

This trend in the long run should be able to guarantee the same entry conditions to operators all over Europe. This will enhance cross-border investment of operators further, promoting the development of the internal market.

Appendix

A.1 Countries participating to 2008 survey

Austria Belgium Croatia Czech Republic Denmark Estonia Finland France Germany Greece Hungary Ireland Italy Lithuania Malta The Netherlands Norway Poland Portugal Romania Slovenia Spain Sweden Switzerland Turkev United Kingdom

A. 2 References

- COMMISSION RECOMMENDATION of 19 September 2005 on accounting separation and cost accounting systems under the regulatory framework for electronic communications (2005/698/EC);
- ERG (05) 29 Common position on EC Recommendation on Cost accounting and accounting separation, published in September 2005, available on http://erg.ec.europa.eu/;
- ERG (06) 23 Regulatory accounting in practice 2006;
- ERG (07) 05 PIBs on WACC;
- ERG (07) 22 Regulatory Accounting in Practice Report 2007;
- ERG (07) 83 ERG CP on symmetry of fixed call termination rates and on symmetry of mobile call termination rates.
- IRG (05) 24 Regulatory accounting in practice 2005, available on http://www.irg.eu/template20.jsp?categoryId=260350&contentId=543311.