Croatian Agency for Postal and
Electronic Communication

Accounting Separation and Cost Accounting

Consultation document

August 2008

Contents

1 Introduction

The Croatian Agency for Postal and Electronic Communications (hereinafter: Agency), is an independent National Regulatory Agency which performs regulatory and other tasks within the scope and competence stipulated by the Act on electronic Communication[1] (further in text: New Law)

One of the major objectives of the Croatian Agency for Post and Electronic Communications (the Agency) is to ensure the provision of world standard telecommunication services at reasonable cost and prices, through creation of a suitable environment for competition among the different electronic communications operators. At the same time, the aim of the Agency is to encourage investment in the electronic communications sector and facilitate the entry of new investors into the market.

In order to achieve these objectives, the Agency intends to ensure that the operators with significant market power ("SMP") on the relevant telecommunication market (hereinafter: Notified Operator) submit appropriately formatted and detailed information to enable the Agency to assess the competition and to determine any anticompetitive practices.

Accounting separation and cost accounting obligation are imposed by the Agency, based on the former Law on Electronic Communications (NN 122/03, 158/03, 60/04 and 70/05 further in text: Law) due to the reasons explained in a chapter 2.1 *Relevant Croatian legal framework*. In addition, the Agency has decided to use in this document terms defined within the Former Law on Electronic Communication and related bylaws in order to avoid any potential misunderstanding which may arise from discrepancy of terms defined in the Law and the New Law.

Based on a market analysis, on the 17th December 2007 the Agency council published the list of the relevant telecommunication markets and Notified Operators[2]. Currently, the intention of the Agency is that proposals and recommendations of this consultation document related to cost separation and cost accounting specifically refers to Notified Operators of the fixed telecommunication network.

Following the closing of public consultations, Agency will issue a detailed "decision document", which imposes the necessary accounting separation and cost accounting obligations on the Notified Operator. The decision document will be based on proposals and recommendations of this consultation document, public consultation conclusions and any subsequent discussions with stakeholders.

The main idea of this document is to support and enforce any legislation already in place with decision based on the relevant European Union (EU) legal framework in the electronic communication sector. The new regulations would therefore provide a framework for preparing regulatory accounts and other information to be submitted periodically to the Agency

[1] NN 73/08
[2] A list of all relevant markets and opetators and providers of telecommunication services that have a consider market power at the same relevant markets (NN 134/2007).

1.1 What is accounting separation and why it is used?

Market distortion by a Notified Operator may take various forms, including excessive charges for interconnect services, discrimination in pricing, unfair cross-subsidies, and predatory pricing. These practices are usually aimed at stifling competition and may even prevent market entry. Accounting Separation (AS) is a common tool used to address these anti-competitive concerns. Under this approach, the Notified Operators' activities are split for accounting purposes, into separate segments or services. In other words accounting separation does not impose on the Notified Operators a set of rules about how its activities should be organized, but simply how accounting information is to be collected and reported. The transfer charges from one business to another should be explicitly identified, allowing non-discrimination to be enforced, and the profitability of particular businesses or services can be monitored, allowing cross-subsidies to be identified. Accounting separation would enable monitoring a systematic division of costs between retail and wholesale.

1.2 Cost accounting obligation

The purpose of imposing an obligation regarding the set up of a cost accounting system is to ensure that fair, pro-competitive and transparent criteria are followed by notified operators in allocating their costs to services.

A cost accounting system is therefore a set of rules and procedures to ensure the attribution and allocation of revenues, costs, assets, liabilities and capital employed to individual activities and services, in particular considering direct and indirect operating costs.

More precisely, a cost accounting system will be made of ways to establish a recordkeeping mechanism, keep track of costs and identify operational expenditures such as equipment maintenance. The major resulting benefit should be a transparent illustration of the relation between costs and prices, as the system should be able to break costs down in order to ensure that costs allocated to regulated services do not result in cross subsidies, excessive prices and, in general, that costs are efficiently incurred.

1.3 Call for public consultation

The Agency seeks the views of the Notified Operator, experts, and other concerned parties in telecommunications sector and the public, on the proposals contained in this consultation document within 30 days from publishing this document on official Agency web page (www.telekom.hr).

1.4 Outline of the document

The short outline of this consultation document is given below.

Chapter 1 is introduction chapter that outlines the purpose of this document.

Chapter 2 outlines the legal basis for imposing obligations of accounting separation and cost calculation. The relevant Croatian legal framework is given in the beginning of the chapter followed by a brief description of the underlying EU legal framework.

Chapter 3 contains the regulatory accounting principles to be applied or used by Notified Operators in the preparation of the Regulatory Financial Statements including process of preparation, audit, approval and publication of regulatory financial statements, as well as maintenance of accounting records and amendments and restatement of the regulatory financial statements.

Chapter 4 describes proposed principles of accounting separation, including: regulatory accounting principles, description of Profit and Loss statement, Mean capital employed statement, Regulatory reconciliation statement, Statement of transfer charges and Auditors report. Furthermore, this chapter outlines the proposal of required financial separation of markets, segments and services.

Chapter 5 sets out the proposed form of cost accounting obligations referring to price control, cost base and cost accounting method for each of the relevant markets and related market segments.

Chapter 6 outlines the key-principles of cost accounting and gives guidelines how cost accounting systems should be developed, including applicable cost base calculation, cost allocation process and cost accounting methods, model requirements and documentation, as well as calculation of cost of capital.

Chapter 7 contains consultation document appendix.

2 Legal basis for imposing obligations of accounting separation and cost calculation

2.1 Relevant Croatian legal framework

2.1.1 New Law on Electronic Communications

Croatian legislation related to Accounting Separation and Cost Accounting follows the principles of European regulatory framework. Thus new Law on electronic communications (hereinafter: New Law), which came into force on 1 July 2008, takes over all relevant EU directives and recommendations described in Section 2.2 *Relevant EU legal framework.*

The transitional and final provisions stipulated in article 128 of the New Law prescribe that all provisions and remedies imposed on Notified Operators pursuant to the former legal acts stay in force until the process of market analysis according to the New Law is finished.

2.1.2 Law on Electronic Communications

The Law on Telecommunications[3] (Law) came into effect on 1 August 2003 and ceased being effective 1 July 2008, when the New Law came into force. All provisions of the former Law ceased being effective except for article 97, 98, 99, 100 and 102, which ceased being effective on 31 December 2008.

2.1.2.1 Imposition of Structural Separation and Separate Accounting

Authority granted to Agency by the virtue of Law, related to Accounting Separation

Article 57 of the former Law is granting the authority to Agency by prescribing that the way of separating the different business activities of an Notified Operator, with respect to their organization and accounting, and other details in connection with that separation shall be determined by a resolution of the Agency Council (according to article 131, paragraph 10 of the New Law Croatian Telecommunication Agency continues to exist as Croatian Agency for Postal and Electronic Communication (hereinafter: Agency)) .

Aim of Structural Separation and Separate Accounting

Structural Separation and Separate Accounting is further regulated with article 57 of the former legal act which defines the following:

- "The Operators or service providers with SMP on the relevant telecommunications market are prohibited to subsidize the provision of telecommunications services, or subsidizing between these and other telecommunications services."

[3] NN 122/03, 158/03, 60/04 i 70/05

- "The Operators or service providers with SMP on the relevant telecommunications market must separate, with respect to the organization and accounting, business activities in different relevant telecommunications markets for the purpose of ensuring the transparency of the flow of telecommunications services and payments between those relevant telecommunications markets on which they perform their business operations."

- "The undertaking with SMP on the markets which are not telecommunications markets or which exercises special or exclusive rights in other fields is prohibited to subsidize the prices of its telecommunications services from the fields in which it has special or exclusive rights. For determining the level of the prices of services in telecommunications markets of the Operator with SMP, the principle of cost-orientation must be applied."

- "The Operators or providers of services with SMP in markets which are not telecommunications markets, or which exercise special or exclusive rights in other areas, must separate business activities, with respect to the organization and accounting, in the relevant telecommunications market from their business activities in markets which are not telecommunications markets, for the purpose of ensuring the transparency of the flow of telecommunications services and payments between those fields where they perform their business activities."

2.1.2.2 Imposition of Cost Accounting

Authority granted to Agency by the virtue of Law, related to Cost Accounting

Article 63 of the Law is granting the authority to Agency by prescribing that the Agency must ensure that the systems of monitoring costs used by the Notified Operators on the relevant market are suitable for application of the principles of transparency and cost orientation in the pricing system for end-users of services. The method of costs monitoring shall be determined by a decision of the Agency Council. Furthermore, Article 8, item (3) of the By-Law on network access an interconnection prescribes that interconnection operators must, without delay, deliver financial and market data related to interconnection upon the Agency's request in the manner that is as detailed as determined by that request.

Leased lines

According to article 55 of the Law, Notified Operators, which provide leased line services, are obligated to publish the minimum offer lines for leasing with uniform technical characteristics, and they must determine general conditions of operation and cost-oriented prices. The operators must offer on the market the service of leased telecommunications lines while observing the principles of non-discrimination, transparency, objectivity and cost-orientation.

Interconnection

According to article 56 of the Law and article 7 paragraph 1 of the Ordinance the prices for interconnection of Operators with SMP on the market of public voice services in the fixed telecommunications network, on the market of services of leased telecommunications lines and

of the operators of the mobile telecommunications network which are designated as Notified Operators on the interconnections market must be in accordance with the principles of transparency and cost-orientation, and they must be based on actual costs of the service provided, including also the reasonable rate of return on investments.

According to the Ordinance on Network Access and Interconnection (article 7, paragraph 1) the burden of proof that the interconnection charges are derived from these costs shall fall on the interconnection operator performing interconnection.

According to the Article 7, paragraph 2 of the Ordinance, The Agency's Council may request from the interconnection (article 7, paragraph 1 of the Ordinance) operator explanation of interconnection prices, and, on the basis of the explanation, order by a decision that the prices of interconnection be changed, if the prices were not determined in accordance with the provisions of the Telecommunications Act and this Ordinance.

According to the Article 7, paragraph 3 of the Ordinance, different interconnection (article 7, paragraph 1 of Ordinance) prices and different interconnection conditions may be determined for different types of interconnection operators, depending on the type of interconnection. When different interconnection prices and different interconnection conditions are determined, the Agency's Council must be careful not do distort free competition and it must respect the principle of non-discrimination

Furthermore, according to the Article 8, paragraph 3 of the Ordinance, operators for interconnection must, without a delay, at the request of the Agency, submit the financial and market data relating to interconnection and this to the level prescribed by the request.

LLU services

Access to Unbundled Local Loop is regulated with article 60 of the Law which defines the following:

- The operators of fixed public telephone networks, designated by the Agency's Council as operators with SMP on the relevant market of services of fixed public telephone networks, namely, public voice services and services of transfer of speech, sound, data, documents, images and other in the fixed telecommunications network, shall, at the request of other operators, enable access to their unbundled local loop and related facilities, observing the principles of transparency, equality, non-discrimination and cost orientation.

- The prices for the provision of unbundled access to the local loop and related facilities shall be determined in compliance with the principles of transparency, non-discrimination, objectivity and cost orientation, and must be based on true costs of services provided, including a reasonable rate of return on investments.

Prices of services and their regulation

According to the Article 63 of the Law, for the prices of services, which are performed by the service provider for which the Agency Council has ascertained that he has SMP on the market of public voice service in the fixed network and on the market of leased telecommunications

lines, it is necessary to obtain a previous approval by the Agency Council. The prices of services shall be based on the principles of transparency and cost orientation

Furthermore, according to article 63, paragraph 10 and 11 of the Law the Agency's Council may issue a decision ordering suitable changes of the prices for services in case of lack of efficient market competition, in case the operator or service provider with SMP on the relevant market infringes the principles of transparency, equality and cost orientation of prices for services, in the following manner:

- charging too high prices for services;
- precluding market entry to other participants;
- restricting market competition by charging excessive or too low prices for services;
- providing unjustified benefits to certain users of services; and
- unjustified bundling of certain types of services.

The Agency's Council may, when determining the change in prices of services, apply the following procedures:

- determine the maximum prices for services;
- regulate individual prices for services;
- impose cost orientation of prices for services; and
- determine prices for services pursuant to the prices on comparable markets.

Publishing of data

The powers to publishing the data related to interconnection, including data related to Accounting Separation and Cost Accounting is given to the Agency by Article 8, Item 4 of the By-Law on network access and interconnection. The Agency may publish data related to interconnection, if that contributes to open competition, taking into account the protection of the business secret.

Audit of Financial Reports

Ordinance on network access and interconnection provides that financial reports of interconnection operators must be prepared, audited and published in accordance with special regulations on financial transactions and audit.

2.1.2.3 Relevant markets for imposition of Accounting separation and Cost Accounting

Taking into account legal basis described above, before the completion of the first round of market analysis according to the new Law, obligation of Accounting Separation and Cost Accounting can be imposed on relevant markets stipulated by the former and other legal acts derived from the Law.

Based on Article 51 paragraph 5 of the former Law and Resolutions of the Agency's Council on 14 September 2006[4] and on 30 March 2007[5] Agency published on 17 December 2007 the *List of relevant markets, operators and telecommunications service providers with SMP on these relevant markets*[6]. Following relevant markets are included in the list:

I. Relevant market for public fixed telephone network services on territory of the Republic of Croatia:

i public voice services on territory of the Republic of Croatia; and

ii transmission of voice, sound, data, documents, pictures and other in fixed telecommunication network on territory of Republic of Croatia

Operators with common significant market power on relevant market:

- HT-Hrvatske telekomunikacije d.d., Zagreb, Savska cesta 32,
- Iskon Internet d.d., Zagreb, Garićgradska 18.

II. Relevant market for Relevant market for public voice services in mobile telecommunication network on the territory of the Republic of Croatia;

Operators with significant market power on relevant market:

- T-Mobile Hrvatska d.o.o., Zagreb, Ulica grada Vukovara 23,
- VIPnet d.o.o., Zagreb, Vrtni put 1.

III. Relevant market for interconnection services on the territory of the Republic of Croatia;

Operators with significant market power on relevant market:

- T-Mobile Hrvatska d.o.o., Zagreb, Ulica grada Vukovara 23,
- – VIPnet d.o.o., Zagreb, Vrtni put 1,
- – HT-Hrvatske telekomunikacije d.d., Zagreb, Savska cesta 32

[4] Klasa: 344-01/06-01/220, Urbroj: 376-06-12
[5] Klasa: UP/I-344-01/06-01/916, Urbroj: 383-07-20
[6] Klasa: 344-01/07-01/939, Urbroj: 376-11-1

IV. Relevant market for leased telecommunication lines on the territory of the Republic of Croatia;

Operator with significant market power on relevant market:

- HT-Hrvatske telekomunikacije d.d., Zagreb, Savska cesta 32

As it is mentioned in chapter 1 Introduction implementation of this consultation document applies specifically to fixed telecommunication network Notified Operators.

2.2 Relevant EU legal framework

2.2.1 Accounting separation

Aim of the accounting separation

According to article 11 of the Directive 2002/19/EC[7] (hereinafter: Directive on access) National regulatory authorities are entitled to impose obligations for accounting separation in relation to specified activities related to interconnection and/or access.

In accordance with Recommendation 2005/698/EC[8] (hereinafter: Recommendation) the purpose of imposing an obligation regarding accounting separation is to provide a much greater level of detail of operating cost and financial results for different markets and services than that derived from the statutory financial statements of the Notified Operator. The imposition of the accounting separation obligation is a supplement to the transparency and non-discrimination obligations, as it specifies that the statements delivered as a result of accounting separation are to reflect as closely as possible the performance of the parts of the notified operator's business as if they had operated as separate businesses. Accounting separation shall also inhibit in case of vertically integrated undertakings the discrimination in favour of their own activities and prevents unfair cross-subsidy. In accordance with article 11 of Directive on access it is required to ensure compliance with the above mentioned a vertically integrated company to make transparent its wholesale prices and its internal transfer prices.

Furthermore, according to Recommendation, when the obligation of accounting separation is imposed on a notified operator it may cover not only the markets where it has SMP, but also other markets where it does not have SMP, e.g. to ensure the coherence of data.

[7] Directive 2002/19/EC of the European Parliament and of the Council of 7 March 2002 on access to, and interconnection of, electronic communications networks and associated facilities (Access Directive)
[8] Commission Recommendation 2005/698/EC of 19 September 2005 on accounting separation and cost accounting systems under the regulatory framework for electronic communications

Formal requirements of accounting separation

According to article 11 of Directive on access, the Agency may specify the format and accounting methodology to be used by the operator having the obligations of accounting separation and cost accounting.

In accordance with Recommendation accounting separation means the separation of costs, capital employed and revenues. From this data a profit and loss statement and a statement of capital employed should be provided by the Notified Operator for each of the regulatory reporting entities.

Transfer charges of services and/or internal purchases need to be clearly identified on business activity level to fulfil compliance with non-discrimination obligations. Transfer charges shall be the same as the prices charged for services offered other companies at the same conditions. The detail of information provided to the Agency should serve to ensure that there has been no undue discrimination between the provisions of services internally and those provided externally and allow identification of the average cost of services and the method by which costs have been calculated.

According to article 13 of Directive on access, irrespectively of the supply of data under the accounting separation obligation the Agency may also require ad hoc provision of accounting records to facilitate the verification of compliance with obligations of transparency and non-discrimination.

The relation of accounting separation and cost accounting

Accounting separation and cost accounting are in close relationship with each other, both obligations serve to assist transparency and non-discrimination. Thus, any mandated cost accounting or accounting separation methodology used in particular as a basis for price control decisions should be specified in a way that encourages efficient investment, identifies potential anti-competitive behaviour and should be in accordance with the Agency policy objectives as set out in Directive 2002/21/EC[9] (hereinafter: Framework Directive).

In accordance with the Commissions recommendation of 19 September 2005 (2005/698/EC) it is recommended that Agency requires the disaggregation of operating costs, capital employed and revenues to the level required to be consistent with the principles of transparency and regulatory objectives mandated by national or Community law. Further, the allocation of costs, capital and revenue shall be undertaken pursuant to the principle of cost causation (e.g. *Activity-Based Costing*, "ABC"), which can be used in cost accounting and also in accounting separation.

Cost accounting and accounting separation systems of notified operators should be able to deliver regulatory financial information, which can verify the compliance with regulatory obligations. It is recommended that this capability is measured against the following criteria: relevance, reliability, comparability and materiality.

[9] Directive 2002/21/EC of the European Parliament and of the Council of 7 March 2002 on a common regulatory framework for electronic communications networks and services (Framework Directive)

Audit of the accounting separation

In accordance with the Recommendation the regulatory financial statement of Notified Operators need to be published and therefore audited annually to ensure that they are in compliance with the principles of the accounting separation obligation. In accordance with the Directive 2002/22/EC[10] (hereinafter: Directive on universal service) audit shall be performed by a qualified body, independent of the notified operator. In case the Agency has the necessary qualified staff, the audit may be carried out by the authority itself.

A statement concerning compliance shall be published annually, paying attention not to include sensitive data of the notified operator.

Other issues in connection with accounting separation

According to Recommendation, when the Agency reviews the notified operator's cost accounting system, it should pay special attention on the capability of the system to analyze and present cost data, in particular, that it is capable of differentiating between direct and indirect costs. Direct costs are those costs wholly and unambiguously incurred against specified activities. Indirect costs are those costs that require apportionment using a fair and objective attribution methodology. In those EU member states that have set up schemes to finance universal service obligetions, it is recommended that any contribution that designated undertakings receive as part of a compensation mechanism is separately identified in the systems for accounting separation.

2.2.2 Cost accounting

Aim of cost accounting

The obligation of cost accounting is imposed to serve as a basis of tariff regulation. All the principles of accounting separation mentioned above shall also be applied to cost accounting. In the following the specifications of cost accounting are set down.

The cost accounting obligation is may imposed in both wholesale and retail markets:

- In accordance with Article 14 of Access Directive in situations where a market analyses indicates lack of effective competition Agency may impose obligations on Notified Operator related to price control including cost orientation,.

- In accordance with Article 4 of Directive on Universal Service Agency shall ensure that where an operator is subject to retail tariff regulation or other relevant retail controls, the necessary and appropriate cost accounting systems are implemented. The Agency may specify the format and the accounting methodology to be used.

[10] Directive 2002/22/EC of the European Parliament and of the Council of 7 March 2002 on universal service and users' rights relating to electronic communications networks and services (Universal Service Directive)

Form requirements of cost accounting

National regulatory authorities shall enable operators to have a reasonable rate of return on capital employed, taking into account the risks involved, means that the cost of capital shall be calculated as a weighted average cost of capital.

Further requirements of the cost recovery mechanism or pricing methodology are that they should promote efficiency and sustainable competition and maximize consumer benefits. While examining prices, national regulatory authorities may use benchmarks and may use their own cost accounting methods independent of those used by the undertaking.

In case the cost accounting obligation has been imposed, the description of the cost accounting system has to be made publicly available, showing the main cost categories and the rules of cost allocation. These rules should be displayed at a level of detail that makes clear the relationship between costs and charges of network components and services, and the basis on which directly and indirectly attributable costs have been allocated between different accounts should also be provided.

Besides the above mentioned in accordance with the Recommendation a reconciliation of the regulatory financial statements to the statutory financial statements of the operator is required.

Assessment of the adequacy and correctness of cost accounting

In accordance with Directive on Access, where an operator has an obligation regarding cost orientation of its prices, the operator has to prove the correctness of its pricing methodology. Therefore, the national regulatory authority may require an operator to provide full justification for its prices, and after reviewing the prices, it may require further adjustments of them.

According to Recommendation, compliance with the cost accounting system shall be verified by a qualified independent body, and a statement shall be published annually.

The audit of cost accounting

For the audit of cost accounting models the same EU regulations are to be applied as described above for accounting separation.

Other issues regarding cost accounting

As a part of cost accounting, the evaluation of assets can be carried out on the base of historical costs or current costs. The EU regulation does not specify that which of them shall be used. Though, in accordance with Recommendation when the notified operator evaluates its assets based on current costs, the use of a cost accounting methodology such as long run incremental costs (LRIC) may be appropriate.

3 General principles for regulatory accounting

Regulatory accounting involves principles used for the implementation of accounting separation and cost accounting obligations. These principles will be used in the process of preparation, audit approval and publication of the Regulatory Financial Statements (hereinafter: RFS) as well as for maintenance of accounting records.

3.1 Regulatory Accounting Principles

The Regulatory Accounting Principles are to be applied or used by Notified Operators in the preparation of the RFS, including attribution methods, transfer charges and general accounting policies. The key principles are:

- Priority

Within the Regulatory Accounting Principles, insofar as there is conflict between the requirements of any or all of these Principles, the Principles are to be applied in the same order of priority in which they appear in this document.

- Cost Causality

Revenue (including appropriate transfer charges), costs (including appropriate transfer charges), assets and liabilities shall be attributed to network components, wholesale and retail products and services in accordance with the activities which cause the revenues to be earned or costs to be incurred or the assets to be acquired or liabilities to be incurred.

- Objectivity and Non-discrimination

The attribution shall be objective and not intended to benefit notified operators, or any product, service or network component.

- Consistency of Treatment

There shall be consistency of treatment from year to year. Where there are material changes to the regulatory accounting principles including attribution methods, transfer charges or general accounting policies that have a material effect on the information reported in the RFS, Notified Operators shall restate the parts of the previous year's RFS affected by the changes. A change has a material impact on the RFS if a regulatory financial statement caption changes by more than 5% compared to the original value.

- Use of IFRS

Unless expressly prescribed otherwise, International Financial Reporting Standards will be applied.

- Transparency

Regulatory accounting information has a potentially wide range of interested parties including competitors (both actual and potential), investors (actual and potential), consumers as well as the Agency. These interested parties have legitimate interests in the RFS and in gaining a clear understanding of the basis on which they have been prepared. The attribution methods used should be transparent. Costs and revenues which are allocated to markets, segment and services (as applicable) shall be separately distinguished from those which are apportioned on the basis of cost drivers (i.e. costs and revenues not allocated in full but proportionally based on a cost driver). It is also important to ensure that the methodology and documentation is complete and comprehensive to avoid deficiencies in the reliability of the RFS.

For qualitative characteristics of financial information please refer to in chapter 2.2.1 *The relation of accounting separation and cost accounting*

The Agency proposes that the preparation of the RFS should be based on the following key principles:

- **Cost Causality;**
- **Objectivity and Non-discrimination;**
- **Consistency of Treatment;**
- **Use of IFRS; and**
- **Transparency.**

3.2 Process of preparation, audit, approval and publication of regulatory financial statements

In accordance with the Regulatory accounting principles, Notified Operators are obliged to prepare RFS which need to be audited, approved by the Agency and subsequently published.

3.2.1 Timeframe and deliverables

The timeline of the regulatory reporting process is shown in the following tables, followed by a detailed description.

Table 1 Timetable for 2008 - setting up the regulatory obligations process

2008 - SETTING UP THE REGULATORY REPORTING PROCESS

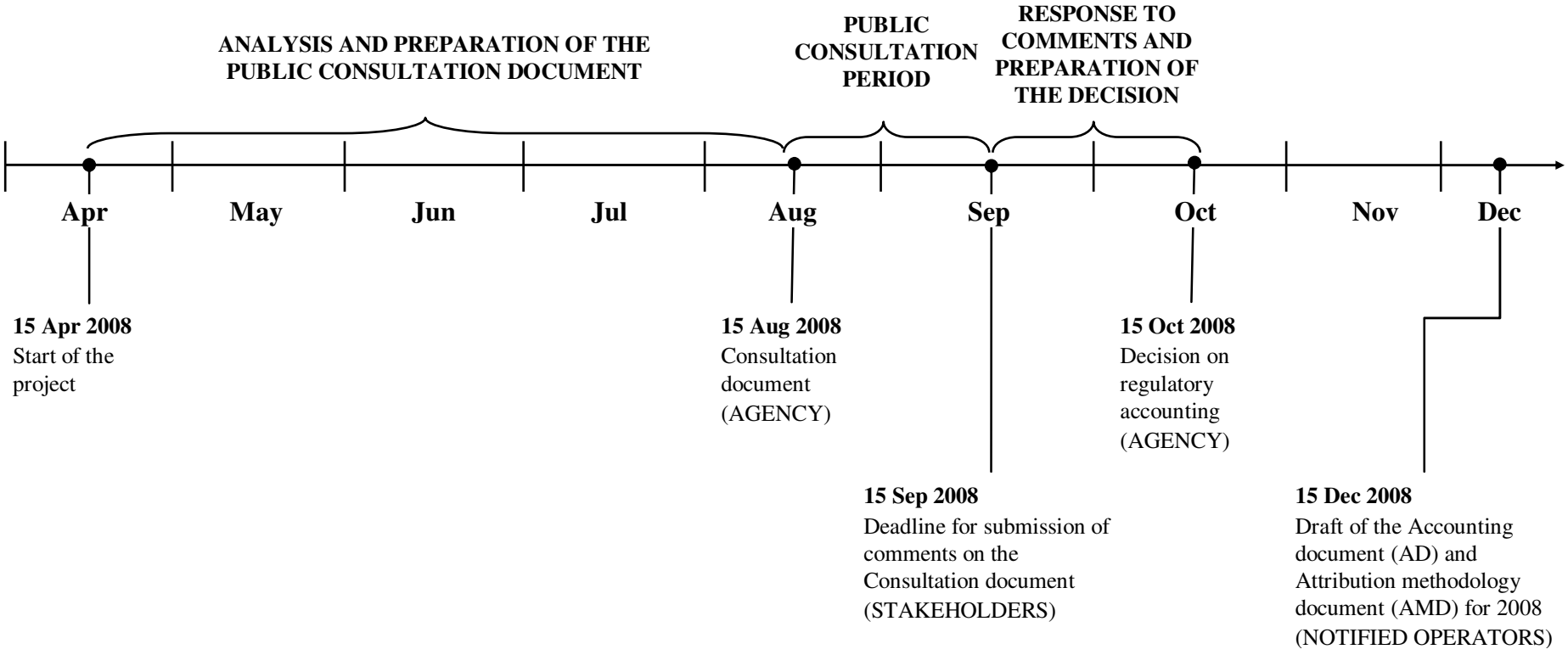


Table 2 - Timetable for 2009 - preparation of draft RFS and statement of unit costs

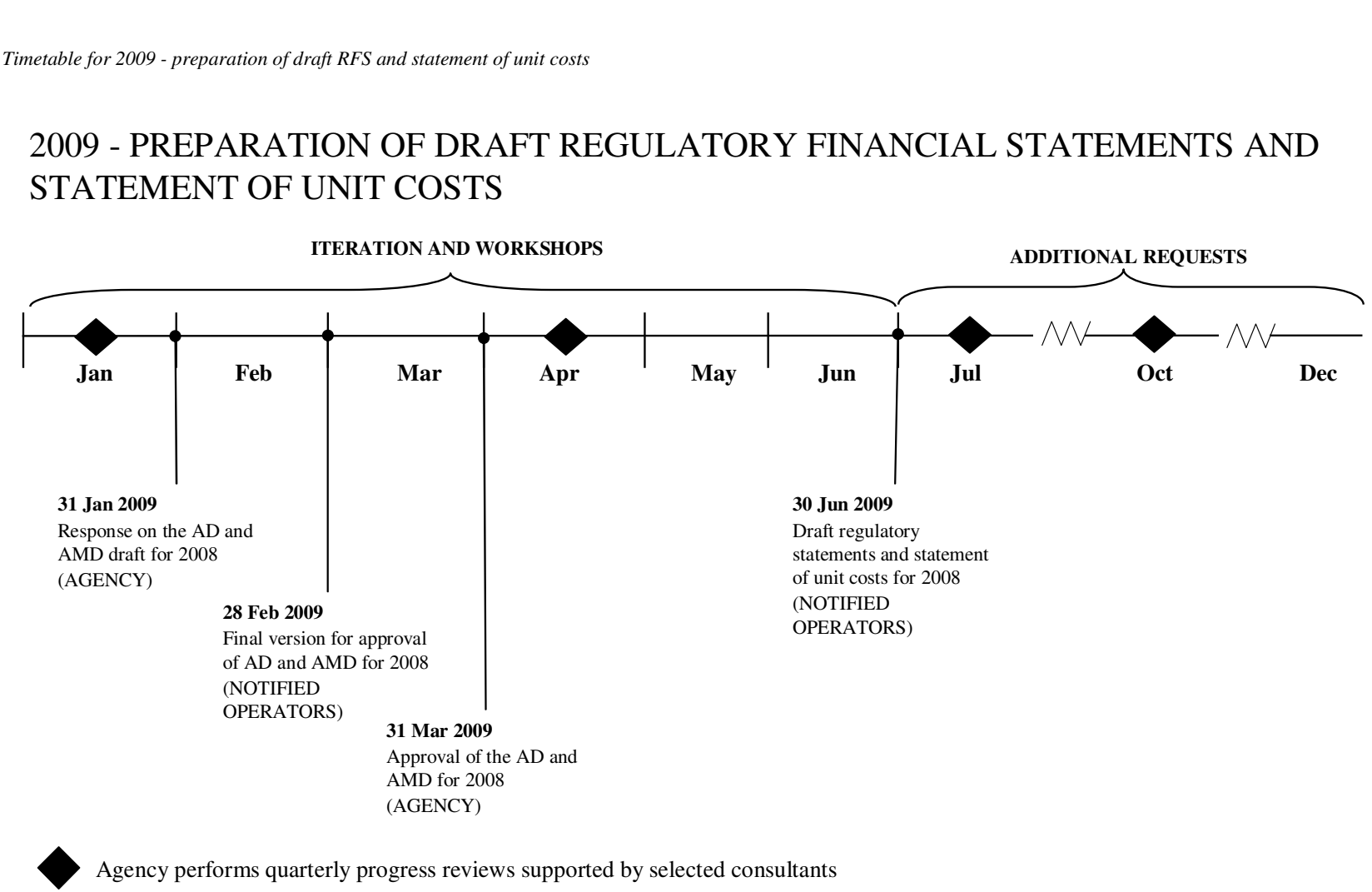
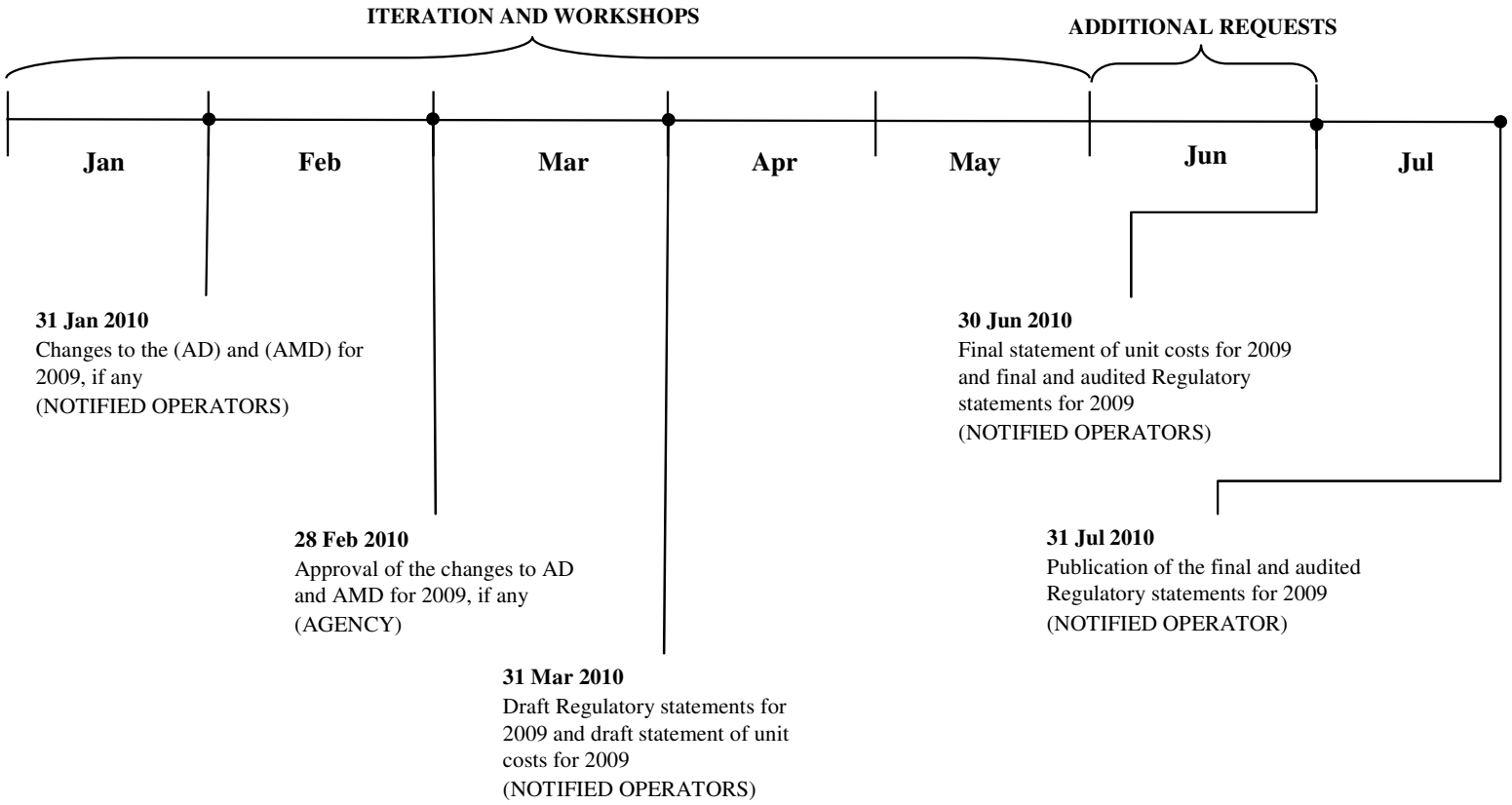


Table 3 - Timetable for 2010 onwards - preparation of statement of unit costs and audited RFS

2010 onwards- PREPARATION OF STATEMENT OF UNIT COSTS AND AUDITED REGULATORY FINANCIAL STATEMENTS



3.2.1.1 Year 2008 - setting up the regulatory obligations process

The Agency publishes this consultation document summarizing the Regulatory accounting principles for accounting separation and cost accounting, which interested parties can comment upon during the Consultation period.

After reviewing submitted comments on issues raised in this document, the Agency will issue a Decision on Regulatory Accounting questions.

Notified Operators will have three months to prepare their respective drafts of the Accounting document (hereinafter: AD) and Attribution methodology document (hereinafter: AMD). By 15 December 2008 these drafts have to be submitted to the Agency for a review. For a content of the AD and AMD please refer to section 3.2.4 For a preview of proposed cost accounting methodologies for accounting separation purposes please refer to the table 5.1.

3.2.1.2 Year 2009 - preparation of draft RFS and statements of unit costs

The Agency will comment on submitted drafts of the AD and AMD by 31 January 2009. Notified Operators have one month to discuss and implement these comments into their AD and AMD and submit the final version to the Agency by 28 February 2009. In case the above mentioned documentation contains all proposed changes, the Agency will issue an approval notice of the AD and AMD by 31 March 2009.

From January to the end of June, every Notified Operator will be involved in a number of workshops with the Agency in order to entirely align their AD, AMD and RFS with legal requirements.

Draft RFS and statement of unit costs for 2008 are to be submitted on 30 June 2009. The Agency has the right for requesting additional information after submission of draft RFS and statement of unit costs.

Draft RFS will be used only for the evaluation if the regulation obligations are being correctly implemented.

3.2.1.3 Year 2010 and onwards - preparation statements of unit costs and audited RFS

The Agency understands that sometimes Notified Operators will have to change their accounting policies and attribution methodology. In such cases, the Agency proposes that Notified Operators inform the Agency of any changes in AD and AMD compared a previous version, if they have a material impact on the RFS.

The Agency proposes that a separate report detailing these changes should be submitted by 31 January to enable a more effective evaluation of the impact on the RFS. The Agency will issue its approval of changes by 28 February, if changes are considered to be acceptable.

The Agency proposes that current and previous years should be presented in RFS based on the same accounting principles and attribution methodology in order to be comparable. The exemption is RFS for the first year when no comparative information is needed.

By 31 March each year, Notified Operators will submit draft RFS and statement of unit costs.. From January to the end of June, every Notified Operator will be involved in a number of workshops with the Agency in order to entirely align their AD and AMD and RFS with legal requirements.

Final and audited regulatory statements are to be submitted by 30 June. The Agency has the right for requesting additional information after submission of final and audited RFS.

In case the audit opinion is positive, the Agency's Council will, within 30 days from receiving the RFS, issue a Decision for accepting the RFS.

The Notified Operator will publish the final and audited RFS by 31 July each year.

Where the Agency has reasonable grounds to believe that any or all of the RFS and/or AD are deficient, Notified Operators shall in period defined by the Agency:

- amend the AD in order to remedy the deficiencies identified by the Agency
- restate the RFS
- deliver to the Agency the restated RFS and corresponding audit opinion; and
- publish the restated RFS and corresponding audit opinion.

For the list of deliverables and deadlines please refer to section 7.2 of the Annex.

The Agency, supported by selected consultants, will quarterly review the status of the implementation as outlined in afore stated timeline.

The Agency proposes that the process of preparation, audit, approval and publication of RFS should follow the steps outlined in the timeline graph above.

The Agency proposes that, in cases the Notified Operators will have to change their accounting policies and attribution methodology, informs the Agency in advance of these changes, if these changes have a material impact on the RFS. The Agency proposes a separate report detailing these changes to enable a more effective evaluation of the impact on the RFS. Furthermore, the Agency proposes that current and previous years should be presented in RFS on the same basis in order to have full comparability. The exemption are RFS for the first year when no comparative information is needed.

Reliability is one of the key characteristics of qualitative financial information. In order to obtain reliable Regulatory financial information, the Agency considers that effective and detailed auditing is necessary, which will provide the Agency with assurance about the quality of the regulatory financial information when making decisions based on that information.

3.2.2 Audit process

The Agency considers it to be important that RFS are audited by an independent external party in accordance with the relevant rules of legislation.

In the process of the auditing the following items should be defined:

- scope and timing of the audit;
- mandate of the auditor;
- Auditor: a qualified body, independent of the Notified Operators.

Appointment of the auditor

As it is the principal user of the separated accounts, the Agency believes that it has an interest in, and should have a say in appointing and reappointing of the regulatory auditor.

Agency requires information about audit scope, detailed audit plan and resources. The Agency reserves the right to approve the appointment of the regulatory auditor for the regulatory accounts. The Agency requires Notified Operators' letter of engagement appointing the regulatory auditor to include provisions acknowledging duties and responsibilities to the Agency in line with the guidance issued by Croatian Chamber of Auditors.

The Agency proposes that Notified Operators should notify the Agency in writing of the auditor appointed before the auditor carries out any work for that purpose, in any event at least 60 days before start of the audit. Notified Operators shall notify the Agency of any proposed change of regulatory auditor as soon as a management decision is taken or a proposal for Board approval tabled, but in any event, at least 60 days before effect is given to that change.

The audit of regulatory financial reports shall be conducted by persons authorized for conducting audits (hereinafter: Certified Auditors).

All audit work carried out on the regulatory accounts shall be at the expense of Notified Operators.

Changing the Auditor

If the audit procedure or the audit report are performed in a manner that is not in accordance with the requirements set-out in this document, the Agency will reject the audit report and require the audit to be reperformed by another audit company on the Notified Operator's expense..

Restrictions to the Auditors

Audit firm may not conduct or be entrusted by the Notified Operator with conducting an audit of the RFS if in the previous year that audit firm derived more than a half of its total income from having audited the financial statements of that Notified Operator.

An audit firm may not simultaneously or in the same year conduct an audit of the RFS of the Notified Operator and provide consulting services to that Notified Operator.

If audit firm audits the RFS of the Notified Operator contrary to any of the provisions stated in this document, the Agency shall not accept the report on the audit of the RFS of the Notified Operator for the year involved, conducted by that audit firm.

If the audit has not been conducted, or if the audit report has not been prepared in accordance with requirements stated in this document, the Agency may refuse the report and demand that the audit be performed by Certified Auditors employed in another audit firm at the Notified Operator's expense.

If the Agency rejects the audit report of a Notified Operator submitted by an audit firm, in the following five years the Agency shall not accept audit reports prepared by that audit firm.

Responsibility of the Auditor

Certified Auditors shall be obliged to give opinions on whether the annual RFS (unconsolidated and consolidated) and cost models have been prepared in accordance with all relevant regulations, including the requirements and recommendations presented in this document and those contained in all relevant Croatian and European legislation and professional standards.

In the course of conducting an audit, Certified Auditors shall be obliged to immediately notify the Agency of any noticed fact:

- which is a serious violation of laws, regulations, or provisions pursuant to which the Operator's Operating License has been issued;
- which is a serious fraud or embezzlement;
- as well as of any other facts and circumstances that could endanger the continuation of the Notified Operator's operation.

Certified Auditors shall also be obliged to notify the Agency of any of the outlined facts which they become aware of in the course of conducting an audit of a dependent company controlled by the Notified Operator.

Disclosure of any of the outlined facts made by Certified Auditors shall not be considered a violation of regulations and provisions of a contract between the Auditors and the Notified Operator which refer to the restriction on providing information, and the Auditors shall not bear responsibility of any kind that would otherwise arise in such circumstances.

Additional engagement of the Auditor

The Agency reserves the right to invite the Auditors to discuss procedures to be applied in performing the audit or to discuss the auditors' findings. When issues are raised requiring clarification, the Agency expects that the Operator and/or the Auditor will obtain such clarification.

The Agency reserves the right to request Notified Operators to instruct the Auditors to perform additional or alternative work to substantiate the statements and assertions contained in the regulatory accounts and to further report on this additional work. Finally, the Agency also reserves the right to appoint Auditors directly to carry out such further reviews, examinations and audits as it deems necessary should it consider that the submitted accounts fail to provide the required degree of assurance.

The Agency proposes that in terms of the audit process, appointment of the Auditor, changing the Auditor, restrictions to the Auditors, responsibility of the Auditor and additional engagement of the Auditor the Notified Operator should take into consideration suggestions outlined in this chapter.

3.2.2.1 Notified Operator's obligations during the audit process

The Notified Operator should each year inform the Agency about selection of the Auditor by a written note, at least 30 days before the commencement the audit.

Notified Operator should submit the audited RFS for the previous year, except the statements for 2008, until 30 June each year. These statements have to be signed by the Certified Auditor (private person) responsible for the audit of the Operator.

The Agency proposed that the Notified Operator informs the Agency about the selection of the auditor and submits the audited RFS by 30 June of the following year.

3.2.2.2 Auditor's obligations during the audit process

The audit company and its associates are considered as one entity.

The auditor is required to submit to the Agency an audit schedule with timeline and planned activities for each audited Notified Operator, at least 30 days before commencement of the audit.

If needed, the Certified Auditor can have a meeting with the Agency before the commencement of the audit or during the audit process.

The Auditor has to inform the Notified Operator about total revenue incurred in the previous year as well as revenue derived from professional services delivered to the Notified Operator in previous year because of restrictions mentioned above. The Notified Operator has to inform the Agency about these findings.

The Agency proposes that the Auditor submits to the Agency an audit schedule with timeline and planned activities for each audited Notified Operator and to inform the Notified Operator about total revenue incurred in the previous year as well as revenue derived from professional services delivered to the Notified Operator.

3.2.2.3 Agency's involvement in the audit process

After receiving the audit schedule and/or during the audit process, the Agency can organize a meeting with the auditor and the Notified Operator.

During the evaluation of the audit process and/or the financial reports, the Agency has the right to ask for additional explanations.

The Agency will publish its position on accepting or declining the RFS. Notified Operators shall, where directed by the Agency, amend the RFS and deliver them to the Agency by the set deadline.

The Agency will publish its position on accepting or declining the RFS. During the evaluation of the audit process and/or the financial reports, the Agency has the right to ask for additional explanations.

3.2.3 Requirements to the quality and granularity of Notified Operators' accounting records

Granularity describes the level of detail at which information can be obtained from the Notified Operator's accounting system. It is one of the key factors, as information obtained at a level of detail beyond a financial system's granularity, the information obtained may not be reliable. In general, a high level of granularity (such as the ability to identify asset category information to support the analysis of depreciation charges) should be applied. In order to ensure data integrity and the capability to demonstrate that market related information has been extracted accurately and reconciles with corporate financial information, the source costing information will probably need to be drawn from the whole of the undertaking's cost base (including that incurred in the provision of non-SMP markets). The costing information held by these systems may be divided between operating costs, capital costs and accounting entries, such as depreciation. The Agency is proposing that the accounting records should be sufficient to derive financial information, on a Historic Cost Accounting (HCA) basis and, if mandated, on a Current Cost Accounting (CCA)/Long Run Incremental Costing (LRIC) basis and that these accounting records should enable to identify the costs, revenues, assets and liabilities of each market, segment or service where the Accounting Separation and Cost Accounting Separation obligations apply.

Preparing accounts on a routine basis at a level of service or segment will enhance transparency, accelerate the regulatory price setting process and help prevent the omission or double recovery of costs. It is not sufficient for information to be held solely at the market level because the obligation of cost orientation must be given effect at an individual service level. Costs and prices in a market may lie within the acceptable ranges at an aggregate level whilst failing to do so on a service by service level. Therefore it is not sufficient for information to be held solely at the market level because it would not be sufficient to demonstrate that the inputs to these individual services had been appropriately costed. In order to determinate correct and suitable service price it is necessary to analyse revenues, expenses, asset and liabilities of individual service/segment that has to be supported by existing cost accounting/controlling system of Notified Operator. A further consideration is that operators dominant in relevant markets may provide services in a number of markets and may divide the activities required to supply these

services among a number of business units. The division of activities relevant to the Agency for regulatory purposes is the division of services, and the activities which underlie them, between relevant markets. These relevant markets may be a regulated market designated with SMP or a non SMP designated market. Therefore the Agency needs to be able to ascertain to what extent services in non SMP markets may impact on services supplied in SMP markets. In order to determine the information required for regulatory purposes, it is necessary to explore the nature of the costs incurred by activities undertaken in the course of supplying a service (or combination of services).

If the Agency were to impose accounting separation at the market level (rather than at a service level) specially related to retail services, it would not be able to identify whether products and services were provided on a non discriminatory basis.

The Agency believes that the Notified Operator should maintain accounting records that should enable sufficient provision of information, where designated, on a Historic Cost Accounting basis (HCA) and, if mandated, on a Current Cost Accounting (CCA)/Long Run Incremental Costing (LRIC) basis and that these accounting records should enable the identification of costs, revenues, assets and liabilities of each market, segment or service where the obligations apply.

The Agency considers that the cost accounting/ controlling system must be capable of separately identifying and attributing the revenues, costs, assets and liabilities of these individual services and/or segments.

3.2.4 Content of the RFS, Accounting documents and Attribution methodology document

The following regulatory information should be prepared and published (subject to confidentiality and legal obligations) for the relevant market/ segment/ service:

REGULATORY FINANCIAL STATEMENTS	Profit and loss statements
	Mean capital employed statements
	Reconciliation statements
	Statement of unit costs
	Statement of responsibility
	Auditors' opinion
	Statement of transfer charges
	Other notes
ACCOUNTING DOCUMENTS	Accounting principles
	Methods of revaluation

	Description of the costing model
	Detailed description of (Weighted Average Capital Cost) WACC calculation
	Other notes
ATTRIBUTION METHODOLOGY DOCUMENT	Description of cost attributions in the costing model
AD HOC REPORTS UPON AGENCY'S REQUESTS	Additional reports requested by the Agency

For RFS templates, please refer to sections 7.3, 7.4, 7.5, 7.6, 1.1 and 7.8 of the Annex.

The Agency believes that the Notified Operator should prepare RFS containing the above listed documents.

3.2.5 Publishing of the RFS

With respect to the sensitivity of information presented in the RFS, it is important to protect the Notified Operators' rights to confidentiality of business information. Therefore, it is necessary to separate information which will be made publicly available for the purpose of monitoring fair market competition from information which represents the operator's business secrets.

Publicly available documents include the following:

- the Accounting document and the Attribution methodology document provided they do not contain absolute numbers or percentages;
- RFS for the relevant markets, segments, services; and
- the official auditor's opinion regarding regulatory Accounting separation financial statements and statement of unit costs

As stated in this chapter, the Agency proposes to publish the RFS, Accounting document and Attribution methodology document.

3.3 Maintenance of accounting records, amendments and restatement of the regulatory financial statements

3.3.1 Maintenance of accounting records

The Agency proposes that Notified Operators shall preserve records sufficient to provide an adequate explanation of each regulatory financial statement for a period of seven years from the reporting date. This will enable investigations to take place and trend information to be prepared if necessary.

In order to allow potential investigations to take place, the Agency believes that Notified Operators should preserve records sufficient to provide an adequate explanation of each regulatory financial statement for a period of seven years from the reporting date.

3.3.2 Availability of accounting records for ad-hoc queries

Information to support regulatory decisions is necessary both on a periodic basis and to support investigations and queries that may arise on an ad hoc request basis. The accounting systems must be capable of performing both functions. The RFS would be provided annually and would be used inter alia to monitor the impact of price controls/caps and also to monitor the Notified Operators' compliance with their cost-orientation and non discrimination obligations.

The Agency's view is that on-request reporting would be required for investigating specific cases into potential breaches of obligations. The amount of detail that can reasonably be requested in either circumstance will vary. It is likely that periodic information (e.g. annual accounts) can be planned to produce more comprehensive information than reports based on a specific request. In framing an on demand request the Agency will consider its practicality, but also will have regard to the seriousness of whatever issue is at hand.

In addition, the Agency may also require Notified Operators to submit other more detailed information which would not be published**.** The Agency requires this information so as to effectively monitor and enforce compliance with the Notified Operators' obligations for cost-orientation, cost recovery and price controls. The Agency has identified a non exhaustive list of additional information in paragraph 7.8 of the Annex (Additional financial information). The precise format of these schedules will be subject to further discussion/agreement between the Agency and the Notified Operators and will generally be presented to the Agency on a confidential basis.

On request reporting would be required for investigating specific cases of potential breaches of obligations and/or dispute resolution. The Agency has only four months to resolve the dispute under the Law on Electronic Communications. The Agency considers that these requirements could be quite onerous and is proposing that on request reporting should, where possible, rely on information already produced or that which most comparable companies would produce on a routine basis via their management accounting processes. The Agency therefore proposes that in framing individual requests it will consider their practicality. The Agency reserves the right to review this position if it considers that more formal arrangements are required.

In addition to the RFS, the Notified Operators should provide the accounting records for ad-hoc queries by the Agency.

4 Principles for Accounting Separation

Accounting separation should provide a systematic disaggregation of costs, revenues and capital employed between disaggregated regulatory entities, markets, segments and services of a vertically integrated undertaking. It should also ensure that each financial report includes only costs, revenues and capital employed that are relevant to the regulatory entities, markets, segments and services. The availability of detailed, separated accounting information is important either to enable the auditor to provide an opinion as required by the Agency or for the Agency to carry out its own validation exercise. In order to facilitate compliance with obligations of transparency and non-discrimination by Notified Operators, the law empowers the Agency to require that all accounting records, including data on revenues received from third parties. The cost accounting system of Notified Operators needs to be capable of reporting regulatory financial information to demonstrate full compliance with regulatory obligations. This capability has to be measured against the qualitative criteria of relevance, reliability, comparability and materiality.

Accounting separation requirements may be developed using either historical cost accounting ("HCA") or current cost accounting ("CCA") principles.

In order to determine the information required for regulatory purposes (and the information which is not necessary), it is necessary to explore the nature of the costs incurred by activities undertaken in the course of supplying a service (or combination of services). Accordingly, to establish one or more of the measures of cost for a given service it is necessary to:

- establish the costs, revenues, assets and liabilities associated with all of the activities underlying the provision of the service;

- establish rules which, amongst others, address how costs associated with shared activities are distributed between services ultimately supplied (since the majority of activities will be carried out in the course of supplying more than one service or services to more than one market); and

- document the costs and rules e.g. via RFS and methodology documents.

Regulatory accounting information should be prepared in accordance with a set of principles, policies and procedures set out in this document, either when initially defining the system or as the result of an audit process, reviews and investigations and a subsequent decision.

4.1 Attribution Methods

The RFS should give details regarding the underlying assumptions for cost allocation and explain the relationship between cost and related cost drivers:

- Review of all components and activities included in providing interconnection and transfer services

- Operating costs, depreciation and capital employed for mentioned components

- Return on capital employed for mentioned components
- Utilization unit and volume for each component
- Total amount of costs for major components (operative costs + capital cost)

4.1.1 Revenue Attribution

Usually revenues can be directly allocated to the products and services to which they relate based on accounting records and billing system information. Where direct allocation based on accounting records or billing system data is not possible (e.g. bundled discounts), revenues should be attributed on the basis of causation.

4.1.2 Cost Attribution

Costs may be attributed to services according to the following categories:

a) Direct Costs: Costs which are solely generated by a particular service or product and are recorded in the accounts against the relevant product, service, asset or function.

b) Directly Attributable Costs: Costs which are solely generated by a particular service or product but are not recorded in the accounts against the relevant product, service, asset or function.

c) Indirectly Attributable Costs: Costs which are part of a pool of common costs but which can be attributed to a particular service or product through a non-arbitrary and verifiable cause and effect relationship. There is no requirement for this to be a one-to-one relationship and it may be multi-step.

d) Unattributable Costs: Costs which are part of a pool of common costs and cannot be identified to a particular service, product, asset or function through a non-arbitrary and verifiable cause and effect relationship.

4.1.3 The cost "cascade" or attribution hierarchy

Costs may be attributed to "Services", or to cost pools called "Network components", "Related functions" or "Other functions". These may be defined as follows:

- **Services** – These are the costs that can be directly identified with a particular service. For these purposes, the term "service" refers both to enduser services (e.g. the provision of retail leased lines) and network services (e.g. interconnection services).
- **Network components** – This pool contains the costs relating to the various components of transmission, switching and other network plant and systems. The costs will be in respect of network components that cannot be attributed directly to a particular service as they are utilised in the provision of a number of services.

- **Related functions** – This pool contains the costs of retail and wholesale functions necessary for the provision of services to the customer or end users such as billing, maintenance, and customer services.

- **'Other' functions** – This pool contains the costs of functions that are not related to the provision of particular services but are an important part of the operations of the company. Examples of such costs include planning, administration and general finance.

As noted, there are a series of steps which allocate cost pools in a tiered approach to eventually allocate costs to services. These allocation steps are performed using appropriate drivers. Each step is summarized below:

1. The allocation of 'other' functions across related functions, network components and services.

2. The allocation of the related function costs to services and network components.

3. The allocation of network components to services.

4. The grouping of services into markets/ segments (as defined for the purposes of accounting separation).

Each of the allocation steps illustrated above could involve a number of detailed sub-steps, particularly if the initial capture of cost information is at an aggregated level. Where it is possible to perform an allocation via a number of direct or indirect attributions this is preferable to allocation through a single discrete step particularly if the reliability of the attribution methodologies is uncertain. The attribution methodologies should be comprehensively documented and transparent to the satisfaction of the Agency. Notified Operators may need to use survey and sampling techniques such as pattern of usage of network element for each type of product/network service, staff activity data and engineering information in order to allocate costs (including capital costs) to the services that they provide and, subsequently, to the businesses defined for the purposes of accounting separation. For example, periodic analysis of the tasks undertaken by staff in customer call centres may be used to determine the amount of time spent by those staff on different tasks. This information may then be used to allocate - either directly or indirectly - the costs associated with the staff to the services provided by the operator. The fundamental objective is to arrive at an appropriate basis of attribution to comply with the principle of causation. However, when the Agency is considering or determining a cost recovery mechanism or value there are factors to be taken into account, in addition to the cost causality principle (normally established in the cost accounting system), such as distribution of benefits, effective competition, cost minimisation, reciprocity and practicality. All aspects of the cost attribution process including cost driver definitions and calculations, survey and sampling techniques and valuation methodologies must be made available to, and subject to review by, the Agency.

4.2 Profit and loss statement

A Profit and Loss (P and L) statement contains revenues, costs and capital for a relevant market/ segment or service of the year reported. Costs are calculated on HCA basis for the first year (for 2008 and submitted in 2009) and on CCA basis onwards. The P/L statement contains standardized lines of revenues and costs as stated in sections 7.3 and 7.6 of the Annex.

The Agency proposes that costs in the Profit and Loss statement shall be stated for a relevant market/ segment/ service based on the templates in sections 7.3 and 7.6 of the Annex.

4.3 Mean capital employed statement

When the Notified Operator calculates costs incurred in establishing a service/ segment, it is appropriate to allow a reasonable return on the capital employed including appropriate labor and building costs, with the value of capital adjusted where necessary to reflect the current valuation of assets and efficiency of operations. This means that the investment made by the operator should take into account and allow him a reasonable rate of return on capital employed, taking into account the risks involved.

There must be consistency between the measure of capital employed on which the cost of capital is based and the capital employed reported in regulatory financial statements.

For price-setting purposes, the Notified Operators will be use average capital employed rather than capital employed at a single point in time such as the end of the financial year. This is because a 'snap-shot' at any one point in time may not be representative of the average level of capital employed by operators. Specifically, mean capital employed should be calculated using a geometric average between the beginning and the end of the fiscal year.

For a template, please refer to sections 7.4 and 1.1 of the Annex.

The Agency proposes that capital employed should be calculated as the average of beginning and end of the fiscal year and based on the template in sections 7.4 and 1.1 of the Annex.

4.4 Regulatory reconciliation statement

Financial statements should be reliable and consistent amongst each other. To ensure this, key financial captions of the RFS need to reconcile to the statutory financial statements.

Notified Operators shall therefore ensure that sufficient controls and reconciliation procedures are in place to support the link between the RFS and the accounting records and hereby:

(a) enable the auditor and the Agency to conclude that, in their opinion, the Cost Accounting System complies with the Accounting Documents;

(b) enable the RFS to be audited and; and

c) enable a reconciliation to the Notified Operators' statutory financial statement.

In order to ensure reliability and consistency among the financial statements, the Agency proposes reconciliation of the key financial captions of the RFS to the statutory financial statements.

4.5 Auditor's opinion (statement of auditor)

The Auditor's opinion should at least include:

- the conclusions of the Auditor;
- all identified irregularities;
- recommendations made by the Auditor (with a description of the corresponding effects); and
- a full description of the verification methodology followed.

The statement of compliance and of the audit results should be presented in a form easily accessible by interested parties, such as a paper or electronic version, or published on the Notified Operators' or the Agency's website.

It is proposed that for each of the RFS the Agency should be provided with the necessary assurance that the information with which it is being provided is relevant, reliable and of a high quality. The Agency proposes that the most appropriate manner by which this assurance can be provided is to secure Fairly Presents in Accordance with (FPIA) audit opinion.

For a template of the Audit opinion, please refer to section7.10 of the Annex.

The Agency proposes that the most appropriate method by which it is assured that the information is relevant, reliable and of a high quality is to acquire an Fairly Presents in Accordance with (FPIA) audit opinion.

The audit opinion should at least include:

- **the conclusions of the auditor;**
- **all identified irregularities;**
- **recommendations made by the auditor (with a description of the corresponding effects); and**
- **a full description of the verification methodology utilised.**

4.6 Statement of Transfer Charges

The statement of transfer charges should include the following:

- Retail activities where Notified Operators designated as having SMP;
- Measure unit and volume of the stated activities for the relevant accounting period (for example total number of minutes, total number of calls etc.);
- The network unit charges;
- The product of the unit charges and the volumes, in order to identify total network charge for the activity;
- Accounting Policies; and
- Cost Valuation Methods.

For a complete example, please refer to section 7.5 of the Annex.

The Agency believes that the statement of transfer charges should include all elements outlined in this chapter.

4.7 Minimum requirements for Accounting Separation

The Agency proposes to implement Accounting Separation obligations at the service level for retail markets and at the segment level for wholesale markets except for segment 3 (Wholesale (physical) network infrastructure access (including shared or fully unbundled access) at a fixed location), where a presentation at the service level is required. The Agency believes it is not sufficient to implement such an obligation at the market level as it is important to discourage possible unfair cross-subsidisation of pricing at the service level.

Separate accounts should be prepared for each service within retail and within wholesale segment 3 (Wholesale (physical) network infrastructure access (including shared or fully unbundled access)) and for each segment on the remainder of wholesale markets that are subject to regulation. In developing separated accounts, the following matters should, among other things, be taken into account:

- Identifying markets, segments and services to be separated, providing more detailed information, (e.g. an individual profit and loss statement, a statement of capital employed and information on the main cost drivers, such as minutes, access lines and/or full time equivalent or labour costs);
- The provision of reconciliation by the Notified Operators (to ensure that costs are not covered twice and are in line with the statutory accounts of their total corporate entity);

- An indication of how the average cost per component/activity is allocated to the specific disaggregated regulatory entities and services;

- Detailed, published guidelines for the cost base (HCA; CCA) and the methodology to use for cost allocation (FAC/LRIC).

The way this identification and preparation of separate accounts can be carried out can be best illustrated by a matrix. The identified markets, segments and services can be placed on the horizontal line. The cost, revenues and capital employed are placed on the vertical line, divided in the following categories: Wholesale, Common and Retail. For the Common category, further allocation methods will have to be used. Along each (both horizontal and vertical) line of the matrix (sub)totals can be calculated. The matrix below illustrates the development of the separate accounts.

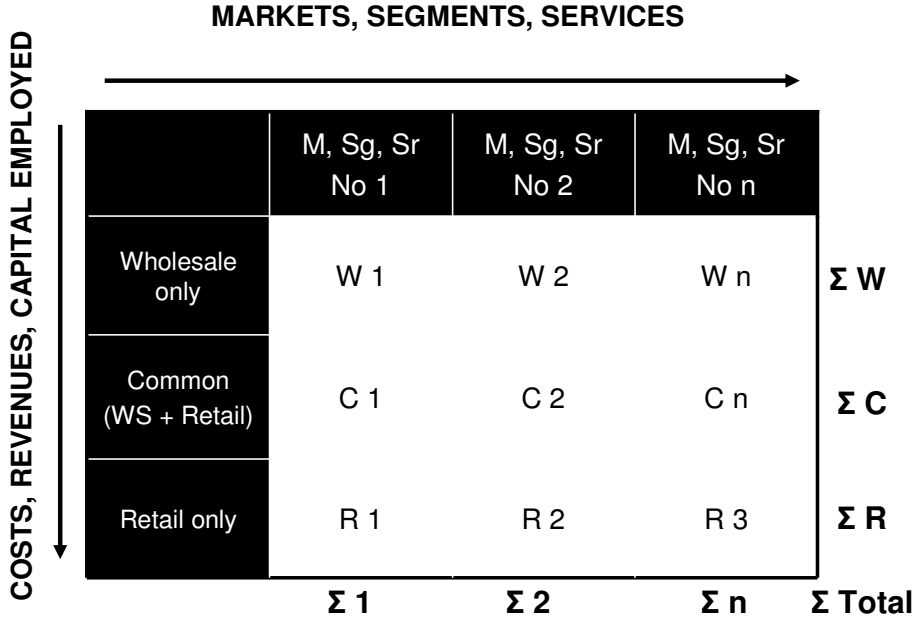


Figure 4.1 Development of the separate accounts

Section 7.9 of the Annex outlines the proposal of required financial desegregation for markets, segments and services.

The Agency proposes that Notified Operators prepare a list of all internal and external wholesale services and retail services that match the corresponding markets, segments and services listed in section 7.9 of the Annex. Services that are rendered by Notified Operators but not listed in this document should be placed in categories "Segment X- Other".

A detailed description of all internal wholesale, external wholesale and retail services, including activities used in the provision of these services, should support this allocation of services.

The Agency proposes that Notified Operators submit this list relevant for the reporting period ending 2008 by 15th December 2008 and that for the period ending 2009 and onwards by 31

January each year, together with drafts of the Accounting document and Attribution methodology document.

The Agency also proposes that Notified Operators should update this register as new services are introduced or existing services discontinued.

The Agency proposes that separate accounts should be prepared for each retail service, for each service within wholesale segment 3 (Wholesale (physical) network infrastructure access including shared or fully unbundled access) and for each segment on the remainder of wholesale markets that are subject to regulation. The Agency believes it is not sufficient to implement such an obligation at the market level, as it is important to discourage possible unfair cross-subsidisation of pricing. For a detailed list of required separate accounts, please refer to chapter 7.9 of the Annex.

The Agency proposes that Notified Operators prepare a list of all internal and external wholesale services and retail services that match the corresponding markets, segments and services listed in section 7.9 of the Annex.

4.8 Transfer Charges

Transfer charges relate to transactions that flow between disaggregated entities, markets, segments and services of a vertically integrated operator.

A well-defined, transparent and verifiable transfer charging system is necessary for Notified Operators to demonstrate non-discrimination and calculate internal costs and revenues for both cost-orientation and non-discrimination purposes. They will reflect the vertically integrated nature of the Notified Operators and will enumerate the wholesale/retail relationships between the economic markets, segments and services within the undertaking's scope of activity.

Basic elements or conditions of this system are:

- There should be a clear rationale for the transfer charges used and each charge should be justifiable. Charges should be non-discriminatory and there should be transparency of transfer charges in the separate accounts.

- Transfer charges should be determined as the product of usage and unit charges. The charge should be equivalent to the charge that would be levied if the product or service were sold externally rather than internally.

- For accounting separation purposes it should be assumed that Notified Operators' retail business pays the same charge for the same input service (bought on its own wholesale market) as it would if bought externally by an alternative operator.

- There should be consistency of treatment of transfer charges from year to year. Any change should be consistent, transparent and satisfactory to the Agency.

The fundamental principle for the operator in setting transfer charges between the separated accounts is non-discrimination. This principle requires that the charges set internally (e.g. while selling services within the operators business) reflect the charges applied to other operators. This principle allows the regulator to accurately evaluate the financial performance of each separated business unit.

Wholesale services utilized in the retail segment would generate internal costs that also equal internal revenues from transfer services presented in the wholesale segment.

There are two principles for setting the transfer price as outlined below:

Transfer charge based on external prices

The basic assumption for calculating charges of the transfer services is that they should be equal to the market price. Therefore, where the Notified Operator renders a relevant service both internally and on the external wholesale market, the price for this service would be equivalent to the wholesale price for external customers stated in Reference interconnection offer (RIO) and Reference unbundling offer (RUO). Consequently, the internal revenue of the wholesale segment would equal the wholesale price multiplied by the quantity rendered to the retail segment.

Transfer charge based on unit cost of service

Where the Notified Operator does not render transfer services both internally and on the external wholesale market, the transfer charge for the service would equal the unit cost of service calculated as outlined in chapter 5. Therefore, internal revenues from transfer services would equal the transfer charge multiplied by the volume of transactions in a year.

The Agency proposes that transfer charges/prices should be calculated as follows:

- **There should be a clear rationale for the transfer charges used and each charge should be justifiable. Charges should be non-discriminatory and there should be transparency of transfer charges in the separate accounts;**

- **Transfer charges should be determined as the product of usage and unit charges;**

- **Where a service is also sold externally, the transfer charge should be equal to the price stated in the Reference interconnection offer (RIO) and Reference unbundling offer (RUO);**

- **Where a service is rendered only internally, the transfer charge for the service would equal to the unit cost of service as outlined in chapter 5; and**

- **There should be consistency of treatment of transfer charges from year to year. Any change should be consistent, transparent and satisfactory to the Agency**.

5 Proposed form of cost accounting obligations for the Notified Operators

A cost accounting system is necessary where there is an obligation imposed on a Notified Operator for the following purposes:

- required disaggregation of costs into markets/segments and/or services;
- cost oriented pricing in both wholesale and retail areas including transfer charges;
- determination of retail minus tariffs; and
- on-request financial reporting.

This section sets out the proposed requirements for the cost accounting system of the Notified Operator on markets and corresponding market segments. It presents proposed cost base and cost accounting methodology for the purposes of accounting separation and for the calculation of unit cost of service that Notified Operator provides.

Furthermore, the Agency would like to note that after the results of the market analysis in accordance with the New Act are available, the Agency intends to reassess whether the below proposed requirements are still appropriate and reserves the right to change and supplement them.

Cost accounting system for the purposes of accounting separation

The Agency believes that, ultimately, all separate regulatory financial statements should be based on current costs.

However, taking into account proposed timeframes for the delivery of the separate regulatory financial statements and present cost accounting system of the Notified Operator, the Agency proposes the graduate transition from HCA cost base to CCA cost base, in two steps:

- The draft regulatory financial statements covering all relevant markets, market segment and services for the year 2008, (due June 2009) should be based on HCA as a cost base and FAC as accounting methodology.
- The audited regulatory statements covering all relevant markets, market segment and services for the year 2009, (due June 2010) and all regulatory statements in the following years should be based on CCA as a cost base and FAC as accounting methodology.

Proposed cost accounting methods for the purpose of the unit cost calculation

For the purpose of calculating unit cost of service provided by Notified Operator different markets/segments/services level, the Agency proposes to follow the same two stage approach as in the case of cost accounting methods used for accounting separation purposes.

Therefore, for the year ending 31 December 2008 the Agency proposes that calculation of unit cost should be based on the HCA as a cost base using FAC as accounting methodology.

Furthermore, for the assessment of the level of cost orientation of the Notified Operator's prices in the year 2009 and onwards, the Agency proposes the following:

- In case of retail services, their unit costs should be calculated applying both HCA and CCA as a cost base and using FAC as accounting methodology.

- In case of wholesale services, their unit cost should be calculated applying CCA as a cost base and using LRIC as accounting methodology.

In proposing the cost base and accounting methodology in case of retail services, the Agency decided to follow the practice of other national regulators in EU.

Recent studies of European telecom markets show that in EU countries, the most commonly used accounting methodology in case of retail markets is FAC. Furthermore, the cost base is calculated by equally using HCA or CCA approach.

Similarly, the application of LRIC method is commonly seen in EU countries as the most appropriate to calculate unit cost of wholesale services. The Agency also took in to account the fact that economic theory shows that the LRIC based prices are intended to replicate the outcomes that would occur in a competitive market. Furthermore, the application of the LRIC method to wholesale markets has been recommended by regulatory organizations such as the Independent Regulators Group (IRG).

The summary of proposed cost base calculation and accounting methodology approach for each market and corresponding market segments for year 2009 and onwards is given in the table below.

Table 5.1: Summary of proposed cost accounting methodologies for accounting separation and unit cost calculation – year 2009 and onwards

Relevant market/market segment	Accounting separation obligation		Unit cost calculation	
	Cost base	Accounting methodology	Cost base	Accounting methodology
1. Relevant market for fixed public telephone network services on the territory of Republic of Croatia				
Market segment: Access to the public telephone network at a fixed location for residential and non-residential customers	CCA	FAC	CCA and HCA	FAC
Market segment: Publicly available telephone services provided at a fixed location for private and business customers.	CCA	FAC	CCA and HCA	FAC
Market segment: Wholesale Network Infrastructure Access (including Shared or Fully Unbundled Access) at a Fixed Location	CCA	FAC	CCA	LRIC
2. Relevant market for interconnection services on the territory of the Republic of Croatia				
Market segment: Call origination on the public telephone network provided at a fixed location	CCA	FAC	CCA	LRIC
Market segment: Call termination on the public telephone network provided at a fixed location	CCA	FAC	CCA	LRIC
Market segment: Transit services in the fixed public telephone network.	CCA	FAC	CCA	LRIC
Market segment: Wholesale broadband access	CCA	FAC	CCA	LRIC
3. Relevant market for leased telecommunication lines on the territory of the Republic of Croatia				
Market segment: Retail leased lines	CCA	FAC	CCA and HCA	FAC
Market segment: Wholesale terminating segments of leased lines	CCA	FAC	CCA	LRIC
Market segment: Wholesale trunk segments of leased lines	CCA	FAC	CCA	LRIC

6 Key principles and guidelines for cost accounting systems

To ensure cost orientation of a Notified Operator's prices the Agency can impose price controls. To be able to apply these controls effectively, it is necessary to gain a profound and clear understanding of the Notified Operator's costs and how these are attributed to various activities. Given the prevalence for common costs in telecommunications, the cost accounting process and system is potentially complex.

This section outlines the key-principles of cost accounting and provides guidelines regarding cost accounting system of the Notified Operator.

Chapter structure is as follows:

- Sections 6.1 and 6.2 discuss the applicable cost accounting methodologies,
  - Section 6.1 provides a detailed description of Current Cost Accounting (CCA) including the asset valuation methods, capital maintenance and CCA adjustments; and
  - Section 6.2 introduces Historical Cost Accounting (HCA).
- Section 6.3 describes the cost allocation process in general, covering regulatory accounting principles and basic rules of activity-based costing;
- Sections 6.4 and 6.5 focus on the LRIC and FAC cost allocation methods
  - Section 6.4 contains the detailed methodologies and instructions of the calculation of LRIC,
  - Section 6.5 gives a description of the allocation process of FAC.
- Section 6.6 deals with other relevant cost accounting issues, such as model requirements, documentation; and
- Section 6.7 outlines the calculation of cost of capital.

6.1 Current Cost Accounting

6.1.1 The basic principles of current cost accounting approach

The CCA methodology is used for financial reporting purposes within an environment of changing prices. The objective of CCA is to provide more useful and relevant information than would be provided by traditional HCA which, for example, does not reflect inflationary effects.

In addition, CCA takes into consideration current market conditions in terms of prices and technologies. Therefore, assets valued on a current cost basis reflect the value to the business resulting in a cost base and related profits similar to that under fully competitive market conditions.

CCA also directly impacts the value of mean capital employed used to calculate the cost of capital:

- Under historical cost accounting, non-current assets are valued at historic acquisition costs minus depreciation/ amortisation; while

- Under CCA, non-current assets are measured at current costs minus depreciation/ amortisation.

Formally, Current Cost is calculated based on the following scheme:

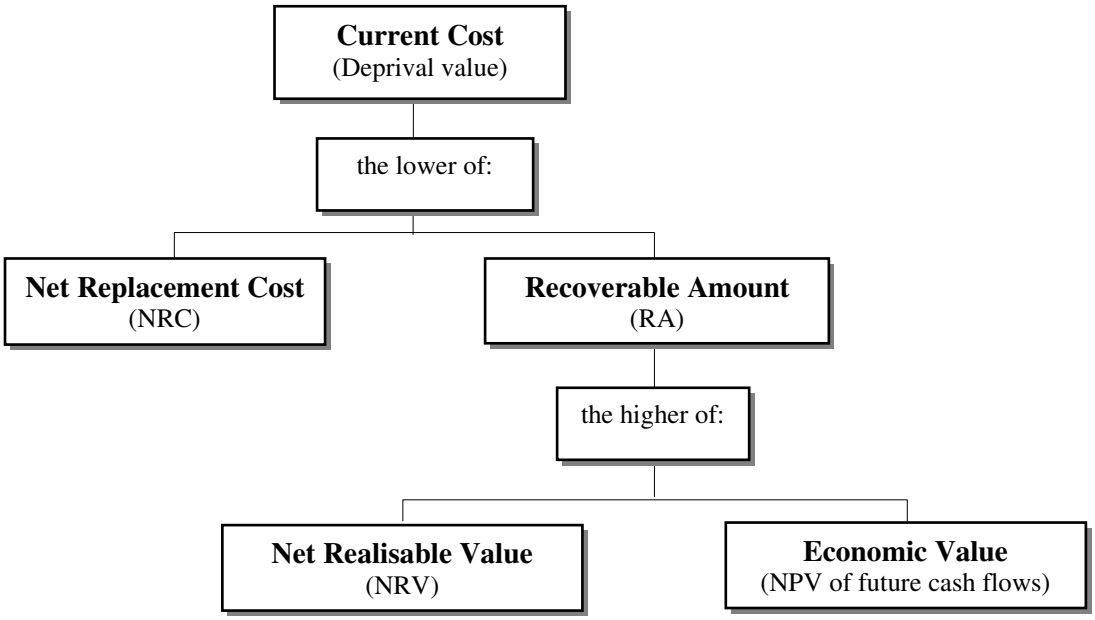


Diagram **6.1. The method of deriving the current cost of an asset**

Where:

- The **Net Realisable Value (NRV)** is the amount, which would be obtained by selling the asset (less sales costs) at current prices,

- The **Economic Value (EV)** measures the net present value (NPV) of future cash flows that the asset would generate whilst in use in the business,

- The **Recoverable Amount (RA)** is the higher of NRV and EV,

- The **Net Replacement Cost (NRC)** is the cost of replacing an existing asset with another asset, which has similar performance characteristics and of similar age and

- The **Deprival Value (DV)** is considered to be the **Current Cost** of an asset as it is the amount of loss suffered by an undertaking if an asset were lost or destroyed. The deprival value is the lower of the NRC and the RA.

The RA gives the best economic opportunity to the business:

- If EV > NRV, the asset is worth more to the undertaking in its current use than potential sale proceeds, hence the undertaking will keep the asset in its current use.

- If NRV > EV, the undertaking will sell the asset, because the potential income from the sale exceeds the economic value that the asset would be expected to generate while remaining in use.

As stated above, DV or Current Cost is the lower of NRC and RA. This can be seen by considering that:

- If the NRC < RA, this means that if the undertaking disposes of an asset, it would not lose all the returns (the recoverable amount), but it would simply replace the asset. Therefore, in this case the deprival value (current cost) equals the replacement cost. This is normally the case since businesses only buy assets if the returns are expected to exceed the cost.

- If the NRC > RA, it means that the asset has irreversibly lost value (become impaired). In this case, if an asset is disposed the undertaking will not seek to replace it. Therefore, the deprival value to the undertaking equals the lost returns the asset would have provided.

If an asset is vital to a business to provide services, it is not appropriate to use NRV as a valuation method as the asset cannot be sold. In addition, EVs can be difficult to calculate in practice. As a result, the revaluation of an asset is usually limited to the calculation of NRC.

The Agency therefore recommends ignoring RA in calculating Current Cost provided that the NRC is not higher than 150% of the corresponding historic value. Nevertheless, the Agency believes that EV and NRV methods should be used in order to determine the current value of a Notified Operator's real estate.

6.1.2 Valuation methods of Gross Replacement Cost

Gross replacement cost (GRC) represent the value of a newly built network providing the same level of functionality and capacity as the existing one taking into account technological changes as well as the purchase date: if an asset has been purchased in the same period as the regulatory accounts cover, GRC equals historic cost.

Where assets are at various stages in their useful economic lives, the **net replacement cost (NRC)** approach is applied and depreciation charge is based on current cost. The net replacement cost is the cost of replacing an existing asset with another asset which has similar performance characteristics and is of a similar age (in case of rapid technological change the Modern Equivalent Asset approach is applied as described in 6.1.3).

This section presents various valuation methodologies that can be used when assets are revalued by replacement cost for the purposes of current cost accounting. The selection of valuation methodology will depend on the nature and characteristics of the asset that is being valued. Any chosen set of valuation methods will need to be reviewed from time to time to ensure that they are still appropriate and produce accurate valuations considering changes in technology and levels of investment into assets.

The first step in establishing the actual replacement costs of the network is determining the cost of replacing existing assets with new ones that have the same functionality. Once the replacement values are established, certain adjustments are then made to approximate economic value. The adjustments reflect the considerations that existing assets have a shorter remaining economic life than newly purchased assets; and that the existing assets may have undergone physical deterioration and therefore have higher maintenance costs than newly purchased ones.

International practice shows that methods adopted by undertakings and accepted by regulatory authorities for determining asset values incorporate a mix of practices, which includes the use of historical costs, appropriate indices and absolute valuation.

Historical cost

Historical cost can be used as a approximation for the current cost of an asset where it is unlikely that historical cost would materially different from current cost. This is typically the case when the quantity and/ or the value of an asset are not material or the asset has a short useful lifetime. Historical cost is also used for additions made during the year covered by the regulatory accounts as for newly acquired assets current cost usual equal current cost.

Under the HCA methodology, the NRC of an asset is given by its NBV, which is its gross book value (GBV) of an asset minus accumulated depreciation. Adjustments to the asset value are not necessary.

Indexation

Under the indexation method, a group of assets is revaluated by applying yearly price change indices that are specific for each group of assets. The indices to be used should, where possible, be asset-specific. Where a suitable specific index is not available a more general index may be used as a approximation.

Indexation is usually used when:

- there has been no technological change regarding the asset or the change has not been significant;
- the Operator's databases and the fixed asset's register deliver sufficient and accurate information about the asset subject to valuation, or
- the asset group is homogenous in respect of price changes.

The Agency believes that the following asset groups could be revaluated using indexation:

- **support and inventory systems,**
- **fixtures, fittings and office equipment, and**
- **PC and IT equipment.**

Absolute valuation

Absolute valuation involves assigning a current up-to-date purchase price ie current cost to each single asset. I applying this method, it is usually necessary to consider the following:

- The Operator must have a reliable database containing detailed information on each single asset, which would normally require an inventory system; and
- Reliable information on up-to-date prices has to be available.

In practice, absolute valuation is essential for the revaluation of telecommunication equipment based on Modern equivalent asset principle (please refer to section 6.1.3). In particular, when:

- the asset group is not homogenous in respect of price changes;
- there has been significant technological change regarding the asset or the asset group; or
- the Operator's fixed assets register cannot provide accurate data about the asset or asset group subject to valuation.

Without prejudice to the Agency's recommendation related to the choice between NRC and RA as the method of current cost calculation, the Agency believes that the following asset groups could be revaluated using absolute valuation method:

- **Ducts and cables**
- **Switches**
- **Transmission equipment**
- **Power supply equipment**

Summarising above stated, the Agency proposes the following valuation methods for GRC as follows:

- **Historical cost can be used if:**
  - **the asset has no significant value or short useful lifetime;**

- **the asset is not exposed to significant price changes;**
- **there has been no technological change regarding the asset or the change is not significant; and**
- **the effect of revaluation would be immaterial for the regulated cost base.**

- **Indexation can be used if:**
  - **there has been no technological change regarding the asset or the change is not significant;**
  - **the Operator's databases and the fixed asset's register deliver sufficient and accurate information about the asset subject to valuation; and**
  - **the asset group is homogenous in respect of price changes.**

- **Absolute valuation shall be used if:**
  - **the asset group is not homogenous in respect of price changes;**
  - **there has been significant technological change regarding the asset or the asset group; or**
  - **the Operator's fixed asset's register can not serve accurate data about the asset or asset group subject to modern equivalent asset MEA as a basis for valuation.**

6.1.3 Modern equivalent asset (MEA)

The determination of current cost must take into account technological changes. As a result of changes in technology an asset may substantially differ in respect of:

- initial purchase cost;
- the level of operating costs, e.g. lower maintenance costs;
- the service provided (capacity and/or functionality); and/or
- economic life.

Where existing assets cannot be replaced in the same form (i.e. no direct replacement for the asset is available), the replacement cost is derived from the GRC of MEA. The same goes for assets due to be replaced within a given time horizon.

Since new technologies are usually superior to old ones in terms of functionality and efficiency, MEA values are required to reflect assets of equivalent capacity and functionality. Therefore, adjustments (abatements) need to be made to reflect the cost of an asset with same or similar characteristics.

Adjustments related to MEA

Where the MEA differs from the existing asset in terms of operating costs, asset life or service provided, this needs to be taken into account when revaluating the asset. These adjustments include:

a) Operating cost adjustments

The operating cost of new equipment may be lower than that of the existing equipment. In this case, the cost of the MEA should be reduced by the present value of the additional operating costs associated with the existing equipment over the remainder of its life.

b) Functionality adjustments

Similarly, new equipment may have increased functionality. If so, the cost of the MEA should be reduced taking into account differences in capacity and functionality between existing assets and its equivalent.

c) Surplus capacity adjustments

For surplus capacity, i.e. capacity that is not currently required and is not expected to be required within the network planning horizon, valuations should be adjusted downwards compared to full capacity of the equipment. For example, this could be specialized space such as exchange buildings. This reflects the fact that the space requirement of modern switching equipment is much lower than that of analogue equipment. A way to deal with this is to use modern building and site costs but assume a space requirement consistent with what is necessary for modern equipment.

The Agency considers that the cost accounting system of the Notified Operator must specify what MEA technologies have been used for the revaluation of assets under the CCA approach. The choice of the MEA should be clearly explained and documented. Furthermore, where the MEA and the asset differ in functionality and/or efficiency, adjustments to the purchase price and operating costs should be made accordingly.

6.1.4 Annual capital charges

There are effectively three methods which can be used to calculate annual capital charges:

- Economic cost approach;
- Annuities approach; and

- Accounting cost approach.

These approaches differ in terms of depreciation.

6.1.4.1 Economic cost approach

The economic cost approach is based on economic depreciation, which reflects the change in the economic value of an asset and takes into account technological change and obsolescence (asset life). The asset's economic value is the price, at which the undertaking is indifferent whether to retain a given asset or replaces it with a new MEA.

An undertaking will only invest in a network component if the PV of future revenue streams is greater than or equal to its GBV, meaning that its NPV is greater than or equal to zero. The economic depreciation is therefore calculated as the difference between the estimated NPV of future cash flows at the beginning of a given period and the estimated NPV of future cash flows at the end of this period.

The depreciation profile will depend on such factors as: the expected annual operating costs, the purchase costs of assets and the revenue generated by those assets. The length of the depreciation profile (the economic life of the asset) will depend on the surplus of revenues over operating expenditure. After this time period operating expenditure is greater than revenues and therefore the operation of the asset is no longer economically justified.

In this approach the annual capital charge is the sum of economic depreciation and cost of capital (which is set at WACC multiplied by the average economic value of the asset).

6.1.4.2 Annuities

With the annuities approach two kinds of charges are calculated: the depreciation charge and the capital charge. After discounting, a charge is set, which recovers the cost of the asset and the financing costs in equal sums. The total capital charge will be based on the GRC of the particular asset and will be annualised based on the formula:

$$\text{Annual capital charge} = GRC \times WACC / (1-(1/(1+WACC)^{t}))$$

where

t = the asset life,

WACC = Weighted average cost of capital.

The annuity will be a flat profile, initially consisting mainly of capital charges, later on mainly driven by depreciation charges.

If the price of an asset is expected to change over time, it is better to use a tilted annuity approach. According to this approach an annuity charge is calculated, that changes over time at

the same rate at which the price of the asset is expected to change. This means that the annual capital charge will decline if prices are expected to fall over time.

$$\text{Annual capital charge} = \text{GRC} \times (\text{WACC} - p) / (1-[(1+p)/(1+\text{WACC})^t])$$

Where p = rate of price change or "tilt".

The depreciation charge in the annuities approach depends primarily on the asset's economic life and the replacement rate.

According to the IRG the annuities approach is recommended for bottom-up models.[11]

6.1.4.3 Accounting cost approach

Accounting depreciation reflects that the use of long-life assets can be considered as the decrease of the service potential of the assets. This is determined by accounting and/or tax allowance rules under which operators prepare their financial statements.

Accounting depreciation is considered the most appropriate approach, as the top-down approach itself is based on the current costs of the operator as recorded in its accounting records and network databases.

In this approach the annual capital charge is the sum of accounting depreciation and the cost of capital (which is set at WACC multiplied by the NRC of the asset).

To calculate accounting depreciation two principal methods are used:

- the NBV/GBV methodology (net book value/ gross book value); and
- the rolling forward methodology.

NBV/GBV methodology

The simplest approach to calculate the net replacement cost is to multiply the gross replacement cost by the ratio of NBV to GBV:

$$NRC = NBV/GBV * \text{GRC}$$

This should be done asset category by asset category. However, the approach will not provide accurate results when asset prices are changing. Where asset prices are rising, this methodology places too much weight on recent observations. This is because the asset price increases will result in a higher GBV per unit of output for more recent observations whereas the gross asset valuation per unit of output should be the same for all observations. The impact of this bias will lead to overestimation of net asset valuations, and therefore of capital costs. The opposite holds

[11] IRG Public Consultation Document – Principles of Implementation and Best Practice regarding the use of current cost accounting methodologies as applied to electronic communications activities, 2006

when asset prices are falling. There are other factors that might in practice affect the bias. For example, the investment pattern is unlikely to be even.

The actual investment pattern will affect the NBV to GBV ratio, which may result in biases, either positive or negative, if using this ratio to calculate net asset values.

Rolling forward methodology

The rolling forward methodology calculates the net asset value as the gross asset value less current cost accumulated depreciation.

The rolling forward approach produces the correct net asset values if two assumptions are met: First, it requires that current cost depreciation plus holding gains and losses are equal to economic depreciation in each and every year. Secondly, the starting net replacement cost must be correct. This may be difficult in practice, since it requires details on the installation dates of each of the assets included in the GRC. Such information may not be available, particularly not for asset categories that include a large number of items or where individual items have been modified at various stages during the asset's lifetime. In such circumstances, an initial net asset valuation could be calculated using the NBV/GBV methodology. Clearly, the longer the period for which the application of the NBV/GBV is used, the greater is the potential error in the calculation of net replacement cost.

Although the rolling-forward methodology is the theoretically correct methodology, it is associated with a number of practical difficulties. The Notified Operator may therefore choose between either of the two methodologies.

As the NBV/GBV methodology will lead to higher (lower) annualised costs than the rolling forward methodology where asset prices are rising (falling), the Agency believes that the two methodologies must be used in a consistent manner. If different methodologies are used for different assets, this will need to be documented and justified in the documentation.

The Agency considers that the cost accounting system of the Notified Operator should use an accounting based approach to capital charges.

6.1.5 Capital maintenance

Considering the fact that undertakings function under circumstances where asset prices at the beginning of a financial period may differ from those at the end of that period (due to e.g. inflation or technological progress), it is necessary to reflect the impact of such differences in Current Cost Accounting statements. This is done by applying the adjustments described in this section.

Two alternative approaches can be used in CCA, which differ in how they treat capital that is required to be maintained before a profit is recognised. Capital maintenance is important for measuring the profit available for distribution in the Profit and Loss account (P&L), and it also affects the division between capital and retained profits in the balance sheet.

Capital can be examined from two different points of view:

- in operational terms (i.e. as the company's capacity to produce goods and services) or
- in financial terms (i.e. as the value of shareholders' equity interest).

According to the two points of view, there are two concepts of capital maintenance: Operating Capital Maintenance and Financial Capital Maintenance:

- **Operating Capital Maintenance (OCM)** focuses on maintaining the output capability of the company's assets. Capital maintenance under this approach requires the company to have as much operating capability – or productive capacity – at the end of the period as it had at the beginning of it. Under OCM, a profit is therefore only realised after a provision has been made for replacing the output capability of a company's assets. In general, this requires the adjustment of asset values based on specific inflation indices.

- **Financial Capital Maintenance (FCM)** is concerned with the maintenance of the company's financial capital and with its ability to continue financing its functions. Capital is assumed to be maintained if shareholders' funds at the end of the period are maintained in real terms at the same level as at the beginning of the period. Under this concept, profit is only realised after a sufficient amount of provision has been made to ensure that the purchasing power of the opening financial capital is maintained.

The choice between OCM and FCM is a vital determinant of the exact specification of the revenue requirement (cost accounting formula, further explained in Section 6.1.5.1).

If OCM is applied in determining charges, the revenue requirement would be calculated as the sum of operating costs, historical cost depreciation, supplementary depreciation and a return on net assets. On the other hand, using FCM means that the revenue requirement would be the sum of operating costs, a return on net assets less holding gains/losses plus the adjustment to shareholders' funds, historical cost depreciation, and supplementary depreciation. Consequently the required revenue is different depending on which of the capital maintenance concepts is used.

The preferred approach by the EC is the FCM[12]. The main reasons why FCM is considered to be the more appropriate method are the following:

- Under FCM the returns to the providers of capital would equal the required return (as measured by the cost of capital) irrespectively of whether replacement costs were rising or falling relative to general prices. Under OCM, profit measures do not include holding gains or losses.

- The EC recommends FCM based on the fact that "the use of the OCM concept may systematically incorporate insufficient or excess returns into the level of allowed revenue (depending, respectively, on whether asset-specific inflation was expected to be lower than or higher than general inflation). This is not a desirable feature of any regulatory regime"

12 Commission Recommendation 98/322/EC of 8 April 1998, Part 2 - Accounting separation and cost accounting

- In the European Union the majority of countries have applied the CCA-FCM approach,

Based on the discussion above, the Agency considers that FCM is the appropriate capital maintenance concept.

6.1.5.1 The top-down cost accounting formula

The T-D LRIC cost accounting formula gives the cost base that must be recovered in year t:

$$\text{Cost Base}_t = \text{Opex}_t + \text{Depreciation}_t + \text{WACC} \cdot (\text{NBV}_{AV} + \text{WC}_{AV})$$

Where:

Opex = cash operating expenditure,

Depreciation = current depreciation in the period, not accumulated depreciation,

WACC = Weighted Average Cost of Capital,

NBV_{AV} = Average Net Book Value

WC_{AV} = Average Working Capital

6.1.5.2 Implications of the FCM concept on the cost accounting formula

The application of the FCM method means that the above equation must be adjusted to:

$$\text{Cost Base}_t = \text{Opex}_t + \text{HC Depn}_t \pm \text{Suppl Depn}_t + \text{WACC} \cdot (\text{NRC}_{AV} + \text{WC}_{AV}) \pm \text{HG}_t + \text{Adj to SF}_t$$

Where:

HC Depn = Historical Cost Depreciation

Suppl Depn = Supplementary Depreciation

NRC_{AV} = Average Net Replacement Cost

WC_{AV} = Average Working Capital

HG = Holding gains/losses

Adj to SF = Adjustments to Shareholders' Funds

This equation represents the total cost base that must be recovered each year either from transfer charges or interconnection charges.

Operating expenditure and Working capital are discussed later in Section 6.4.4.

Supplementary depreciation

The current year depreciation charge is calculated on the basis of the revised current cost asset valuations. This ensures that the current cost of fixed assets consumed during the year is charged against revenue. For each asset, or group of assets, the current cost depreciation charge – assuming that straight-line depreciation is used - can be derived by dividing the difference between the current GRC and residual value of the asset by the asset life.

Supplementary depreciation is the difference between the historical cost depreciation charge (based on the original purchase cost of the asset) and the 'revised' current cost depreciation charge (based on the current replacement cost of the asset). It may be positive or negative depending on whether the values of assets are rising or falling.

These relationships can be summarised as follows:

Supplementary depreciation = HC depreciation x [GRC /(Acquisition cost)] – HC depreciation

Given that HC depreciation is derived as acquisition cost divided by asset life, this formula can be reduced to:

Supplementary depreciation = (GRC – Acquisition cost) / Asset life

Taking into account that depreciation can be calculated using several methods attention should be drawn on reconciliations needed depending on method used.

Backlog depreciation

Depreciation charges are based each year on the current gross book value of the assets. The value of these assets increases/decreases/ over time, as does the associated depreciation charge. Consequently, in any particular year, the current cost depreciation charge for the year exceeds/is less than/ the amounts charged as depreciation in previous years (which were based on lower/higher/ gross values of the assets). There is therefore a need to correct past depreciation charges to reflect the prevailing gross book values of the assets. These corrections are known as backlog depreciation.

The GRC should be adjusted with the backlog depreciation to get the appropriate NRC.

Holding gains/losses

Holding gains and losses result from changes in the price of assets. The holding gain/loss is equal to the increase/decrease in the GBV of the asset It is calculated as follows:

$$\text{Gross holding gain} = GRC_{closing} - GRC_{opening} - \text{Additions} + \text{Disposals (at current cost)}$$[13]

Where is:

[13] The GBV of disposals is multiplied by the ratio $GRC_{opening}$ / $GBV_{opening}$ for the asset concerned.

$GRC_{Closing}$ – Gross replacement cost at the year end

$GRC_{Opening}$ – Gross replacement cost at the year opening

The net holding gain can also be calculated as follows:

Net holding gain = Gross holding gain – Backlog depreciation

or

$[GRC_{closing} – GRC_{opening} – Additions + Disposals (at current cost)]$·NBV/GBV

In deciding on the appropriate capital maintenance concept, the Regulator will want to consider, in the context of its regulatory objectives:

a) the treatment of holding/gains losses for reporting purposes and

b) the appropriate methodological approach in the application of holding gains/losses to its decisions.

Adjustments to shareholders' funds

The effect of general inflation on shareholders' funds is taken into account through an adjustment to shareholders' funds. This adjustment is derived by multiplying the opening value of shareholders' funds by the change in the index of general price inflation for the period.

The calculation of WACC – whether it is calculated in real or nominal terms – has an important impact on shareholders' funds. The Agency believes that if a nominal WACC is used related to mean capital employed, and then the cost base of the cost accounting system does not need to include an inflation adjustment for shareholder's funds.

6.1.6 Practical issues of asset valuation

6.1.6.1 Materiality level for revaluation

As mentioned above, current cost valuation of assets involves the use of specific resources to perform the preliminary activities such as the identification of physical quantities, determination of price indices, and so on. In some cases, in order to simplify this process, a maximum asset value level can be identified related to historic values registered in the corporate accounting system, below which the relevant account can be defined as immaterial. Consequently the account's components can be maintained at their historic value. This value level is known as materiality level.

In aggregate terms, the CCA process is considered to be suitably accurate when assets are excluded from CCA and maintained at historic cost, on account of their recent acquisition or

short useful life or limited amount, have overall gross book value within the limits of the materiality level.

When determining materiality level, Agency suggests that higher of 0.05% total value of non-current assets and 0.05% of total revenue received from regular services provided by Notified Operator should be chosen. If the Notified Operator defines such a level, then the Agency considers that it should be clearly documented and justified.

6.1.6.2 Assets in the course of construction

Capitalised interest arising from assets in the course of construction should be included in the GRC of the assets. Such capitalisation should only occur for those activities that are necessary for the asset to be ready for service. However, depreciation should not be charged until the asset comes into use. Hence, the only annualised charge that is allowed is the cost of capital of the asset.

Therefore, the Agency considers that no depreciation should be charged to assets in the course of construction, though they may be included at Gross Value into the calculation of the cost of capital.

6.1.6.3 Leased equipment

Assets can be held under finance leases or operating leases.

Finance leases

Finance leases involve the payment by a lessee to a lessor of the full cost of the asset together with a return on the finance provided by the lessor. Finance leases therefore transfer the majority of the risks and rewards of holding the asset to the lessee. Assets held under finance leases are capitalised in the balance sheet and depreciated, with a capital charge taken through the P&L account.

Operating leases

Operating leases involve the lessee paying a rental for the hire of an asset which is substantially less than its useful economic life. The risks and rewards therefore remain with the lessor. Such assets will have a rental payment put through the P&L account, but the value of the asset should not be part of the asset base.

Based on the discussion above, the Agency believes that the assets held under finance leases should be included under the asset base and the depreciation charge should be allowed. Regarding the finance charge, the capital element of the finance charge should not be allowed under operating expenditure, since this cost will be recovered through the capital charge on the asset base, but the interest element of the finance charge should be allowed under operating expenditure. Any alternative treatment should be sufficiently explained including details on the impact on the cost base.

Furthermore, the rental payments for assets held under operating leases are allowable under operating expenditure. The value of these assets should not be included in the asset base.

6.1.6.4 Fully depreciated assets

An operator may have many fully depreciated assets in the statutory accounts but are still being used by the business to generate further revenue and to provide interconnection capability to new entrants. In other words, the economic/operational life of the asset has exceeded the designated accounting life of the asset. The issue is therefore one of dealing with the differences between an accounting approach to depreciation and an economic approach to depreciation.

Fully depreciated assets have a positive GBV and GRC, while NBV is yero and consequently NRC is zero too (assuming the ratio of NBV divided by GBV is applied to the GRC to arrive at the NRC). Under an accounting approach to depreciation, fully depreciated assets would therefore not be included in the Asset Base.

The Agency considers that fully depreciated assets should not be revalued under Current Cost Accounting revaluations since their value has already been recovered through past depreciation, the treatment of these assets should be documented. Where any alternative proposed approach is used, it should be documented with justification for taking this alternative approach.

6.2 Historical Cost Accounting (HCA)

Under the HCA methodology, the GBV of assets is given by their historical purchase price. Further adjustments of the asset values are not needed. Depreciation is charged against an asset's GBV and the NBV of assets is valued under GBV less accumulated depreciation. HCA does not recognise inflationary effects on asset value, cost and capital employed.

The cost base according to the HCA methodology is calculated as follows:

$$\text{Cost Base} = \text{Opex} + \text{Depreciation} + \text{WACC} \cdot (NBV_{AV} + WC_{AV})$$

Where:

Opex = cash operating expenditure

Depreciation = current depreciation in the period, not accumulated depreciation,

NBV_{AV} = Average Net Book Value

WC_{AV} = Average Working Capital

WACC = Weighted Average Cost of Capital.

6.3 Cost allocation principles

This section sets out the principles that should be followed to attribute costs, capital employed and revenues for the purpose of cost accounting and accounting separation.

Identifying different types of costs and attributing these to individual services or other objects such as network components can be complex and detailed. Attributions should be based on the principles of:

- cost causality,
- objectivity,
- consistency,
- proportionality,
- materiality,
- efficiency and
- transparency.

The principle of causality implies that costs are allocated, directly or indirectly, to the services that "cause" the costs (and revenues) to arise. This requires the implementation of appropriate and detailed cost allocation methodologies.

The Agency believes that the principle of cost causality requires that operators:

- **review and justify the relevance of each item of cost, capital employed and revenue;**
- **establish and quantify the factor or "driver" that caused each item to arise; and**
- **use the driver to allocate each item to individual businesses/activities/network components or services.**

Each item of revenue and cost must be attributed to the products and services provided by operators. In the case of revenues it should be relatively straightforward to allocate a substantial proportion directly.

Attribution methodologies need to be developed and applied where costs are not directly allocable to the reporting object (e.g. component, market or regulated service). In these cases management accounting techniques such as Activity-Based Costing ("ABC") can be used. An undertaking will also need to identify and capture relevant cost drivers, such as operational volumes data using sampling and survey techniques.

Several approaches can be followed to allocate costs to services costs:

- **FAC – Fully Allocated Cost.** The FAC approach attributes all relevant costs, revenues, assets and liabilities incurred by an undertaking to all of its outputs applying the causality principle. It allocates costs that are directly and not directly attributed to services or products using techniques such as ABC, samples and surveys.

- **LRIC – Long Run Incremental Cost.** The LRIC approach allocates costs that are directly or indirectly attributed to services or products, often using cost volume relationships.

Further explanation and details on FAC and LRIC methodology are given within section 6.4 and 6.5 respectively.

6.3.1 Cost allocation methodology: Activity-Based Costing (ABC)

ABC is a management accounting approach that allows causal relations to be established between costs and services or products. ABC views the services and products as a series of activities, each of which consumes resources and therefore generates costs. This methodology, based on cost drivers, traces and allocates costs through the activities performed and establishes clear cause-and-effect relationships between activities, their associated costs and the resulting output.

ABC makes it possible to calculate each cost that is absorbed by various activities that take place in an organization, i.e. provision of communications network, order processing, etc., and allocate this cost respectively to the company's products and services (e.g. telephone calls, data transmission) based on various cost drivers. This method of allocation enables the allocation of both resources directly involved in producing services and overhead costs to the products and/or the services.

The resources represent everything that is consumed in the organization for the purpose of producing services. Resources include i.e. work of employees, machines, information systems, financial assets etc.

Activities represent the processes performed to produce outputs (end products, e.g. telecommunication services). These activities may be regarded as unique processes, functions or tasks. The core and support activities can be distinguished. The core activities are the activities directly linked with particular products or services. The support activities are linked to the volume of products or several products or are linked to the core activities.

The cost drivers are measurable factors that represent the amount of resources consumed by activities, and the amount of activities consumed by end products. Cost drivers may take the form of, i.e. the number of iterations, amount of effort, etc.

The Activity Based Costing method is based on the cost causation principle which requires resources to be allocated or apportioned to products (referred to as cost objects) in a way that reflects the way that cost objects cause or drive the costs incurred. In some situations there may be a direct causal relationship between a cost and a product (direct allocation), and in other cases the causal relationship may be built up over a series of intermediate stages (indirect allocation).

Details of the main network components and commonly accepted cost drivers in case of fixed telecommunication network, together with main non network activities are given in section 7.11 of the Annex.

The Agency considers that the Notified operator should use ABC method for cost allocation. In the case when Notified operator considers some other method as more appropriate, these has to be justified and properly documented.

6.4 Long Run Incremental Costs

6.4.1 Characteristics of LRIC methodology

6.4.1.1 Long run

The long run is defined as a length of time in which all inputs are variable in scale. In the long run there are no fixed inputs. The undertaking has to make two types of production decisions. First, it has to decide about the volume of the production output. After that, it decides about the capacity that should be installed. Since there are no fixed inputs, there are no fixed costs in the long run: all costs are considered variable. Therefore Long Run Total Costs (LRTC) equal Long Run Variable Costs (LRVC). In particular we can consider:

- Long Run Average Incremental Cost (LRAIC);
- Long Run Marginal Cost (LRMC); and
- Long Run Average Cost (LRAC).

Long Run Average Incremental Cost (LRAIC) is defined as an increase in LRTC due to an incremental increase in the output divided by that increment. When the increment in question relates to the volume of output, the LRAIC equals LRTC divided by the volume of output.

Long Run Marginal Cost (LRMC) is an increase in LRTC resulting from expanding output by just one unit. The LRAIC equals LRMC, where the output increases by an increment of only one unit.

Long Run Average Cost (LRAC) of the entire volume of production can be calculated as LRTC divided by the volume of output produced. As, there are no fixed costs in the long run, LRAC equals LRAIC, where the considered increment is the entire volume of production.

Cost models should adapt all input factors to the forecast demand for services. Indeed, some practicalities like minimum size of input and quality of service have to be respected. As a result, operators may face some so called fixed costs at very low levels of output (subscribers or traffic). By definition, these can not be called fixed, but they, unlike variable costs, also do not change with the volume of output. For example, in a fixed line network, a national network of switches and transmission must be provided in order to carry one minute of traffic from any line

to any other line. A cost is incurred regardless of subscriber numbers or traffic volumes and hence represents a so called (long run) fixed cost.

6.4.1.2 Forward-looking

Even though HCA is generally accepted for financial reporting purposes, it may provide unsatisfactory and subjective information for regulatory decision making. Therefore, a forward looking approach (current cost accounting) is usually followed in order to overcome the limitations of historical cost accounting. Forward-looking costs are defined as the costs of an efficient operator building its network today using modern technology bought at current prices. These costs provide an appropriate cost base for LRIC cost modelling.

Costing measures should be forward-looking to reflect the true economic costs of producing an increment of output. In practice, however, there is likely to be considerable debate about the precise definition of forward-looking. Networks evolve over time with the result that the network of even an efficient SMP operator may look very different from the network design that would be used if starting from scratch (often referred to as a scorched earth assumption).

The Agency believes that "Looking forward" implies that the expected development in prices, first of all asset prices, and expected development in demand will need to be taken into account. Forward-looking costs are the costs of a company optimising its production by taking into account the forecast demand for its services.

Finally, the Agency considers that the models should consider the optimised network as if it were already in place. No costs associated with moving from the existing network to the optimised network should be included.

6.4.2 Modelling approach

6.4.2.1 The top-down model

Top-down (T-D) approaches are based on the undertaking's actual costs that derive from its accounting records and other databases (General Ledger, Fixed Asset Register, Trade Debtors Ledger, network inventory and management systems etc.) as well as its actual network topology and architecture. These costs therefore reflect the actual cost of providing and maintaining existing capacity.

In case of T-D modelling bottom-up (B-U) engineering models are also used in order to model the efficient network, to understand quality of service and routing factors, and for the construction of CVRs.

An overview of the typical process of T-D modelling is illustrated in the following figure:

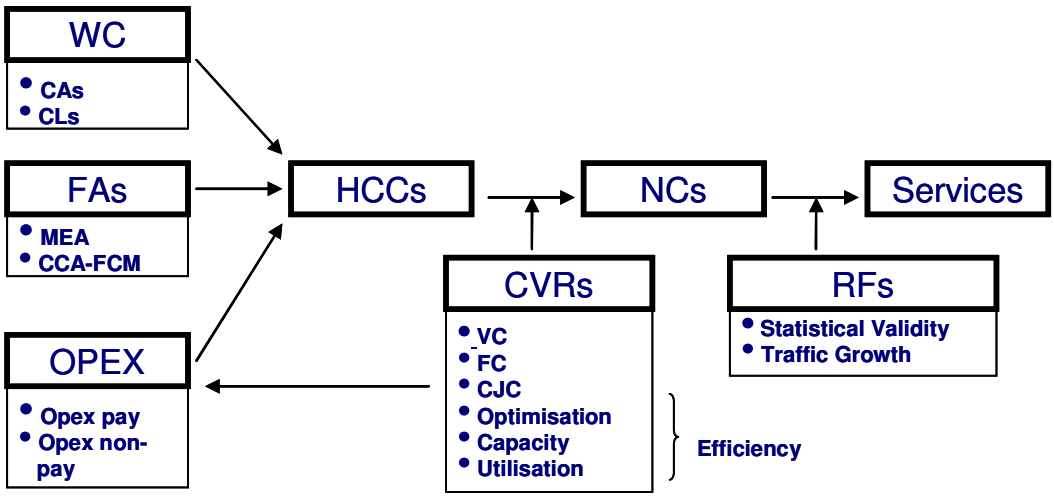


Figure 6.2. Steps of cost allocation in T-D model

Where:

WC = Working Capital

FAs = Fixed Assets

OPEX = Operating Expenditure

CCA-FCM = Adjustments regarding capital maintenance

VC (Variable Costs), FC (Fixed Costs) and CJC (Common and Joint Costs) are discussed in detail in Section 6.4.7.1.

As illustrated in the figure above, the first step is to group costs that have similar characteristics into individual cost categories, also called Homogenous Cost Categories (HCCs). The level of homogeneity is determined by the need to identify individual cost drivers and to account for changes in costs over time.

Once the HCCs have been identified, the next step is to determine Network Components (NCs). Costs are allocated to NCs by using Cost-Volume Relationships (CVRs), and the result is a cost per NC. In particular, CVRs:

- trace how individual costs vary with underlying cost drivers; and
- identify all variable, fixed, common and joint costs.

In simple terms, a CVR is a curve, which describes the relationship between the volume of a cost driver and its related costs.

The last step is attributing services to different NCs. The costs of NCs are allocated to services on behalf of routing factors, and a NC cost per unit is calculated.

The Agency proposes that the LRIC models developed by Notified Operator should adopt a top-down approach based on CCA to ensure that costs can be reconciled back to an operator's actual set of accounts.

When developing cost models, a Notified Operator should follow the two stage process illustrated in Figure 6.2. In particular, Notefied Operators should define Network Components, and calculate first the LRIC of the NCs, then based on these, the LRIC of individual services.

6.4.2.2 Data requirements

T-D models use the following types of data:

- **Financial data** – operating costs, depreciation, net book values, etc.;
- **Network operational data** – route factors, cost-volume relationships, etc.; and
- **Network traffic data** – Busy Hour Traffic, etc.

The requirements for this data are dealt with in respective sections of this document. However, it is critical that this data be derived from a specified period.

Financial data should be based on the latest available set of fully audited financial accounts such that it can be reconciled back to accounts.

Network operational data should be derived from network statistics covering the same period as the latest available audited financial accounts. This data needs to be revised if there is an increase in capacity based on forecast network traffic.

Network traffic data should be based on traffic of the same period as the latest available audited financial accounts and this data should be forecast for two full years. Accordingly CVRs need to be constructed such that the required capacity for the end of the period is taken into consideration.

The Agency believes that the models must be based on the latest available set of fully audited financial accounts. The base year for financial, operational and traffic data should be the same, with projections for two full years ahead to ensure the network has been adjusted to take account of increased capacity requirements.

6.4.3 Homogenous cost categories (HCCs)

6.4.3.1 The level of granularity

To calculate LRIC, costs need to be grouped into a more manageable set of HCCs. Telecommunications networks are characterised by hundreds of pieces of distinct equipment. Hence it is desirable to group similar network equipment costs into HCCs. The level of

homogeneity (or granularity) is determined by the need that for each HCC the following should be identified:

- cost drivers;
- price trends of the particular equipment; and
- Cost-Volume Relationships (CVRs).

Cost drivers are a common requirement for both Fully Allocated Cost (FAC) models and LRIC models. Price trends and CVRs are required for LRIC models only. As a result, considerably more cost categories are usually required for LRIC models than for FAC models.

Cost-drivers

Costs determined by different cost drivers should be grouped into separate HCCs. To understand the determination of cost drivers, take the example of telephone exchanges. The driver of line cards is the number of access lines, which is driven by the number of subscribers. The driver of the trunk capacity, however, is the traffic volume of the exchange. As a result, grouping line cards and the switching stage into the same cost category would not allow identification of a cost driver for this category.

Price trends of particular equipment

For a fixed line example, consider access equipment. The ADSL access network consists of the following broad plant groups:

- Ducting;
- Cables;
- DSLAMs; and
- customer premises equipment (CPIs).

However, over time the price trend of these groups has moved in different directions. The main cost component of building a duct network is the civil engineering costs used to dig and fill in trenches. Due to general wage inflation, civil engineering costs have increased steadily over the years. On the other hand, costs of DSLAMs and CPIs have generally been falling. It would be very difficult to revalue these assets on a current replacement cost basis, if they were all in the same cost category.

Cost volume relationships (CVRs)

The cost volume relationship is the function that describes how costs vary with cost driver volume. The homogeneous cost category should be described by only one CVR. The CVR

should be the same for all the equipment grouped in the same HCC because the CVR is used to calculate the incremental cost.

Cost-Volume Relationships are discussed in detail in section 6.4.7.

Based on the discussion above, the Agency considers the following:

- **Cost categories should be identified, and every cost category in the model must be a HCC. HCCs are characterized by their cost drivers, price trends and CVRs;**
- **Capital or operating expenditure with different cost drivers can not be grouped into the same HCC:**
- **Capital or operating expenditure having different price trends can not be grouped into the same HCC; and**
- **Capital or operating expenditure with different underlying CVRs can not be grouped into the same HCC.**

6.4.4 Definition of cost types

HCCs should be clearly categorised into the following broad cost types:

- Fixed Assets;
- Depreciation;
- Operating Expenditure; and
- Working Capital.

These may be defined as follows.

Costs of fixed assets

Costs of fixed assets are all cash outlays on long-life assets, which are in use for more than one year. The value of fixed assets can be derived from the operator's Balance Sheet. Ducting, cables, switches, exchange buildings and motor vehicles are examples of this cost type.

The costs of fixed assets are the cost of capital and the holding gains/losses incurring from changes in asset prices.

Depreciation

Depreciation is a non-cash expense which reflects the fact the value of the asset declines over time. Therefore it should be written off over the useful lifetime of the asset – and not just in the

year of acquisition – to represent the consumption of the asset over time. Depreciation is a line item in an operator's P&L account.

Operating expenditure (OPEX)

Operating expenditure refers to cash outlays incurring in each accounting period. It does not include financial and extraordinary costs nor the taxes on profit. Operating expenditure appears as a line item in an operator's P&L account. Within operating expenditure, pay and non-pay items can be distinguished.

Working capital

Working capital is defined as current assets less current liabilities. Both are line items in an operator's Balance Sheet.

Current Assets should include stock, debtors, cash and accrued and deferred assets. Debtors should include debtors from sales and prepayments such as rent and rates. Cash should consist of cash at bank and in hand, and short-term investments.

Current Liabilities are short-term creditors and accrued and deferred liabilities. The creditors that should be included in the model are those arising from operating activities and capital expenditure. For example, these will include payments to suppliers, salaries, and rent and rates.

The model should clearly separate creditors and debtors arising in the network division from those arising in the retail division.

As a summary of the above, working capital includes:

- Fixed asset investments (pure financial investments, investments in unrelated activities, other investments)
- Short-term investments (including cash at bank and in hand)
- Stock
- Debtors
- Creditors
- Long-term provisions
- Short-term loans
- Liabilities for taxation and other liabilities.

Based on the above discussion, the Agency considers the following:

- **Cost types should be defined and the HCCs should be categorized according to these cost types. These cost types are fixed assets, depreciation, operating expenditure and working capital.**

- **Working capital should be calculated as current assets less current liabilities. The level of working capital should be a yearly average that can be calculated as the average of the level of working capital at the start of the year and the working capital at the year end.**

6.4.5 Network topology

To calculate incremental cost it is first necessary to design the underlying network, specifically the topology of the network. There are two network topology options:

- Greenfield/Scorched Earth Network Topology; or

- Scorched Node Network Topology.

6.4.5.1 Green-field network topology

This option means that the topology of the network can be created as it is required to provide the number of lines and traffic demanded by doing it at least cost. Applying greenfield option network topologies may differ from a Notified Operator's actual network depending on the number of underlying lines and traffic.

Typically, as incumbent operators have developed their network over many decades, in essence it locks them in so that they evolve and change configuration slowly and in a predictable way. As an example, it would be possible to replace many hundreds of circuit switches with fewer switches – and the cost of building such a network from scratch would be much lower. However, it is almost impossible to redesign a huge network with millions of subscribers from scratch.

This network topology is mainly used in bottom-up modelling.

6.4.5.2 "Scorched node" network topology

Applying the scorched node network topology, changing the location of existing network nodes is not allowed. Network exchange sites are a product of the evolution of the network. The topology of a digital network may be vastly different from that of a mainly analogue one, but once exchanges are built it is difficult to decommission them. For example in the basement of exchange buildings is a cable chamber in which cables enter the building. Relocating an exchange would mean recabling streets which is very expensive.

Geographical and logical scorched node

Under a geographical scorched node network the geographic location of the nodes of an operator's existing network are not allowed to change. By this we mean that exchange and transmission nodes remain in their existing geographic location. Though, the number or the capacity of the existing equipments at a certain geographical location can be reduced.

Under a logical scorched node network, the logical location of equipment of an operator's existing network is not allowed to change. This means that exchange and transmission equipment remain in their existing geographic location. Each piece of equipment in an operator's network will have a unique (logical) identification, and the logical topology of the network is not allowed to change. Each piece of existing equipment must remain in its present location. However, equipment capacity can be reduced in reflection of service loads.

The Agency proposes that the geographic scorched node approach should be applied as the underlying network topology of the LRIC model.

6.4.6 Equipment optimisation

Equipment optimisation can include both efficiency adjustment and capacity optimisation (optimal capacity and utilization). The process of equipment optimisation should only be adopted if it also lowers costs.

The Agency therefore considers that when constructing the LRIC models the principle of equipment optimization has to be applied resulting in lower costs.

6.4.6.1 Efficiency

According to the ERG's common position[14] identifying different types of costs and attributing them to services or network components should be based on the principle of efficiency.

In a telecoms market where a monopolistic situation exists, it is important to assume that the cost to provide regulated services should be modelled based on the operations of an efficient operator. The underlying assumption is that a monopoly is not efficient in itself, and that the competition should not have to pay for inefficiencies.

Therefore, the consideration of efficiency is a key aspect of the application of the LRIC methodology, and must be carefully considered in the calculation of regulatory cost base.

Where regulators have concerns about the efficiency of an Operator, it is possible to commission a study to analyze in some detail the required level of cost reductions to make an Operator more efficient.

International comparison of the incumbent Operator to other Operators in other countries is a key component of inefficiency identification. However, there must be careful selection of appropriate benchmarks for such an analysis of efficiency.

[14] ERG Common Position C (2005) 3480

Redundant space

Most exchange buildings were built/acquired for old analogue switching equipment, which was electro-mechanical in nature and occupied a considerable amount of floor space. With technological developments the analogue equipment has subsequently been replaced with digital switches, which occupy a much smaller floor space. Some floor space, therefore, has become redundant. However, Operators face a similar problem, when replacing digital switching equipment with new digital switches.

New entrants, faced with today's switching technology, would build smaller exchange buildings. If Operators were allowed to recover the cost of (now) redundant floor space, this could distort the build-buy decision and lead to inefficient entry.

The Agency proposes that any floor space which is found to be surplus due to the introduction of modern technologies and exists in an exchange building containing operational switching equipment, should be valued at a NRV of zero, except where it can be shown that it is economically rational to maintain such vacant space.

6.4.6.2 Capacity and Utilisation

The cable and duct network is an area where any Operator typically has significant spare capacity. But it should be noted that it would not be economically reasonable to provide cable and ducting just for the traffic levels expected for the next few years. It would be much more costly to increase capacity by adding cables every few years than to provide sufficient capacity for a longer time frame (say 15-20 years). For this reason current levels of spare capacity are usually treated as efficient. Similarly, in the switching and transmission equipment used, it is necessary to have a certain degree of spare capacity, and the utilisation of this equipment will always be less than 100%.

Therefor, the Agency would need to review the current levels of network utilisation and decide whether these are appropriate. The Agency believes that the Notified Operator should provide justification for the utilisation levels achieved, and allowance should be made for several factors including:

- **impact of customer churn (especially where competition is developing);**
- **need to provide for growth;**
- **need to upgrade equipment as technology develops;**
- **need to offer suitable levels of service;**
- **distribution of customer density that must be served.**

6.4.7 Cost volume relationships (CVRs)

6.4.7.1 Definitions

CVRs are the basis of calculating incremental costs, because CVRs:

- specify all variable costs;
- specify all fixed costs;
- specify all common and joint costs; and
- show how individual costs vary with underlying cost drivers.

In particular, CVRs reveal the relationship of costs and the underlying cost driver volumes. In turn, cost driver volume is driven either by the demand for lines or the demand for calls. For example, the driver for the cost item "transmission nodes" is the number of transmission circuits. The more transmission circuits required between transmission nodes the greater is the associated cost. What drives the number of circuits between nodes is the amount of traffic. By varying the amount of traffic, carried over the network it is possible to trace the impact on the number of transmission circuits and thus the cost of transmission nodes.

Variable Costs (VC) are costs that vary with the cost driver. For each HCC, variable costs are allocated to an NC based on the volume of that cost driver allocated to that particular network component

Component Specific Fixed Costs (CSFC) are fixed costs, which can be directly attributed to a particular component.

Finally, a **Common and Joint Cost (CJC)** are also a fixed costs, but it is common to two or more components. Telephone switches have CJCs in the form of racks. This switch card housing equipment cannot be allocated to components in a meaningfully causative way. Common and Joint Costs are discussed in detail in Section 6.4.9.

A simple CVR is illustrated in the figure below. The cost driver of the illustrated cost category is a square metre. The costs can be attributed to 3 different services (Service 1, 2 and 3). Cost driver volumes are obtained by floor space occupancy surveys, which are periodically undertaken by Operators.

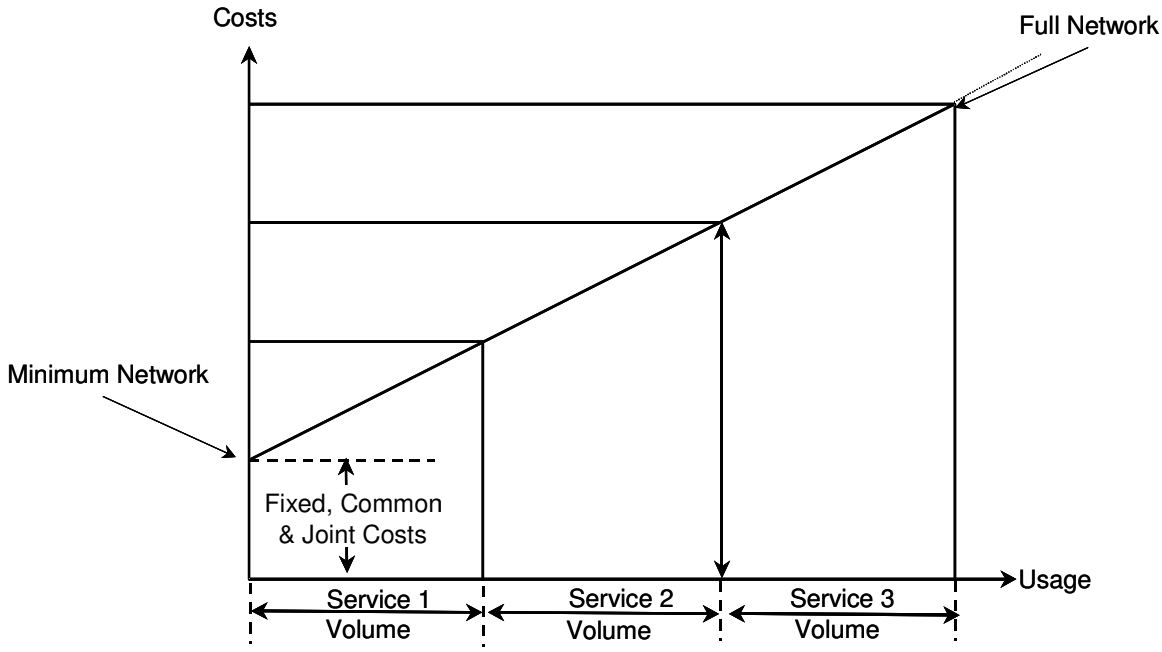


Figure 6.3 A simple CVR

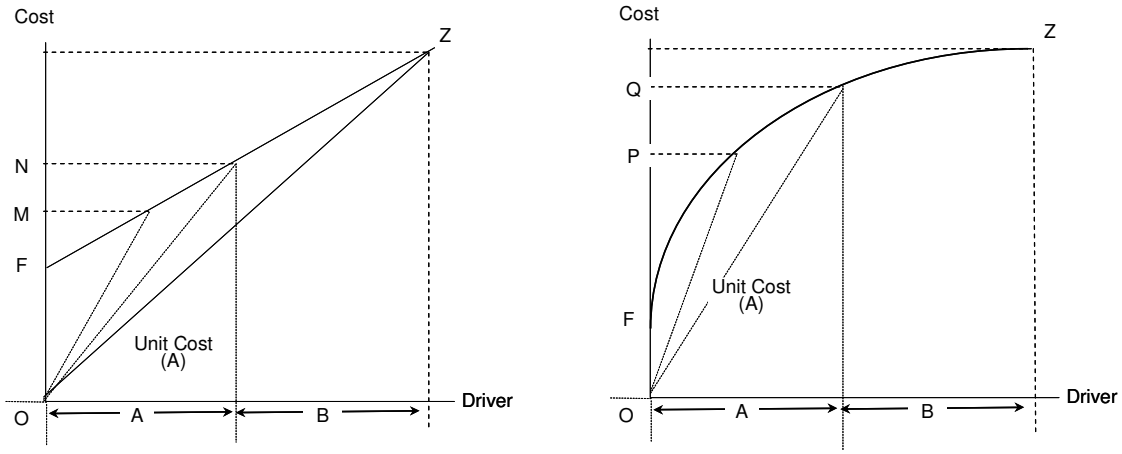
A **minimum network** for fixed line Operators is defined as one in which it is possible to make or receive a call from any telephone currently connected to the network in question. This requires at least one line card to be located in each concentrator and each concentrator to be connected to a local exchange. As a result there is a minimum requirement for exchange buildings.

The **full network**, however, is a network designed to carry existing traffic levels. It requires more local exchanges and as a result more exchange buildings are needed.

The Agency considers that a minimum network for fixed line Operators is defined as one in which it is possible to make or receive a call from any telephone currently connected to the network in question.

6.4.7.2 Economies of scale and the CVRs

The two figures below illustrate the impact of economies of scale on CVRs. Panel (a) shows how the inclusion of Fixed, Common and Joint Costs affect unit costs. As the line FZ reveals, it leads to unit costs falling as volumes increase. Without fixed costs, unit costs remain constant throughout (as shown by line OZ).



Panel (a) Panel (b)

Figure 6.4 The impact of the inclusion of fixed, joint and common costs on the CVRs

Panel (b) shows the impact of purchasing power as cost driver volume increase. Purchasing power is the ability of larger Operators with larger gross investment plans to negotiate better prices from suppliers. This leads to a non-linear/convex cost-volume relationship with unit costs falling at a faster rate as volume increases. Since purchasing power is usually present in telecommunications plant purchasing, all CVRs are expected to exhibit a non-linear relationship. If the CVR is a straight line, it should be fully justified with details of why no economies of scale/scope/purchasing power exist.

Based on the above discussion, the Agency believes that the CVRs should be convex relationships capturing the effects of purchasing power and/or economies of scale/scope. If CVRs represent a straight line relationship, why purchasing power and/or economies of scale/scope have no effect on the shape of CVR should be documented sufficiently.

6.4.7.3 The construction of CVRs

Operators may use survey and sampling techniques such as pattern of usage of network element for each type of product/network service, staff activity data and engineering information in order to define CVRs and using them to allocate costs (including capital costs) to network components and subsequently to the operator's services. For example, periodic analysis of the tasks undertaken by staff in customer call centres may be used to determine the amount of time spent by those staff on different tasks. This information may then be used to allocate – either directly or indirectly – the costs associated with staff to the services provided by the Operator.

For the construction of such CVRs one or more of the following methodologies are used:

- engineering models (also called simulation models);
- statistical surveys; and

- interviews (on-site research).

Engineering models/simulations

This kind of model is used to construct CVRs for plant such as exchanges and transmission switches. They are bottom-up simulation models, which use engineering relationships and algorithms to model how costs will vary as volumes change.

Statistical surveys

Statistical surveys are mostly used to calculate the length of duct networks and average number of bores per kilometre of duct (to generate bore kilometres in the network). These surveys require the examination of network records and statistics and will generate the number of bore kilometres required under a minimum network and a full capacity network.

Interviews, field research

Interviews/field research are primarily used to gather information on operating costs such as maintenance costs. For example, field research will focus on discussing with engineers on the time required and costs associated with service volumes for specific switching equipments.

The Agency proposes that the CVRs should be constructed using one or more of the following:

- **engineering models,**
- **statistical surveys and**
- **interviews, field research.**

Furthermore, the agency requires that all models and research documentation related to construction of CVRs should be submitted by Operators.

6.4.7.4 Dependent and independent HCCs

There are two types of HCCs:

- Independent; and
- Dependent.

Independent cost categories

Cost drivers of independent cost categories are directly linked e.g. to the demand for lines or the demand for calls. For independent cost categories, volumes can be gathered directly from the undertaking's management systems.

Dependent cost categories

Cost drivers of dependent cost categories are linked indirectly e.g. to the demand for lines or calls. An example is exchange maintenance costs. The cost driver for exchange maintenance costs is the amount of working hours associated with maintenance, which is a function of the number of lines and the amount of traffic. If it was classified as an independent HCC, then specific volumes would have been derived for each of the network components.

For dependent cost categories, volumes have to be calculated based on the LRIC of the cost category they depends on. Taking office buildings as an example, office building costs depend on square metres of the buildings, which depend on personnel numbers. Personnel numbers are related to pay costs (or rather, pay costs are related to personnel numbers). Hence it is possible to construct a cost-volume relationship in which pay is the cost driver for office building costs.

The natural sequencing order in calculating LRIC is that first the LRICs of all independent cost categories have to be calculated. Then using these independent LRICs the volumes and LRICs of dependent cost categories can be calculated.

The Agency considers that HCCs should be clearly identified as independent or dependent. If they are dependent, CVRs on which they depend should be documented. Furthermore, equipment optimization must flow through all areas of the network (from HCC to HCC and from CVR to CVR), where the optimization of one area impacts another.

6.4.8 Data of network operation and traffic data

6.4.8.1 Traffic data

The Agency notes that the traffic data should be consistent with the base year of the audited financial statements, with forecasts provided two years forward to ensure CVRs anticipate the capacity appropriately.

6.4.8.2 Calculation of unit cost of services

After the annual cost of each network component has been calculated, which has to be recovered through service charges, the next step is to convert the cost of NCs into per unit charge. No service uses a whole network component on its own, and therefore the cost of each component has to be divided by the corresponding service volume of NCs using it to get the cost on a per unit basis.

For call traffic related NCs, the unit charge might be calculated with the help of routing factors, which is a simple matrix showing average use of each NC by each service. The cost of a particular service can be calculated by calculating the sum of the relevant costs of a service from every NC, considering the minutes, how long the service has used those NCs.

The figure below gives a simple illustrative example of how to calculate the LRIC of a service.

Panel A shows a matrix of routing factors. This matrix captures the frequency with which services use the various NCs (NC1, NC2, NC3) as well as the volumes of traffic on these services expressed in minutes. Using Panel A the total demand is calculated for each NC, by simply multiplying the routing factors by the traffic of services, and adding each NC.

Panel B illustrates how the incremental cost per minute is calculated using total component demand – the incremental cost per component is divided by total component demand.

Finally, the last of the panels (Panel C) reflects how we get the incremental cost of service per minute. Taking the routing factors from Panel A and multiplying them by the incremental cost per minute for each NC, and adding each network service.

Panel A

Services	Traffic (million minutes)	Routing Factors		
		NC1	NC2	NC3
S1	5000	1	2	3
S2	8000	1,5	1	1,5
S3	4000	2,5	2	2

Panel B

Services	Traffic (million minutes)	Incremental cost per NC minute		
		NC1	NC2	NC3
S1	5000	5000	10000	15000
S2	8000	12000	8000	12000
S3	4000	10000	8000	8000
Total NC demand		27000	26000	35000
Incremental cost		30000	50000	100000
Incremental cost per minute		1,11	1,92	2,86

Panel C

Services	NC1	NC2	NC3
S1	1,11	3,85	8,57
S2	1,67	1,92	4,29
S3	2,78	3,85	5,71

Figure 6.5 Routing factor matrix and incremental cost per minute

The traffic volumes that are used in the above calculation are total traffic volumes including interconnection traffic. If a standard set of interconnection charges is to be set for a given period

of time, then the traffic volumes must be the forecast traffic volumes over the period. Similarly, the cost of each NC must be the forecast cost over that period.

Network components unit cost should be calculated dividing the cost of each particular component by corresponding service volume. Unit cost of service is given by allocating network components unit cost based on relevant routing factors.

The Agency considers that the routing factors should be based on the two-year forecasts. The model documentation should provide supporting information of the statistical validity of traffic volumes. Routing factors should be consistent with the forecast traffic data provided.

6.4.9 Fixed, joint and common costs

6.4.9.1 Definitions

Two types of **fixed costs** can be distinguished: Component Specific Fixed Costs (CSFCs) and Common and Joint Costs (CJCs):

- **CSFCs** are fixed costs that can be directly attributed to a particular NC.
- **CJCs** are fixed costs that are common (or span) two or more NCs.

Common costs are those costs that can not be directly allocated to NCs. They are common to two or more activities. They can therefore only be removed by stopping all of the activities to which the costs are common.

Joint costs are costs, which occur where an input produces two or more separable outputs in fixed proportions irrespective of volume.

6.4.9.2 The joint and common costs of fixed line network Operators

Operators usually produce more than one service and as a result costs might be common to two or more services. Cost can be defined from different perspective. If we define LRIC from a retail/wholesale service perspective, then there will be many common or joint costs. However, if we calculate LRIC from a NC perspective, then the amount of costs that are common or joint will be greatly reduced. In the latter case, costs will be considered common or joint only if they span on two or more NCs. This is likely to be the case for support plant such as power supply equipments and air conditioning.

The Agency considers that the percentage of common cost must be disclosed and documented for each HCC, including an explanation of what these costs are common to.

6.4.10 Mark-up

When LRIC is calculated it does not cover all costs. Indeed, setting interconnection charges equal to LRIC will lead to sustained losses since no contribution to common costs is captured. Therefore in order to cover common costs a mark-up has to be added to LRIC. A first best economic solution is for prices to be equal to long run marginal cost. Since this is not possible, a second best solution is Ramsey pricing.

Usually, the increased output gives not rise to proportionally the same increase in common costs. Even if the volume of output of services grows, the common cost may arise, but it is not possible to find dependence of the increase of common costs upon the increase of the volume of output. In this case there is no direct allocation of common costs to certain services, and they must be divided between several services. There are a number of methods to allocate common costs. The most important methods are the following:

Ramsey pricing

In this method the allocation of common costs to different services depends on the impact of tariff changes of the product on the undertaking's profitability. Ramsey Pricing essentially allows for differentiated mark-ups to be applied according to services with various elasticities of demand. If a service has a high elasticity of demand, the mark-up should be lower since the level of demand is more sensitive to price**.** The services with low demand elasticity are more resistant to the increase of price which is why the majority of common costs are allocated to these services. Therefore, in order to avoid losing a client only a small portion of common costs is allocated to the services with high demand elasticity.

Ramsey pricing, however, has a number of weaknesses when implemented in practice. First of all, price elasticities are very difficult to estimate and verify. This is of particular concern since an operator operating in both competitive and regulated markets will have a strong incentive to attribute a disproportionate amount of the common costs to the regulated products. Price elasticities would also be likely to vary over time, with price, and be dependent on the level of competition in various segments of the market. Also multiple price elasticities could occur depending on the intended use of the product. The method therefore faces a number of operational difficulties.

Secondly, it may seem unfair that consumers should bear a larger burden of the costs just because they are so dependent on provision of the services or have so few alternatives that their demand is not very sensitive to price.

Finally, it is not always clear how to estimate demand elasticities for access and interconnection services, since these services are sold to other operators reselling and re-packaging the services to end-users with very different demand elasticities.

Equal Proportional mark-up (EPMU)

Another way of recovering common costs, is to apply the EPMU method. With this method, the common costs are allocated to the separated services or products in proportion to the incremental costs already allocated to these services or products. This means that for each

service the percentage of incremental costs is calculated, which is directly connected with this service and then the same percentage of common costs is allocated to this service.

This kind of method of allocation does not reflect the real service contribution in common costs, however it is easy to implement and does not create any distortion in the proportion of the incremental costs of different network elements. This method is quite easy to apply and is very often used.

For example, if in a model with two increments – access, and interconnection – the LRIC of access is EUR 6 million, and of interconnection EUR 4 million, with common costs of EUR 2 million, then the mark-up would be set at 20% (=2/(6+4)) and common costs would be split between access and interconnection accordingly, i.e. EUR 1.2 million for access and EUR 0.8 million for interconnection.

Following the above discussion, the Agency proposes that the mark-up mechanism used should be EPMU.

6.5 Fully Allocated Costs

The principle underlying Fully Allocated Costing (FAC) is that the total cost incurred in producing a single product or in delivering a specific service should be attributed to that product or to that service. The fully allocated cost of a specific product or service includes both:

- the direct costs of the labour, capital, and material resources used exclusively in the delivery of the service, and

- a portion of the joint costs of labour, capital, and material resources used in the production of a group of services.

According to this method all costs that are incurred in the provision of services are allocated across those services in the precise ratio of their utilization as presented in the following figure:.

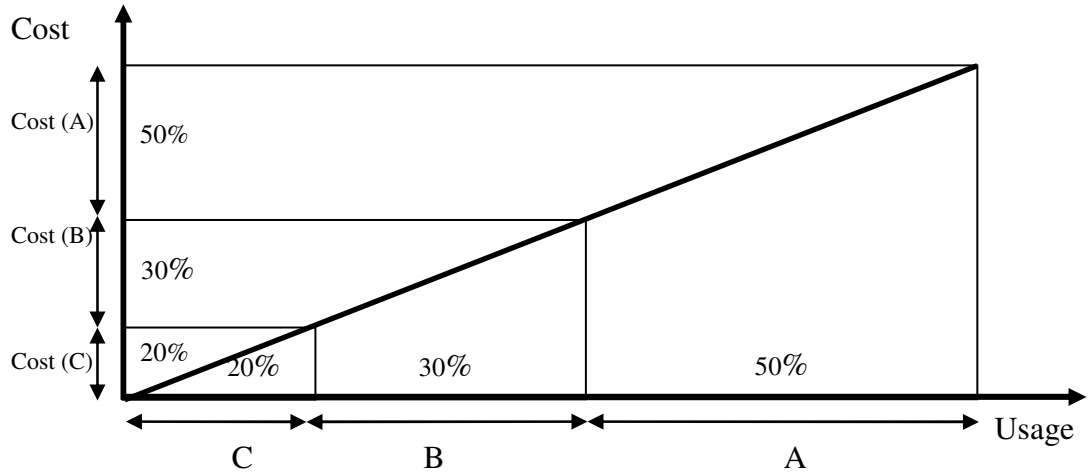


Figure 6.6 Distribution of costs according to the FAC methodology

FAC takes into consideration the current status of an organization's total costs, which are composed of direct variable costs, direct fixed costs and a share of the joint and common costs of services. Direct costs are allocated to their respective output, while indirect and joint costs are averaged across all outputs. Thus, the cost base for each output, meaning the total costs incurred in the production of the output, will include a proportion of the direct capital costs, and those used indirectly to produce the output.

FAC does not require a mark-up to recover a portion of joint and common costs, as it is the case for incremental costs calculation. The FAC allocation may or may not be the same as the one that would result from the use of a mark-up.

FAC are usually used to allocate historic costs. In this case, FAC results in a historic presentation of the costs incurred by each of the products or services offered by the undertaking. It is normally based on the existing network architecture and technology, and the existing operational structure of the undertaking.

FAC may also be used to allocate current costs that are calculated on the basis of assets that are valued according to their replacement cost rather than the historical purchase cost.

Steps in calculating FAC

The creation of the FAC model is based on the same steps as the LRIC model (see figure 6.2 in section 6.4.2.1):

- **The first step is to group costs into cost categories.**
- **After identifying cost categories, the next step is to specify a detailed list of network components.**
- **The general rule is to create the cost categories in such a manner as to allow, if possible, the direct attribution of the cost objects to the network components (without**

the use of cost drivers). Following the allocation of the cost items from cost categories to network components, the costs of supporting activities, such as support functions (e.g. HR, IT, PR) and general network activities, are attributed to the network components.

- **Routing factors have to be determined, as the costs of network components are allocated to services in the degree of their utilization and routing factors are used to show the level of utilization of particular network components by each service provided.**

- **Finally the network component cost per unit is calculated with routing factors, and subsequently unit costs can be allocated to services.**

6.6 Other Issues

6.6.1 Cost accounting depending on daytime/weekday

The level and structure of interconnection charges should be related to the costs of providing interconnection. Interconnection charges that are not firmly based on cost can distort the build-buy decision of competing operators and may lead to excessive duplication of telecommunication infrastructure and facilities or inefficient entry.

However, there are two reasons why interconnection charges should not only be based on cost, but also reflect the structure of retail tariffs.

- If wholesale interconnection charges were based only on cost, a potential difficulty arises because of the fact that retail tariffs may not reflect underlying costs. In this case opportunities for competitive entry would be determined by distortions in retail tariffs rather than competing operators being more cost efficient. Wholesale interconnection charges that ignore such distortions can lead to inefficient entry and bypass because they create opportunities for 'cherry picking'[15].

- Any T-D costing system will calculate an average 24 hours a day, 365 days a year cost. However, many operators' retail tariffs vary according to the time of day and the day of week. These retail time-of-day gradients are a form of capacity charging in order to ration busy hour traffic to equal busy hour capacity. Setting interconnection charges based on a 24 hour a day, 365 day a year average cost could lead to busy hour traffic exceeding busy hour capacity, dramatically decreasing the grade of service on the network.

In order to reflect the structure of retail tariffs, cost based wholesale fees should be defined in a manner, such that the traffic weighted average of the time-of-day fees should be equal to the

[15] Cherry- picking is a business term used for selecting only the best, choosing the most lucrative, advantageous, or profitable among various options. In the telecommunication industry this means that the undertaking focuses on customers, who can be served profitably – taking into account the cost to serve or/and the profit made on those customer segment.

calculated cost, while their quotient should be equal to the traffic weighted average retail tariff gradient.

6.6.2 Cost accounting model requirements

When building the T-D model, a separate aim should be to make the model as transparent as possible.

To support these requirements, the model should have the flexibility to examine the impact of a change in:

- Equipment prices;
- Utilisation Rates;
- Other network design parameters (e.g. busy hour Erlangs)
- Cost of capital;
- Traffic Volumes;
- Annualisation methodologies;
- The inclusion/exclusion of fully depreciated assets;
- Asset useful live; and
- Price trends.

The Agency believes that it should have full access to the Notified Operator's cost model at the Notified Operator's premises. Furthermore, the Notified Operator should provide any kind of data related to the model if requested to do so by the Agency.

The Agency believes that it should have access to and be able to review all parts of the cost model. Finally, the Agency proposes that the cost model should be audited within the framework of regulatory statements audit described in section 3.2.

6.6.3 Documentation of cost accounting models

For the LRIC models, the documentation described in section 3.2.4 (Accounting documentation and Attribution methodology document) should also incorporate:

1) The documentation of HCCs

HCCs should be clearly documented, describing the following parameters in case of each HCC:

- the name of the HCC;
- the cost type of the HCC;
- dependent or independent; and
- the CVR(s) which drives the HCC.

2) The documentation of CVRs

CVRs should be clearly documented, describing the following parameters in case of each CVR:

- the cost driver;
- the shape of the CVR;
- the amount of fixed, common and joint costs;
- the method used to derive the CVR; and
- independency or dependency.

6.6.4 Audit of the model

According to the ERG[16] guidelines following elements of the cost accounting model must be covered by the audit:

- the scope of costs included in the model;
- the scope of costs allocated to individual regulated services;
- reconciliation between the cost model and statutory accounts;
- correctness of figures including: operational data, volumes, technological parameters;
- methodologies used for amortization, cost capitalization, allocation and evaluation of assets;
- transfer charges in separated accounts;
- reconciliation between the cost model and the separated accounts;
- CVRs (if applicable) and
- accounting system information.

[16] ERG Common Position C (2005) 3480

6.7 Cost of Capital

According to the legal background presented in section 2.1, the prices for services of operators which are designated as Notified Operators on relevant market must be in accordance with the principles of transparency and cost-orientation, and they must include a reasonable rate of return on investments. This means that from a regulatory perspective, telecommunications operators are entitled to a reasonable or fair rate of return within the prices of services they offer whether these are retail or wholesale services.

The cost of capital calculation is the most appropriate method of calculation for a reasonable rate of return since it represents the financial return on a group of assets which are employed by a company or business. The correct determination of the cost of capital is, therefore, a crucial element in the regulatory process, as it has an impact on the regulated operator revenues, as well as on the prices other operators must pay for services provided by regulated operator.

Nevertheless, the Agency has a duty to ensure that the cost of capital used in the calculation of costs/prices of services provided to either end users with retail services, or wholesale services such as access or interconnection services, represents the true efficient/optimal cost of capital. Where an operator is competing within a competitive market without having SMP it must ensure its cost of service provision is minimised if it is to continue to be profitable. In this case, the operator will be forced to use an optimal financing mix that lowers its cost of capital. On the other hand, a market structure with a limited number of players allows an Notified Operator to choose a financing mix which may not be optimal, and using the status quo would force interconnecting parties (and indeed end users) to pay for what may be inefficiencies of the operator. Therefore, when calculating a cost of capital for regulated services, it would not be economically justifiable to simply use the current financing mix of the operator, as this may not represent the optimal mix that would be observed in a competitive market. As debt finance can have tax advantages over equity finance (because interest payments, unlike dividends, are normally a tax deductible expense for a company), it is possible to reduce the overall cost of capital by switching from equity to debt.

Accordingly, in its considerations of the cost of capital, it becomes necessary for the Agency to consider matters such as the debt/equity ratio that should apply and the risks and costs that arise from employing the particular mix of debt and equity. In the following sections the Agency proposes guidelines aimed at ensuring that cost of capital based on an efficient or optimal capital structure will be used.

It should be noted that the Agency is not attempting to control or recommend a particular type of financing arrangement for the Notified operator. These are matters entirely within an operator's own control. The Agency is however concerned that a particular financing arrangement may unduly increase the cost of services charged to other interconnecting parties, and is therefore proposing the use of a particular mix of equity and debt for calculating the price of regulated services.

6.7.1 Cost of capital calculation using the WACC methodology

The WACC methodology is a widely accepted method for calculating the cost of capital. It is understood by both the finance community and the industry, and is consistent with the

methodology used by many regulators. The concept underlying the WACC methodology is that the return expected from the assets managed by a firm must be the total of the returns expected by debt holders and equity holders, weighted by their respective contribution to the financing of these assets.

This is explained by the following formulae:

$$WACC = r_e \frac{E}{V} + r_d \frac{D}{V}(1 - t_c)$$

Where:

r_e = return on equity

r_d = return on debt

E = market value of equity

D = market value of debt

V = market value of Firm (D+E)

t_c = corporate profit tax (CPT) rate

The above post-tax WACC formula represents the return required for investors to take on the risks of investing in the company, while the pre-tax WACC reflects the returns that the company must earn to be able to pay shareholders' and debtors' earnings and finance its tax liabilities.
The pre-tax WACC formula is as follows:

$$WACC = \frac{E}{E+D} r_E + \frac{D}{E+D} \times r_D + r_E \times \frac{E}{E+D} \times \frac{t_C}{1 - t_C}$$

As the cost base of the regulatory cost accounting models may not include the corporate tax, the Agency believes that the applicable WACC calculation formula is the pre-tax WACC formula.

Most of the parameters used to calculate the WACC in practice have to be estimated or inferred from observable data. Therefore it is clear that the rate obtained will be an estimation based on assumptions and judgements about the theory and the data used in the calculation. Furthermore, it must be appreciated that the basic form of WACC is appropriate where there are no market imperfections. Market imperfections, especially imperfections of an emerging market like Croatia, require an assessment of their effects as they influence the validation of the basic WACC calculation model.

Throughout the remainder of the chapter, the various parameters used to calculate the WACC will be analyzed in detail, as well as adjustments of the traditional basic form of the cost of equity calculations, to allow for possible imperfections of an emerging financial market.

6.7.2 The gearing ratio

The weighting used in the WACC formula is the company's gearing. The gearing 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 ratio = D/ (D+E)

There are a number of ways to determine the gearing level, each with a direct effect on the cost of capital:

a) *Based on book values*: the gearing is calculated using the accounting value of the company's debt and equity;

b) *Based on market values*: the gearing can be calculated on the basis of the observed market value of the company's debt and equity, namely its market capitalization, which in theory will reflect the true economic value of the company's capital structure;

c) *Optimal or efficient gearing*: is based on an optimal capital structure defined by the regulator.

The book values method is a transparent method that is easy to check and audit, but it is not forward-looking and does not reflect the company's true economic value. The problem with the use of market values is that they are dependent on several market factors, namely volatility, investors' expectations and speculation and so they can be subject to serious fluctuations, negatively affecting market stability. The reason for using optimal efficient gearing method is to ensure that operator that over-borrows or borrows at too high a rate is not rewarded for this financial decision. This efficiency adjustment can be done by taking into account the capital structure of an efficient operator rather than the structure of actual operators. However, establishing an optimal ratio is a subjective issue.

Taking into account the above advantages and drawbacks of each method, the Agency proposes to use the optimal efficient gearing method.

Debt benefits from certain tax advantages. This is only true up to an optimum level, beyond, which the higher levels of debt adversely effect the financial stability of the company. As the debt passes an optimum level, the risk on debt repayment increases which results in an increase in the return required by the debt holders - WACC trends upwards after this point.

In assessing the prudent level of debt, the firm’s interest cover ratio must also be considered. As the level of debt is increased, the interest cover ratio falls, and it is likely that the cost of debt will rise. Where a firm is highly profitable, its interest cover ratio may be high, even with a large amount of debt, whereas with a new entrant, for the same proportion of debt its interest cover ratio will be much lower. It could therefore be argued that an optimal gearing level will be relatively higher for a larger more profitable firm than a new entrant.

Furthermore, information on similar telecommunication companies gearing ratios has to be taken into consideration. In these considerations, it is the market values of the debt that is important not the book value. In many cases, it may be the case that telecom operators may have significant debt on their books, but the actual market value of such debt is much lower.

6.7.3 Cost of Equity

There are various methods that can be used to price equity; some are theoretically stronger than others. All these models share a common assumption about how investors make financial decisions: investors are assumed to be able to reduce total risks by holding diversified portfolio.

There are four broad alternative approaches to the pricing of equity:

1) Dividend growth model, assumes that a company will pay a dividend that grows at a constant rate over time. The cost of equity is the discount factor that leaves investors indifferent between receiving the share price today and the stream of dividends that will accrue if they own the share.;

2) Arbitrage Pricing Theory (APT), allows the actual return R(i) on asset (i) to be influenced by a number of market-wide variables or "factors", such as interest rates, exchange rates etc;

3) Capital Asset Pricing Model (CAPM), which relates the value of equity to the implied risk investors must bear, and is effectively a shorter form of the APT model;

4) The Fama and French three-factor model can be thought of either as a special case of APT or as an enhancement of CAPM. The model has three factors: market factor, company size factor, and book/market value factor.

The general consensus amongst academics and in particular regulatory bodies is that the CAPM is the most suitable at this present time. However, recently a number of academics have suggested that the CAPM is not entirely relevant for emerging markets, although have accepted the fundamental idea of the model. These academics have such advanced that the APT could be more representative of factors of relevance in an emerging market, as fundamental drivers with the APT are macroeconomic level factors.

The Agency believes however that based on the academic merits, proven track record and availability of data to implement the method, the CAPM is the most appropriate method to be used for the calculation of the equity price at present. Nevertheless, the Agency accepts that it may need minor adjustments in the context of Croatia being classified as an emerging market country.

6.7.3.1 Capital Asset Pricing Model - CAPM

The CAPM is based on portfolio theory, which recognises that investors are broadly risk averse and seek to limit the impact of exposure to the risks associated with individual businesses by

creating a diversified investment portfolio. A major implication of holding a diversified portfolio of securities is that the risk of a single stock can be divided into two components:

1) *Unsystematic or diversifiable risk* - can be eliminated through portfolio diversification such risk includes company-specific events such as the discovery of a new product (positive effect) or a labour strike (negative effect). The fact that a company operates in a competitive sector of the market place does not necessarily mean that it will have a high cost of capital;

2) *Systematic or non-diversifiable risk* - cannot be eliminated through portfolio diversification. Events that affect the entire economy instead of only one firm, such as changes in the economy's growth rate, inflation rate and interest rates

Theory predicts that financial markets will not reward unsystematic risk, because it can be eliminated through diversification at practically no cost. Thus, the only risk that matters in determining the required return on a financial asset is the asset's systematic risk. In other words, the required rate of return on a financial asset depends only on its systematic risk.

The underlying premise of portfolio theory is that, as more assets/securities (with varying levels of risk) are added to a portfolio, the risk of the overall portfolio falls. Theoretically as the number of assets approach infinity, the diversifiable risk tends to zero. However, in practical terms, a portfolio with around 40 different assets sufficiently tends towards zero diversifiable risk (this implies that even a stock exchange with less than 100 companies listed, can be sufficient in achieving a locally diversified portfolio, provided that the industrial composition of the exchange is not biased towards a particular industry). It is the impact that a given asset has upon a portfolio that is of concern, and not the individual risk of that asset.

The diagram below illustrates the impact of reduced volatility on a portfolio by the addition of shares/firms in a existing portfolio:

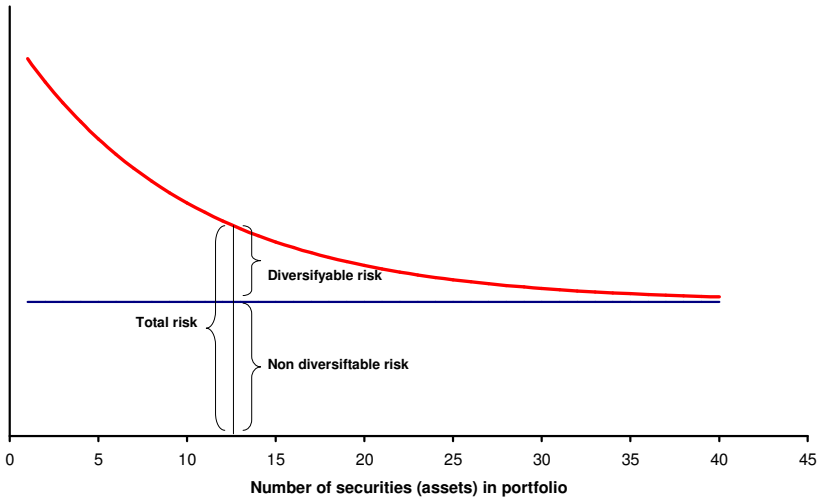


Figure 6.7: impact of the addition of shares/firms in a portfolio

CAPM recognises research that suggests that investors require a premium for investing in equities rather than in risk free investments. The premium is commonly known as the Market

Risk Premium (MRP) and notionally represents the premium required to compensate for investment in the equity market in general.

A firm's systematic risk is usually measured relative to the market portfolio (the portfolio that contains sufficient assets such that the diversifiable risk tends towards zero). Systematic risk of a stock is estimated by measuring the sensitivity of its returns to changes in a broad stock market index. This sensitivity is called the stock's "beta coefficient" (beta).

Since beta measures a security's risk relative to the market portfolio, a security's risk premium equals the market risk premium × the security's beta. The CAPM states that the expected return on any security is the risk-free rate, plus the market risk premium multiplied by the security's beta:

$$r_e = r_f + \beta_{e,l}(r_m - r_f)$$

Where:

r_f = risk free return

$\beta_{e,l}$ = equity beta

r_m = Market return [$(r_m - r_f)$ if often referred to as the market risk premium].

In graphical form, the security market line is shown as a linear line with intercept through the risk free rate. The intersection point of the security market line and the point at which beta is "1" represents the market portfolio rate. Changes in the beta of an asset imply a higher or lower return above or below the market rate.

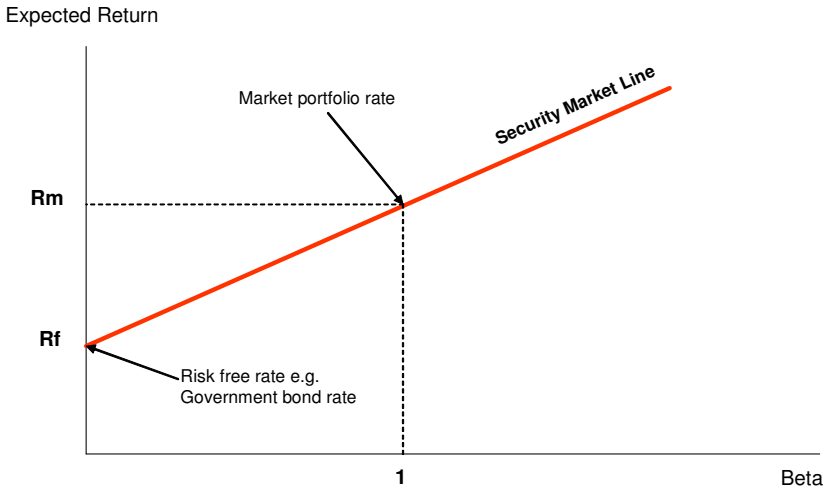


Figure 6.6: Security market line

6.7.3.2 Factors of the CAPM equation requiring derivation

It follows from the above that in determining the cost of equity it is necessary to consider:

1) The "risk free" rate;
2) Market risk premium ("MRP");
3) The Beta factor.

Each of these elements is discussed below.

The risk free rate

The risk free rate in emerging markets is generally not as simple to determine as it is in developed markets. There are three main problems in determining emerging market risk free rate. Firstly the sovereign debt is generally not risk-free, secondly it is often difficult to find long–term debt to match the duration of the cash flows being reviewed, and thirdly any longer term debt which does exist is generally denominated in US dollars or a stable European currency.

There are three potential models that have been proposed for estimating the risk free rate in emerging markets:

- **Method 1** – Local Bond Yield. This method starts with the yield on a local currency denominated bond and adjusts for sovereign risk and possibly extension of duration if appropriate;

- **Method 2** – International currency denominated local bond yield. This method uses the yield of a foreign currency denominated bond and adjusts for sovereign risk, duration (if appropriate) and currency effects;

- **Method 3** – Mature market bond yield. This method starts with the yield on a mature stable market bond and adjusts for inflation differential.

The method that is ultimately chosen is generally determined by the information available.

Given the information available, the Agency proposes to use Method 2 above, where the foreign currency denominated government debt is adjusted for sovereign risk, currency and duration effects.

This means that the first step is to remove the sovereign risk embedded in the Croatian bond yield. The second step involves converting the Euro denominated into a HRK denominated risk-free rate. Where real rates of return are comparable between two countries, forward looking inflation predictions can provide a method of estimating the movement in currency and the forecasts of individual inflation within a country can provide an indication of the term structure of interest rates. To use such a methodology, an assessment of Croatian inflation rates over the bond maturity period is required.

The maturity of the government bonds also has to be defined. It is a rational financial management principle to measure liabilities with long-term maturities against assets with long term investment horizons. In such circumstances, matching the duration of the risk free asset to the cash flows being analysed implies the use of a time period of at least 10 years. In practice, investors often use the 10-year bond terms as an approximation of the duration of cash flows.

Based on above discussion, Agency believes it would be appropriate to use 10-year bonds, as these typically match the generally accepted duration of the company cash flows, and are considered appropriate by other Regulatory Authorities.

The last important consideration when defining the risk free rate is the kind of data to use: current or historical values. When evaluating a past historical cost of capital over a certain period of time, the Agency proposes to consider the average risk free rate over that period.

The Market Risk Premium

The equity risk premium, as has already been discussed, represents the additional return that an investor would require to invest in equities as a general asset category. It is the premium required above the risk free rate that an investor would require to bear the additional risk inherent in equity returns versus returns on a risk free asset.

To estimate the risk premium we can use ex-post estimations (based on historical investment returns) or ex-ante estimations (based only on forward-looking considerations).

Historic risk premium

The historic Equity Risk Premium (ERP) can be measured by comparing the return on equities with the return from risk free investments. This approach relies primarily on the results obtained from the analysis of the average difference over the long term between realized returns on the market portfolio and those on a risk free asset (government bond yields). There are several methodological issues involved in determining this difference:

a) Arithmetic versus geometric mean: the more unpredictable returns are considered, the better the case for using the arithmetic average

b) Relevant indices: the most common approach is to use a domestic capital market index, but the estimation of a world premium, considering that there are many more data points, allows a more robust estimation. The selected index should be consistent with the one selected for estimating beta.

c) Time period: A too long time period may bias the estimation while too short time period may place too much weight on single events and therefore may mislead estimates of the "true" premium. In practice the correct time period to use when analysing historic data cannot be defined exactly, therefore the relevant time period has to be estimated considering the expectations we have on the market and risk tendencies.

As we can see, the historic approach is not totally objective and there are reasons to believe that it overestimates the return required by investors considering that recent estimates. Yet, considering that estimating the risk premium on a forward-looking basis will always be somewhat speculative, historic returns can be used as a proxy for the expected forward looking returns.

Adjusted historical risk premium

There have been several arguments to suggest that changes in the level of risk associated with the equity market may mean that the risk premium will be lower in the future than was the case in the past. In this case, the use of an historical risk premium may lead to its overstatement, which introduction of a downward adjustment to historical risk premium. This adjustment can be made taking into account the differences observed between real premium and that which investors sought ex ante. This involves identifying returns, which are likely to have exceeded expectations. The risk premium can also be adjusted for significant re-rating of equities that have occurred over the period.

Survey premium

Survey evidence is one way in which forward-looking expectations of market participants can be observed. In fact, since the risk premium is an average of the premium demanded by investors, surveying investors about their expectations for the future can be another valid approach. The most important issue in this approach is to ensure that the questions posed to respondents are properly framed, in order to avoid ambiguous or not meaningful answers. The usual problems with surveys are the fact that there are no constraints on reasonability and respondents' expectations can be influenced by recent market movements. Further, these kinds of estimates tend to be short term. The answers can also vary with the sample of investors chosen.

Benchmark

A further alternative for estimating the risk premium is through benchmark. This can be done by selecting a foreign market and adjusting for differences in the economies of the local and benchmark country. These differences can relate to the nature and size of the companies, differences in taxation and differences in country risk. The average values is of market risk premium in IRG member countries is 5.3% with significant differences among different countries. These differences can be caused by different calculation methods, but also by country specific reasons (maturity of stock markets, differences in country risk, etc.).

Implied premium (and the dividend growth model)

There are alternative ways to estimating risk premium that do not require historical data, usually called the ex-ante approaches. A total ex-ante approach calculates the risk premium as the difference between the current observable expected returns and observable current expected yields on a proxy for a risk free asset. Other ex-ante measures of the risk premium consist of the analysis of certain financial indicators regarded as having the ability to predict equity returns

such as interest rates, the dividend to price ratio, dividend yield or earnings yields. One methodology commonly used to infer the ex-ante risk premium is the dividend growth model. The risk premium is estimated by using market data of actual share prices and earnings per share, in conjunction with forecasts of the growth in earnings, to derive an implied cost of equity. The advantage of this approach is that it is market-driven and does not require historical data. However, the estimated market risk premium derived in this manner is itself the sum of three components, one of which is an estimate and therefore, subject to some degree of uncertainty.

The major methodological drawback with using the dividend growth model is that it assumes that the financial market is efficient and correctly valued and that the dividend yields, the growth in dividends and the expected inflation are constant into the infinite future, which are highly questionable assumptions. In addition, the approach purports to derive a forecast of what the MRP is expected to be from forecasts of future dividend yields and growth rates, rather than the premium that investors demand as compensation for risk.

The Agency has concluded that the Croatian equity market is not sufficiently large or liquid and does not have a long enough history to allow meaningful estimation of the market risk premium through direct observation to be made. The Agency is therefore minded to use international adjusted historical risk premium obtained from recognised international financial reports such as the Dimson, Marsh and Staunton study[17].

The Beta factor

Beta is a measure of the risk of the risky asset relative to the market risk. 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. The higher the value of beta, the higher is the uncertainty about the returns on a firm's equity. Forward-looking estimates of returns on particular stocks and on the market as a whole are not readily available; therefore estimating beta is not a easy task. Several approaches can be used in estimating beta and they are presented below.

Historical beta

Beta estimates are generally obtained through regression analysis of historical evidence of the relationship between the company returns and the market returns. Thus, for publicly traded firms betas can be estimated by regressing stock's returns (R_j), including both dividends and price appreciation, against the market returns (R_m):

$$R_j = a + b \cdot R_m$$

Where:

R_i = stock's return

[17] Dimson, Marsh and Staunton (DMS) of the London Business School (LBS). The most recent example of their work on the equity risk premium can be found in their 2006 paper "The World Equity Premium: A Smaller Puzzle", revised April 2006.

R_m = market return

a = intercept form the regression

b = slope of the regression, which corresponds to the covariance (R_j, R_m)/$\sigma^2(R_m)$ and is the beta of the stock

Using historic returns to estimate future values of beta raises the question of what is the correct estimation period and frequency. Most estimate services use period ranging from 2 to 5 years for the regression. The relevant frequency should be defined in order to have a data set of a reasonable size, which can generate a statistically significant estimate of the value of beta. A beta calculated through regression analysis of historical information provides an approximation. However, estimation errors are likely because betas may vary significantly over time. Therefore, the estimation of the relevant beta from historical information may need to be complemented with other forward-looking approach.

Bottom-up Beta

Beta can also be estimated by the construction of a bottom-up beta. A bottom-up beta is estimated through benchmark from the betas of specific firms. It has the advantage of eliminating the need for historical stock prices and reducing the standard error created by regression betas.

Since financial leverage can vary across industries, countries and firms, and, furthermore, 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 beta then to re-lever at the target financial leverage considered appropriate for the business in question. The asset beta is obtained with the following formulas:

Miller Formula: $\beta_{asset} = \beta_{equity} / (1 + D/E)$

or

Modigliani - Miller Formula: $\beta_{asset} = \beta_{equity} / (1+(1-t)*(D/E))$

Where:

- β_{asset} corresponds to the un-levered beta and,
- β_{equity} to the levered beta.

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. Therefore, when conducting a comparison with a portfolio of companies, after obtaining the several levered beta for each company, these can be un-levered to find the asset beta, using the debt to equity (D/E) of each company of the sample portfolio.

The chosen bottom-up asset beta can then be re-levered taking into account the relevant company's financial structure.

This approach might be particularly useful for non-quoted companies, when the firm has been restructured substantially or when the standard error of the beta from the regression is high.

Target beta

Finding a bottom up beta is, oppositely to the use of historical beta, a more forward-looking approach that aims at capturing the risks of the activity (un-levered beta) and of financial leverage. Operators, which have similar activities, would be expected to have a similar un-levered beta. In certain circumstances, however, it may appear that homogenous samples of companies have heterogeneous un-levered beta. In such cases, the regulator may want to determine a target un-levered beta, which should represent the activity risk.

Based on above discussion, Agency believes it would be appropriate to use bottom-up methodology trough use of benchmarks. International benchmarks could therefore be used to arrive at a proxy beta. The Agency places emphasis on careful selection of the benchmark companies to ensure that they reflect an appropriate level of risk.

6.7.4 Cost of debt

The cost of debt reflects the cost the company has to sustain in order to get capital to finance its activity, either from financial institutions or through loans from other companies. It corresponds to the weighted average of the costs of the various long-run loans of the company and it is strongly correlated to the current interest rate's level, the company's financial capacity and risk and even to the country's fiscal policy.

The cost of debts can be calculated as following:

- Using accounting data, such as the current loan book to derive the interest rate;
- By the regulator calculating an efficient borrowing level and the associated cost of debt;
- Using the sum of the risk free rate and the appropriate company specific debt premium; and
- Using the benchmark rate of similar EU telecommunication companies bonds.

Agency believes that appropriate benchmark rate of similar EU telecommunication companies bonds should be used, adjusted to Croatian market conditions

6.7.5 The documentation supporting the cost of capital calculation

The Agency proposes that Notified operator should provide adequate and detailed description of the cost of capital determination. The description should allow the Agency to gain a complete understanding of the cost of capital determined by the Notified operator including assumptions, methodology and calculations.

The description of the cost of capital determination should be submitted as a part of Accounting documents within timeframes and according to process of preparation, audit, approval and publication of regulatory financial statements, described in section 3.2.

7 Annex I

7.1 Summary of proposals and regulations related to accounting separation and cost accounting

SECTION	AGENCY PROPOSAL	RESPONSIBILITY
3.1 Regulatory Accounting Principle	The Agency proposes that the preparation of the RFS should be based on the following key principles: • Cost Causality; • Objectivity and Non-discrimination; • Consistency of Treatment; • Use of IFRS; and • Transparency.	NOTIFIED OPERATOR
3.2.1 Timeframe and deliverables	The Agency proposes that the process of preparation, audit, approval and publication of RFS should follow the steps outlined in this document. The Agency proposes that, in cases the Notified Operators will have to change their accounting policies and attribution methodology, informs the Agency in advance of these changes, if these changes have a material impact on the RFS. The Agency proposes a separate report detailing these changes to enable a more effective evaluation of the impact on the RFS. Furthermore, the Agency proposes that current and previous years should be presented in RFS on the same basis in order to have full comparability. The exemptions are RFS for the first year when no comparative information is needed.	NOTIFIED OPERATOR
3.2.2 Audit process	The Agency proposes that in terms of the audit process, appointment of the Auditor, changing the Auditor, restrictions to the Auditors, responsibility of the Auditor and additional engagement of the Auditor the Notified Operator should take into consideration suggestions outlined in this chapter.	NOTIFIED OPERATOR

SECTION	AGENCY PROPOSAL	RESPONSIBILITY
3.2.2.1 Notified Operator's obligations during the audit process	The Agency proposed that the Notified Operator informs the Agency about the selection of the auditor and submits the audited RFS by 30 June of the following year.	NOTIFIED OPERATOR
3.2.2.2 Auditor's obligations during the audit process	The Agency proposes that the auditor submits to the Agency an audit schedule with timeline and planned activities for each audited Notified Operator and to inform the Notified Operator about total revenue incurred in the previous year as well as revenue derived from professional services delivered to the Notified Operator.	NOTIFIED OPERATOR
3.2.2.3 Agency's involvement in the audit process	The Agency will publish its position on accepting or declining the RFS. During the evaluation of the audit process and/or the financial reports, the Agency has the right to ask for additional explanations.	AGENCY
3.2.3 Requirements to the quality and granularity of Notified Operators' accounting records	The Agency believes that the Notified Operator should maintain accounting records that should enable sufficient provision of information, where designated, on a Historic Cost Accounting basis (HCA) and, if mandated, on a Current Cost Accounting (CCA)/Long Run Incremental Costing (LRIC) basis and that these accounting records should enable the identification of costs, revenues, assets and liabilities of each market, segment or service where the obligations apply. The Agency considers that the cost accounting/ controlling system must be capable of separately identifying and attributing the revenues, costs, assets and liabilities of these individual services and/or segments.	NOTIFIED OPERATOR
3.2.4 Content of the RFS, Accounting documents and Attribution methodology document	The Agency believes that the Notified Operator should prepare RFS containing the documents listed in section 3.2.3.	NOTIFIED OPERATOR
3.2.5 Publishing of the RFS	As stated in chapter 3.2.4 the Agency proposes to publish the RFS, Accounting document and Attribution methodology document.	AGENCY

SECTION	AGENCY PROPOSAL	RESPONSIBILITY
3.3.1 Maintenance of accounting records	In order to allow potential investigations to take place, the Agency believes that Notified Operators should preserve records sufficient to provide an adequate explanation of each regulatory financial statement for a period of seven years from the reporting date.	NOTIFIED OPERATOR
3.3.2 Availability of accounting records for ad-hoc queries	In addition to the RFS, the Notified Operators should provide the accounting records for ad-hoc queries by the Agency.	NOTIFIED OPERATOR
4. Principles for Accounting Separation		
4.2 Profit and loss statement	The Agency proposes that costs in the Profit and Loss statement shall be stated for a relevant market/ segment/ service based on the templates in sections 7.3 and 7.6 of the Annex.	NOTIFIED OPERATOR
4.3 Mean capital employed statement	The Agency proposes that capital employed should be calculated as the average of beginning and end of the fiscal year and based on the template in sections 7.4 and 7.7 of the Annex.	NOTIFIED OPERATOR
4.4 Regulatory reconciliation statement	In order to ensure reliability and consistency among the financial statements, the Agency proposes reconciliation of the key financial captions of the RFS to the statutory financial statements.	NOTIFIED OPERATOR
4.5 Auditor's opinion (statement of auditor)	The Agency proposes that the most appropriate method by which assurance that the information with which it is being provided is relevant, reliable and of a high quality is to secure the Fairly Presents in Accordance with (FPIA) audit opinion. The audit opinion should at least include: • the conclusions of the auditor; • all identified irregularities; • recommendations made by the auditor (with a description of the corresponding effects); and • a full description of the verification methodology utilised.	NOTIFIED OPERATOR

SECTION	AGENCY PROPOSAL	RESPONSIBILITY
4.6 Statement of Transfer Charges	The Agency believes that the statement of transfer charges should include all elements outlined in chapter 4.6.	NOTIFIED OPERATOR
4.7 Minimum requirements for Accounting Separation	The Agency proposes that separate accounts should be prepared for each retail service, for each service within wholesale segment 3 (Wholesale (physical) network infrastructure access including shared or fully unbundled access) and for each segment on the remainder of wholesale markets that are subject to regulation. The Agency believes it is not sufficient to implement such an obligation at the market level, as it is important to discourage possible unfair cross-subsidisation of pricing. For a detailed list of required separate accounts, please refer to chapter 7.9 of the Annex. The Agency proposes that Notified Operators prepare a list of all internal and external wholesale services and retail services that match the corresponding markets, segments and services listed in section 7.9 of the Annex.	NOTIFIED OPERATOR
4.8 Transfer Charges	The Agency proposes that transfer charges/ prices should be calculated as follows: • There should be a clear rationale for the transfer charges used and each charge should be justifiable. Charges should be non-discriminatory and there should be transparency of transfer charges in the separate accounts; • Transfer charges should be determined as the product of usage and unit charges; • Where a service is also sold externally, the transfer charge should be equal to the price stated in the Reference interconnection offer (RIO) and Reference unbundling offer (RUO).; • Where a service is rendered only internally, the transfer charge for the service would equal to the unit cost of service as outlined in chapter 5; and • There should be consistency of treatment of transfer charges from year to year. Any change should be consistent, transparent and satisfactory to the Agency.	NOTIFIED OPERATOR
5. Proposed form of cost accounting obligations for the Notified Operators		
5. Proposed form of cost accounting obligations for the Notified Operators	Agency proposes that accounting separation obligation and cost orientation assessment should be calculated in accordance to Table 5.1 in Chapter 5.	NOTIFIED OPERATOR
6. Key principles and guidelines for cost accounting systems		

SECTION	AGENCY PROPOSAL	RESPONSIBILITY
6.1.1. The basic principles of current cost accounting approach	The Agency therefore recommends ignoring RA in calculating Current Cost provided that the NRC is not higher than 150% of the corresponding historic value. Nevertheless, the Agency believes that EV and NRV methods should be used in order to determine the current value of a Notified Operator's real estate.	NOTIFIED OPERATOR
6.1.2. Valuation methods of Gross Replacement Cost	The Agency believes that the following asset groups could be revaluated using indexation: • support and inventory systems, • fixtures, fittings and office equipment, and • PC and IT equipment. Without prejudice to the Agency's recommendation related to the choice between NRC and RA as the method of current cost calculation, the Agency believes that the following asset groups could be revaluated using absolute valuation method: • Ducts and cables • Switches • Transmission equipment • Power supply equipment Summarising above stated, the Agency proposes the following valuation methods for GRC as follows: • Historical cost can be used if: – the asset has no significant value or short useful lifetime; – the asset is not exposed to significant price changes; – there has been no technological change regarding the asset or the change is not significant; and – the effect of revaluation would be immaterial for the regulated cost base. • Indexation can be used if:	NOTIFIED OPERATOR

SECTION	AGENCY PROPOSAL	RESPONSIBILITY
	– there has been no technological change regarding the asset or the change is not significant; – the Operator's databases and the fixed asset's register deliver sufficient and accurate information about the asset subject to valuation; and – the asset group is homogenous in respect of price changes. • Absolute valuation shall be used if: – the asset group is not homogenous in respect of price changes; – there has been significant technological change regarding the asset or the asset group; or – the Operator's fixed asset's register can not serve accurate data about the asset or asset group subject to modern equivalent asset MEA as a basis for valuation.	
6.1.3. Modern equivalent asset (MEA)	The Agency considers that the cost accounting system of the Notified Operator must specify what MEA technologies have been used for the revaluation of assets under the CCA approach. The choice of the MEA should be clearly explained and documented. Furthermore, where the MEA and the asset differ in functionality and/or efficiency, adjustments to the purchase price and operating costs should be made accordingly.	NOTIFIED OPERATOR
6.1.4.3. Accounting cost	The Agency considers that the cost accounting system of the Notified Operator should use an accounting based approach to capital charges.	NOTIFIED OPERATOR
6.1.5. Capital maintenance	The Agency considers that FCM is the appropriate capital maintenance concept.	NOTIFIED OPERATOR

SECTION	AGENCY PROPOSAL	RESPONSIBILITY
6.1.5.2. Implications of the FCM concept on the cost accounting formula	The calculation of WACC – whether it is calculated in real or nominal terms – has an important impact on shareholders' funds. The Agency believes that if a nominal WACC is used related to mean capital employed, and then the cost base of the cost accounting system does not need to include an inflation adjustment for shareholder's funds.	NOTIFIED OPERATOR
6.1.6.1. Materiality level for revaluation	The exclusion of certain assets from the CCA process helps to ensure the accuracy of current cost valuation. In aggregate terms, the CCA process is considered to be suitably accurate when assets are excluded from CCA and maintained at historic cost, on account of their recent acquisition or short useful life or limited amount, have overall gross book value within the limits of the materiality level. When determining materiality level, Agency suggests that higher of 0.05% total value of non-current assets and 0.05% of total revenue received from regular services provided by Notified Operator should be chosen. If the Notified Operator defines such a level, then the Agency considers that it should be clearly documented and justified	NOTIFIED OPERATOR
6.1.6.2. Assets in the course of construction	The Agency considers that no depreciation should be charged to assets in the course of construction, though they may be included at Gross Value into the calculation of the cost of capital.	NOTIFIED OPERATOR
6.1.6.3. Leased equipment	The Agency believes that the assets held under finance leases should be included under the asset base and the depreciation charge should be allowed. Regarding the finance charge, the capital element of the finance charge should not be allowed under operating expenditure, since this cost will be recovered through the capital charge on the asset base, but the interest element of the finance charge should be allowed under operating expenditure. Any alternative treatment should be given sufficient explanation, detailing the impact on the cost base. Furthermore, the rental payments for assets held under operating leases are allowable under operating expenditure. The value of these assets should not be included in the asset base.	NOTIFIED OPERATOR
6.1.6.4. Fully depreciated assets	The Agency considers that fully depreciated assets should not be revalued under Current Cost Accounting revaluations since their value has already been recovered through past depreciation, the treatment of these assets should be documented. Where any alternative proposed approach is used, it should be documented with justification	NOTIFIED OPERATOR

SECTION	AGENCY PROPOSAL	RESPONSIBILITY
	for taking this alternative approach.	
6.3. Principles for cost causality	The Agency believes that the principle of cost causality requires that Operators: • review and justify the relevance of each item of cost, capital employed and revenue; • establish and quantify the factor or "driver" that caused each item to arise; and • use the driver to allocate each item to individual businesses/activities/network components or services.	NOTIFIED OPERATOR
6.3.1. Cost allocation methodology: Activity-Based Costing (ABC)	The Agency considers that the Notified Operator should use ABC method for cost allocation. In the case when Notified Operator considers some other method as more appropriate, these has to be justified and properly documented.	NOTIFIED OPERATOR
6.4.1.2. Forward-looking	The Agency considers that the models should consider the optimised network as if it were already in place. No costs associated with moving from the existing network to the optimised network should be included.	NOTIFIED OPERATOR
6.4.2.1. The top-down model	The Agency proposes that the LRIC models developed by Notified Operator should adopt a top-down approach based on CCA to ensure that costs can be reconciled back to an operator's actual set of accounts. When developing cost models, a Notified Operator should follow the two stage process illustrated in Figure 6.2. In particular, Notefied Operators should define Network Components, and calculate first the LRIC of the NCs, then based on these, the LRIC of individual services.	NOTIFIED OPERATOR
6.4.2.2. Data requirements	The Agency believes that the models must be based on the latest available set of fully audited financial accounts. The base year for financial, operational and traffic data should be the same, with projections for two full years ahead to ensure the network has been adjusted to take account of increased capacity requirements.	NOTIFIED OPERATOR

SECTION	AGENCY PROPOSAL	RESPONSIBILITY
6.4.3.1. The level of granularity	The Agency considers the following: • Cost categories should be identified, and every cost category in the model must be a HCC. HCCs are characterized by their cost drivers, price trends and CVRs; • Capital or operating expenditure with different cost drivers can not be grouped into the same HCC; • Capital or operating expenditure having different price trends can not be grouped into the same HCC; and • Capital or operating expenditure with different underlying CVRs can not be grouped into the same HCC.	NOTIFIED OPERATOR
6.4.4. Definition of cost types	Based on the above discussion, the Agency considers the following: • Cost types should be defined and the HCCs should be categorized according to these cost types. These cost types are fixed assets, depreciation, operating expenditure and working capital. • Working capital should be calculated as current assets less current liabilities. The level of working capital should be a yearly average that can be calculated as the average of the level of working capital at the start of the year and the working capital at the year end.	NOTIFIED OPERATOR
6.4.5.2. "Scorched node" network topology	The Agency proposes that the geographic scorched node approach should be applied as the underlying network topology of the LRIC model.	NOTIFIED OPERATOR
6.4.6. Equipment optimisation	The Agency therefore considers that when constructing the LRIC models the principle of equipment optimization has to be applied resulting in lower costs.	NOTIFIED OPERATOR
6.4.6.1. Efficiency	The Agency proposes that any floor space which is found to be surplus due to the introduction of modern technologies and exists in an exchange building containing operational switching equipment, should be valued at a NRV of zero, except where it can be shown that it is economically rational to maintain such vacant space.	NOTIFIED OPERATOR
6.4.6.2. Capacity and Utilisation	The Agency would need to review the current levels of network utilisation and decide whether these are appropriate. The Agency believes that the Notified Operator should provide justification for the utilisation levels achieved, and	NOTIFIED OPERATOR

SECTION	AGENCY PROPOSAL	RESPONSIBILITY
	allowance should be made for several factors including: • impact of customer churn (especially where competition is developing); • need to provide for growth; • need to upgrade equipment as technology develops; • need to offer suitable levels of service; • distribution of customer density that must be served.	
6.4.7.1Cost volume relationships - definitions	The Agency considers that a minimum network for fixed line Operators is defined as one in which it is possible to make or receive a call from any telephone currently connected to the network in question.	NOTIFIED OPERATOR
6.4.7.2 Economies of scale and CVRs	Agency believes that the CVRs should be convex relationships capturing the effects of purchasing power and/or economies of scale/scope. If CVRs represent a straight line relationship, why purchasing power and/or economies of scale/scope have no effect on the shape of CVR should be documented sufficiently.	
6.4.7.3. The construction of CVRs	The Agency proposes that the CVRs should be constructed using one or more of the following: • engineering models, • statistical surveys and • interviews, field research. Furthermore, the Agency requires that all models and research documentation related to construction of CVRs should be submitted by Operators.	NOTIFIED OPERATOR
6.4.7.4. Dependent and independent HCCs	The Agency considers that HCCs should be clearly identified as independent or dependent. If they are dependent, CVRs on which they depend should be documented. Furthermore, equipment optimization must flow through all areas of the network (from HCC to HCC and from CVR to CVR), where the optimization of one area impacts another.	NOTIFIED OPERATOR

SECTION	AGENCY PROPOSAL	RESPONSIBILITY
6.4.8.1. Traffic data	The Agency notes that the traffic data should be consistent with the base year of the audited financial statements, with forecasts provided two years forward to ensure CVRs anticipate the capacity appropriately.	NOTIFIED OPERATOR
6.4.8.2. Calculation of unit cost of services	The Agency considers that the routing factors should be based on the two-year forecasts. The model documentation should provide supporting information of the statistical validity of traffic volumes. Routing factors should be consistent with the forecast traffic data provided.	NOTIFIED OPERATOR
6.4.9.2. The joint and common costs of fixed line network Operators	The Agency considers that the percentage of common cost must be disclosed and documented for each HCC, including an explanation of what these costs are common to.	NOTIFIED OPERATOR
6.4.10. Mark-up	The Agency proposes that the mark-up mechanism used should be EPMU.	NOTIFIED OPERATOR
6.5. Fully Allocated Costs	The creation of the FAC model is based on the same steps as the LRIC model (see figure 6.2 in section 6.4.2.1): • The first step is to group costs into cost categories. • After identifying cost categories, the next step is to specify a detailed list of network components. • Then costs are allocated to network components with the help of CVRs. The general rule is to create the cost categories in such a manner as to allow, if possible, the direct attribution of the cost objects to the network components (without the use of cost drivers). Following the allocation of the cost items from cost categories to network components, the costs of supporting activities, such as support functions (e.g. HR, IT, PR) and general network activities, are attributed to the network components. • Routing factors have to be determined, as the costs of network components are allocated to services in the degree of their utilization and routing factors are used to show the level of utilization of particular network components by each service provided. • Finally the network component cost per unit is calculated with routing factors, and subsequently unit costs can be allocated to services.	NOTIFIED OPERATOR

SECTION	AGENCY PROPOSAL	RESPONSIBILITY
6.6.2. Cost accounting model requirements	The Agency believes that it should have full access to the Notified Operator's cost model at the Notified Operator's premises. Furthermore, the Notified Operator should provide any kind of data related to the model if requested to do so by the Agency. The Agency believes that it should have access to and be able to review all parts of the cost model. Finally, the Agency proposes that the cost model should be audited within the framework of regulatory statements audit described in section 3.2.	NOTIFIED OPERATOR
6.7.1. Cost of capital calculation using the WACC methodology	As the cost base of the regulatory cost accounting models may not include the corporate tax, the Agency believes that the applicable WACC calculation formula is the pre-tax WACC formula.	NOTIFIED OPERATOR
6.7.2. The gearing ratio	Taking into account the advantages and drawbacks of each method, the Agency proposes to use the optimal efficient gearing method.	NOTIFIED OPERATOR
6.7.3. Cost of Equity	The Agency believes however that based on the academic merits, proven track record and availability of data to implement the method, the CAPM is the most appropriate method to be used for the calculation of the equity price at present. Nevertheless, the Agency accepts that it may need minor adjustments in the context of Croatia being classified as an emerging market country.	NOTIFIED OPERATOR
6.7.3.2. Factors of the CAPM equation requiring derivation	Agency believes it would be appropriate to use 10-year bonds, as these typically match the generally accepted duration of the company cash flows, and are considered appropriate by other Regulatory Authorities. Agency proposes to consider the average risk free rate over period when evaluating a past historical cost of capital over a certain period of time. The Agency has concluded that the Croatian equity market is not sufficiently large or liquid and does not have a long enough history to allow meaningful estimation of the market risk premium through direct observation to be made. The Agency is therefore minded to use international adjusted historical risk premium obtained from recognised	NOTIFIED OPERATOR

SECTION	AGENCY PROPOSAL	RESPONSIBILITY
	international financial reports such as the Dimson, Marsh and Staunton study[18]. Agency believes it would be appropriate to use bottom-up methodology trough use of benchmarks. International benchmarks could therefore be used to arrive at a proxy beta. The agency places emphasis on careful selection of the benchmark companies to ensure that they reflect an appropriate level of risk.	
6.7.4. Cost of debt	Agency believes that appropriate benchmark rate of similar EU telecommunication companies bonds should be used, adjusted to Croatian market conditions.	NOTIFIED OPERATOR
6.7.5. The documentation supporting the cost of capital calculation	The Agency proposes that Notified operator should provide adequate and detailed description of the cost of capital determination. The description should allow the Agency to gain a complete understanding of the cost of capital determined by the Notified operator including assumptions, methodology and calculations. The description of the cost of capital determination should be submitted as a part of Accounting documents within timeframes and according to process as described in section 3.2.	NOTIFIED OPERATOR

[18] Dimson, Marsh and Staunton (DMS) of the London Business School (LBS). The most recent example of their work on the equity risk premium can be found in their 2006 paper "The World Equity Premium: A Smaller Puzzle", revised April 2006.

7.2 Timeframe and deliverables

DATE	DELIVERABLES	RESPONSIBILITY
	2008	
15 August 2008	Publishing the Consultation document Start of the Public consultation period	AGENCY
15 September 2008	Deadline for submission of comments on the Consultation document	STAKEHOLDERS
15 October 2008	Decision on regulatory accounting	AGENCY
15 December 2008	**Deadline for submission of the Accounting document and the Attribution methodology document**	**NOTIFIED OPERATOR**
	2009	
31 January 2009	Deadline for response on the draft of the Accounting document and the Attribution methodology document	AGENCY
28 February 2009	**Deadline for submission of the final version of the Accounting document and the Attribution methodology document**	**NOTIFIED OPERATOR**
31 March 2009	Deadline for approval of the Accounting document and the Attribution methodology document	AGENCY
30 June 2009	**Deadline for submission of the draft RFS and statement of unit costs**	**NOTIFIED OPERATOR**

DATE	DELIVERABLES	RESPONSIBILITY
	2010 ONWARDS	
31 January 2010	**Deadline for submission of possible changes to the Accounting document and the Attribution methodology document**	**NOTIFIED OPERATOR**
28 February 2010	Deadline for approval of the changes to the Accounting document and the Attribution methodology document	AGENCY
31 March 2010	**Deadline for submission of draft RFS and statement of unit costs**	**NOTIFIED OPERATOR**
30 June 2010	**Deadline for submission of the final statement of unit costs and final and audited RFS**	**NOTIFIED OPERATOR**
31 July 2010	Publication of the final and audited RFS	NOTIFIED OPERATOR

7.3 Profit and loss statement

Profit and Loss Statement

HISTORICAL & CURRENT COST PROFIT AND LOSS ACCOUNT
for the year ended XX XX XXXX

	CURRENT YEAR		PREVIOUS YEAR		% CHANGE
	000 kn	% per line	000 kn	% per line	Year on Year
REVENUES					
Internal Sales					
- services which are also available externally					
- services provided internaly only					
External Sales					
TOTAL SALES					
COSTS					
Charges from Other Segments/ Services					
Operating costs					
- Maintenance					
- Spare parts					
- Provision					
- Finance & Billing					
- Bad Debts					
- Marketing Costs					
- Labour Costs					
- Depreciation					
- Services					
- Financing costs					
- Other Costs (Specified by item)					
- Other Costs (total of items below 5% of operating cost)					
Sub total operating expenditure (HCA Basis)					
TOTAL OPERATING COSTS (HCA Basis)					
PROFIT (HCA Basis)					
CCA ADJUSTMENTS					
Holding (gain)/loss					
Supplementary depreciation					
Other adjustments					
TOTAL OPERATING COSTS (CCA Basis)					
PROFIT (CCA Basis)					
RETURN ON MEAN CAPITAL EMPLOYED AND TURNOVER for the year ended XX XX XXXX					
RETURN ON MEAN CAPITAL EMPLOYED					
RETURN ON SALES					

Note 1: This statement would be a combination of HCA and CCA computations. Agency's view is that e.g. if an asset type is revalued for CCA, then those valuations would be included in this statement, but if that asset is not revalued, then the statement would show only its HCA value. In case when only a certain part of an asset is revalued, then the asset would be showed in combination of both. Individual approach to methods of revaluation for certain types of assets are shown in the accounting documentation.

Note 2: If items over 5% of operating costs are reported on this schedule,then it must also be reported on other schedules.

7.4 Mean capital employed statement

STATEMENT OF CURRENT COST MEAN CAPITAL EMPLOYED
for the year ended XX XX XXX

	CURRENT YEAR	PREVIOUS YEAR	% CHANGE
	000 kn	000 kn	Year on Year
FIXED ASSETS			
Tangible fixed assets*			
- Land & Buildings			
- Duct			
- Transmission Equipment			
- Exchange Equipment			
- Other (Specified by item)			
Investments			
TOTAL FIXED ASSETS			
CURRENT ASSETS			
Stocks			
Debtors			
Other			
TOTAL CURRENT ASSETS			
SHORT TERM LIABILITIES			
Creditors due within the current financial year			
Other creditors			
Other			
TOTAL SHORT TERM LIABILITIES			
Total assets less current liabilities			
Provisions for liabilities and charges			
MEAN CAPITAL EMPLOYED			

* Identifying asset categories where the value exceeds 5% of total fixed asset base

Note: This statement would be a combination of HCA and CCA valuations. CTA's view is that if an asset type is revalued for CCA, then those valuations would be included in this statement, but if that asset is not revalued, then its HCA value would be included. If part of the asset type was revalued, then that asset would be a mixture. The Accounting Documention would disclose the individual method for the reader

7.5 Transfer charges statement

RETAIL (or other) SERVICE	WHOLESALE SERVICE	BILLING RATE	BILLING RATE UNIT	USAGE OF BILLING UNITS	TOTAL
SERVICE 1	Wholesale service 1	a	xx	d	A = a * d
	Wholesale service 2	b	xx	e	B = b * e
	Wholesale service 3	c	xx	f	C = c * f
	Wholesale service n	y	xx	z	Z = y * z
TOTAL FOR SERVICE 1					A+B+C+…+Z

	Retail service 1	Retail service 2	Retail service 3	Retail service 4	Retail service 5	Retail service 6	Retail service 7	Retail service 8	Retail service 9	Retail service 10	Retail service 11	Retail service 12	Retail service 13	Retail service 14	Retail service 15	Retail service 16	Market for fixed public telephone network- Wholesale segment 2	Market for interconnection- segment 1	Market for interconnection- segment 2
Retail service 1																			
Retail service 2																			
Retail service 3																			
Retail service 4																			
Retail service 5																			
Retail service 6																			
Retail service 7																			
Retail service 8																			
Retail service 9																			
Retail service 10																			
Retail service 11																			
Retail service 12																			
Retail service 13																			
Retail service 14																			
Retail service 15																			
Retail service 16																			
public telephone network- Wholesale																			
Market for interconnection- segment 1																			
Market for interconnection- segment 2																			
Market for interconnection- segment 3																			
Market for leased telecommunication services- segment 1																			

7.6 Profit and loss reconciliation statement

Profit and Loss Reconciliation Statement

for the year ended XX XX XXX

	SALES 000 kn	OPERATING COSTS 000 kn	HCA RETURN OR PROFIT BEFORE TAXATION 000 kn	GAIN/LOSS AND OTHER ADJUSTMENTS 000 kn	SUPPLEMENTARY DEPRECIATION 000 kn	CCA RETURN OR PROFIT BEFORE TAXATION 000 kn
SEGMENT/MARKET						
Wholesale Segments/ Markets (where cost accounting and/or accounting separation obligations apply)						
Retail Segments/ Markets (where cost accounting obligations apply)						
SUBTOTAL SMP MARKETS						
Wholesale services/ markets						
Retail services/ markets						
NON SMP TELECOM SERVICES/ MARKETS						
RESIDUAL SERVICES/ MARKETS (i.e. non Telecom)						
TOTAL						
Elimination of interbusiness sales and costs						
Interest receivable/ payable and similar charges						
Share of profit from related companies						
Minority interests						
Share of gain of associates/ goodwill amortised on associates						
Minority interests						
Tax on profits on ordinary activities						
Dividend paid and proposed						
Amount w/o financial assets and investments held as current assets						
Non relevant Core Network exceptional operating costs						
Non relevant associated undertakings exceptional operating costs						
Impact of change to asset lives						
Other as appropriate						
ADJUSTMENTS (as necessary)						
AS IN THE ANNUAL REPORT						

7.7 Reconciled Mean Capital Employed Statement

Consolidated Mean Capital Employed

for the year ended XX XX XXX

	CURRENT YEAR 000 kn	PREVIOUS YEAR 000 kn
Shareholders' funds as in the Annual Report		
CCA adjustments		
ADJUSTMENTS		
Interest receivable		
Interest payable on long term bonds		
Interest payable on long term bonds		
Proposed dividend		
Taxation		
Long term liabilities		
Current portion of long term liabilities		
Current portion of long term liabilities		
Deferred Taxation provision		
Other as appropriate		
Closing CCA capital employed at 31 March		
Opening CCA capital employed at 1 April		
Adjustment to opening capital employed		
Revised opening CCA capital employed at 1 April		
Average CCA capital employed		
Daily averaging adjustment		
Deferred costs		
TOTAL CCA MEAN CAPITAL EMPLOYED		
Wholesale Markets (where cost accounting and/or accounting separation obligations apply)		
Retail Markets (where cost accounting obligations apply)		
MEAN CAPITAL EMPLOYED OF SMP MARKETS		
SUBTOTAL MARKETS		
NON SMP TELECOM SERVICES		
- Wholesale services		
- Retail services		
RESIDUAL SERVICES (Non Telecoms)		
TOTAL CCA MEAN CAPITAL EMPLOYED		

7.8 Additional financial information

ADDITIONAL INFORMATION PROVIDED BY WAY OF SUPPLEMENTARY SCHEDULES	REASON FOR THIS STATEMENT/SCHEDULE	Audit Opinion required	Publication
Headcount equivalent by market/segment/service	Allows the Agency to understand breakdown of costs, and evaluate efficiency	PPIA	No
Payroll by market/segment/service	Allows the Agency to understand breakdown of costs, and evaluate efficiency	PPIA	No
Movement in Prepayments/accruals	Ensure movements are understood and allows for an understanding/reasoning for balances	PPIA	No
Customer class information	Provides base of information for price controls	PPIA	No
Files that track the separated accounts to the RIO interconnect rates- FAC/LRIC Outputs to the network statement of costs schedules including - Component volumes, carrier billing and carrier admin, own use analysis & holding gains & losses - (all RIO submission files) - Similar files will be required for the Access Network.	Allows the Agency to understand build up of RIO and its costs	PPIA	No
Files relating to the remaining RIO Core & Access services i.e. NTC's, Order Handling Charges	Allows the Agency to understand build up of RIO and its costs	PPIA	No
Analysis and details of the various surveys (i.e. duct and manufacturing 90/10 etc study- ie. Sample sizes,population sizes,stastical significant of the results & methodologies etc.)	Allows the Agency to understand an evaluate basis of preparation of Financial Statements	PPIA	No
Analysis of exceptional costs	Allows the Agency to understand an evaluate basis of preparation of Financial Statements	PPIA	No
Cost category (as used within regulatory LRIC model) analysis for network components, increments and relevant layers of common cost (LRIC - LRIC& FAC by cost code for teh network- As per Files that track the separated accounts to the RIO interconnect rates above- this is the LRIC output sheets to to network costs per the conveyance rates	Allows the Agency to understand build up of LRIC Model	PPIA	No

Summarised activity analysis of components for network activities, increments and the relevant layers of common cost (LRIC basis)	Combinatorial Test analysis, evaluation of mark up regimes	PPIA	No
Cost category (as used within regulatory LRIC model) analysis for network components and increments	Allows the Agency to understand build up of LRIC Model	PPIA	No
Summarised activity analysis for network components and increments	Allows the Agency to understand and evaluate relative importance and allocation of activities	PPIA	No
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: - eg -HCA Depreciation, -CCA Supplementart depreciation, -Holding gains, -Other CCA adjustments	Allows the Agency to understand relative importance of assets and transactions related to them	PPIA	No
CCA Fixed asset movement statement a) gross replacement costs brought forward, additions/disposals/transfers, holdings gains/(loss), gross replacement costs carried forward and	Allows the Agency to understand relative importance of assets and transactions related to them	PPIA	No
b) gross depreciation brought forward, HCA depreciation charge, supplementary CCA depreciation, disposals/transfers/other movements, holding gains/(loss), gross depreciation carried forward) by asset category for eircom group plus reconciliation to HCA fixed assets movement statement in the group statutory acounts	Allows the Agency to understand relative importance of assets and transactions related to them		
Total mean capital employed and detailed activity analysis for all network components	Allows the Agency to understand ane evaluate basis of preparation of Financial Statements	PPIA	No
Analysis by type of product group and by type of OLO of costs, mean capital employed and transfer charges to disaggregated activities (and associated volumes) in relation to outpayments to other licensed operators (OLOs)	Allows the Agency to understand distribution of outpayments to aid understanding of business	PPIA	No
Detailed Network activity analysis of mean capital employed for all network components	Understand ane evaluate basis of preparation of Financial Statements	PPIA	No

Gross call revenues, discounts & option fees by tariff option for each segment	Allows the Agency to understand net sales calculation to aid margin squeeze determinations	PPIA	No
Gross revenues, discounts & option fees by customer option for each segment	Allows the Agency to understand net sales calculation to aid margin squeeze determinations	PPIA	No
Graphs over time of the various raw indices, index weightings & composite indices used by the Notified operator to revalue assets onto a current cost basis	Allows the Agency to understand and evaluate and makes transparent the build and basis of CCA valuations	PPIA	No
Estimated economic useful lives, valuation and depreciation basis, survey used for valuation or index used to revalue , historical cost accounting (HCA) & current cost accounting (CCA) depreciation, gross book values (GBV) by year of acquisition, gross replacement costs (GRC) & net replacement costs (NRC) across asset categories	Allows the Agency to understand and evaluate and makes transparent the build and basis of CCA valuations	PPIA	No
Marketing expenditure analysis of the top 10 campaigns in the financial year, including advertising copy, video and audio tape of the advertising campaigns	Allows the Agency to evaluate and understand basis of attribution of marketing costs	PPIA	No
Total operating costs & 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	Allows the Agency to evaluate and understand build up of components	PPIA	No
Fixed fee revenues (including line rental) by tariff package & associated network costs	Allows the Agency to understand and evaluate basis of apportionment of revenues	PPIA	No
Analysis of profits/(losses) on asset transfers plus analysis of such assets transferred	Allows the Agency to understand and evaluate basis of apportionement and attribution of sales of fixed assets	PPIA	No
CPS set up costs and their recovery over time	Allows the Agency to understand CPS calcualtions	PPIA	No
Engineering /(Dimensioning) Study	Allows the Agency to evaluate efficiency of network and understand CCA valutations	PPIA	No

7.9 Proposal of required financial desegregation for markets, segments and services

	P&L	MCES	RS	AO	TC
MARKET FOR FIXED PUBLIC TELEPHONE NETWORK SERVICES ON THE TERRITORY OF REPUBLIC OF CROATIA			■		
SEGMENT 1- ACCESS TO THE PUBLIC TELEPHONE NETWORK AT A FIXED LOCATION FOR RESIDENTIAL AND NON-RESIDENTIAL CUSTOMERS			■		
Access to the public telephone network for residential customers (PSTN/ISDN)	■	■		■	■
Access to the public telephone network for non-residential customers (PSTN/ISDN)	■	■		■	■
ADSL Access for residential customers	■	■		■	■
ADSL Access for non-residential customers	■	■		■	■
Segment 1- Other	■	■		■	■
SEGMENT 2: PUBLIC AVAILABLE TELEPHONE SERVICES AT A FIXED LOCATION FOR RESIDENTIAL AND NON-RESIDENTIAL CUSTOMERS			■		
National call for residential customers	■	■		■	■
National call for non-residential customers	■	■		■	■
International call for residential customers	■	■		■	■
International call non-residential customers	■	■		■	■
National call to mobile network	■	■		■	■
Dial up call	■	■		■	■
Enquiry services	■	■		■	■
Public payphone service	■	■		■	■
Segment 2 - Other	■	■		■	■
SEGMENT 3 - WHOLESALE (PHYSICAL) NETWORK INFRASTRUCTURE ACCESS (INCLUDING SHARED OR FULLY UNBUNDLED ACCESS) AT A FIXED LOCATION			■		
Fully unbundled access	■	■		■	■
Shared access	■	■		■	■
Segment 3 - Other	■	■		■	■

P&L Profit and Loss statement
MCES Mean Capital Employed statement
RS Reconciliation statement
AO Audit opinion
TC Transfer charges statement

MARKET FOR INTERCONNECTION SERVICES ON THE TERRITORY OF THE REPUBLIC OF CROATIA					
SEGMENT 4- CALL ORIGINATION ON THE PUBLIC TELEPHONE NETWORK PROVIDED AT A FIXED LOCATION					
SEGMENT 5- CALL TERMINATION ON PUBLIC TELEPHONE NETWORKS PROVIDED AT A FIXED LOCATION					
SEGMENT 6 - Transit services in the fixed public telephone network					
SEGMENT 7 - WHOLESALE BROADBAND ACCESS					
SEGMENT 8 - OTHER					
MARKET FOR LEASED TELECOMMUNICATION LINES ON THE TERRITORY OF THE REPUBLIC OF CROATIA					
SEGMENT 9: RETAIL LEASED LINES					
Leased lines below 2 Mbps bandwidth					
Leased lines above 2 Mbps bandwidth					
Segment 9 - Other					
SEGMENT 10 - WHOLESALE TERMINATING SEGMENT LEASED LINES, IRRESPECTIVE OF THE TECHNOLOGY USED TO PROVIDE LEASED OR DEDICATED CAPACITY					
SEGMENT 11 - WHOLESALE TRUNK SEGMENTS OF LEASED LINES, IRRESPECTIVE OF THE TECHNOLOGY USED TO PROVIDE LEASED OR DEDICATED CAPACITY					
SEGMENT 12 - OTHER					

P&L Profit and Loss statement
MCES Mean Capital Employed statement
RS Reconciliation statement
AO Audit opinion
TC Transfer charges statement

7.10 Audit opinion

Independent Auditor's report on the regulatory financial statements for the year ended on 31 December XXXX

We have audited the the attached regulatory financial statements of <name of the Notified Operator> (hereinafter: "Notified Operator"), comprising of the following: Separated Accounts (including Statement of Responsibility, Auditors' Report, reconciliations, consolidated statements, transfer charges statement and other notes); Accounting Documents (that include principles, definitions, methods of revaluation, description of costing model etc) and Attribution Methodology Document (that details all attributions in the costing model without including actual percentages and absolute numbers).

Management's Responsibility for the Regulatory Financial Statements

Management is responsible for the preparation and fair presentation of these regulatory financial statements for regulatory purposes and their appropriate layout in accordance with accounting separation and cost accounting obligations imposed by the Croatian Post and Electronic Communications Agency. This responsibility includes: designing, implementing and maintaining internal control relevant to the preparation and fair presentation of regulatory financial statements that are free from material misstatements, whether due to fraud or error; selecting and applying appropriate accounting policies; and making accounting estimates that are reasonable in the circumstances.

Responsibility of the Auditor

Our responsibility is to express an opinion on these regulatory financial statements based on our audit. We conducted our audit in accordance with the accounting separation and cost accounting obligations imposed by the Croatian Post and Electronic Communications Agency. The Agency requires that we comply with relevant ethical requirements and plan and perform the audit to obtain reasonable assurance whether the financial statements are free of material misstatement.

An audit involves performing procedures to obtain audit evidence about the amounts and disclosures in the regulatory financial statements, as follows:

1. We have examined reconciliation of incoming financial information derived from cost model with audited annual financial statements;

2. We have examined compliance of accounting separation and cost accounting with the Decision of the Agency;

3. We examined whether cost model is correct and if it is in compliance with the description in relevant cost accounting documentation.

We believe that audit findings provided to us are sufficient and present adequate basis for establishing our opinion.

Opinion

According to our opinion, regulatory financial statements on 31st December of XXXX are fairly presented and in accordance with accounting separation and cost accounting obligations as published by the Agency and in accordance with the Accounting documentation.

During the audit there was no indications found that the Notified Operator is not in compliance with accounting separation and cost accounting obligations.

Auditor Date
Croatian Certified Auditors
Address

For and on behalf of KPMG Croatia d.o.o za reviziju:

Name
Director

Croatian Certified Auditor

the lower of:

7.11 Details of the main network components and commonly accepted cost drivers

Category of assets and liabilities	Description	Cost driver
Exchange equipment	Local exchanges	Allocation to products and services based on seconds of use.
	Tandem exchanges	Allocation based on seconds of use.
	International exchanges	Allocation based on seconds of use.
	Other equipment in exchanges	Allocation on the basis of the use of the connections and cabels.
Transmission equipment	Transmission equipment which depends on volume of usage	Allocation based on usage of circuits.
	Cables and wires	Allocation to components based on the amount of cable used to provide different services.
	Equipment of local knot	Allocation between access services based on line usage.
	Radio and satellite equipment	Allocation based on usage of channels.
	International/ submarine cable	Allocation based on usage.
	Public payphones and related equipment	Direct to service.
Support Plant	Ducting	Ducting can be allocated to the cable and wire that it supports and allocated to products in the same way as cable and wire.
	Power equipment	Allocate to primary plant groups on the basis of the use of power equipment to support each plant - e.g. kilowatts per hour. Assets should then be allocated to products in the same way as the relevant primary plant groups.
	Network management systems	Allocate to primary plant of the different networks provided on the basis of the use of the systems to support each plant - e.g. time spent to local exchanges, tandem exchanges and international exchanges. Cost should be attributed to products and services in the same way as the related primary plant group.