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Final Report

to the European Commission
Directorate-General for Information Society and Media

For a study on the Cost-Benefit Analysis of Options for Better Functioning of the Internal Market in Electronic Communications (with special focus on the Establishment of European Electronic Communications Market Authority - EECMA)

For a Cost Benefit Analysis of Options for Better Functioning of the Internal Market in Electronic Communication

Final Report
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Executive Summary

The purpose of this analysis is to provide policymakers with a reasonable estimate of the orders of magnitude of the issues at stake and highlight, whenever possible, side considerations not reflected in the figures. The results of the analysis indicate that the proposed European Electronic Communications Market Authority has the potential to produce economic benefits exceeding its budgetary costs by a factor of some 10-30 times. On the more conservative side, it is sufficient to assume a marginal reduction of the regulatory risk across Europe being adequately reflected in the cost of capital for the industry, or just one case of a one-year time saving in the enablement of a medium-size technological platform requiring the allocation of pan-European spectrum to repay several years of the Authority's operations. On top of that, additional benefits are to be expected from the other areas of activity of the Authority that have not been quantified, such as those related to network and information security. Similarly, any indirect support the Authority can provide to spur general authorisations harmonisation will probably be an additional important benefit unaccounted for in our analysis.

The largest part of the benefits above is not replicable by the present European Regulators Group (ERG) loose co-ordination structure. A simple peer-review without any veto power is not an equally credible mechanism to reduce the risk for regulatory error across Europe or to decrease perceived market uncertainty related to regulatory discretion factors. The European Regulators group has been very limitedly involved in spectrum management issues and lacks any operational experience in this field, also because some of its national member organisations do not have specific competencies on the subject. In some other areas of the proposed Authority's mandate, ERG involvement is simply not possible (replacement of missing national analyses) or severely hindered by lack of sufficient incentives or legal mandate at the national level (trans-national markets).

Of course, the actual materialisation of the benefits above depends on 1) the EECMA being able to represent regulatory best practice and being recognised by the market as a highly competent body committed and consistent in the achievement of its mandate (and this is therefore subject to a certain degree of management risk) and 2) the actual requests for pan-European rights of use or numbering, which ultimately depends on technological and market trends clearly outside of the Authority's control (and this is therefore subject to a certain degree of forecasting risks not dissimilar from that of a company operating in the underlying industry). Available present evidence of the future demand for the Authority's services is reasonably strong, but the underlying unpredictability is also strong. The intrinsic uncertainty about the size of the future demand for the EECMA services might suggest the need to fine-tune its operational viability and economic sustainability after a certain period of time.

It is worth reminding that the methodology used in this exercise is unable to capture equity considerations and the analysis has restrained from entering the controversial debate on the relation between ex-ante regulation and long term impact on investment, which is considered under another strand of the same impact assessment. In other words, the benefits of ex-ante regulation have been considered as a given, in line with the broader findings of the impact assessment for the revision of the overall regulatory framework for e-Communications. This represents a limitation in that some of the options included in the first strand of the impact

assessment might eventually reduce the demand for the Authority's services and, therefore, impact on its prospective benefits.

This cost-benefit analysis certainly discounts major methodological difficulties, because some of the Authority activities cannot be precisely defined at the moment (see trans-national markets for instance) or are intrinsically uncertain. To cope with this circular argument a number of educated guesses on the likely scope of the Authority activities based on available knowledge had to be made in this report and this inevitably introduced an element of subjectivity in the analysis. This is further compounded by the fact that the Authority is expected to produce results in areas (regulatory risk and transaction costs) where economic measurement issues are also controversial. Nevertheless, the reader is always put in a position to judge how different assumptions would impact on results and draw his or her different conclusions.

To sum up, even by making rather pessimistic and prudential scenarios of potential benefits and related costs, it can be reasonably concluded, if everything is considered, that the establishment of the Authority is cost-effective and fully justifiable from an EU budgetary perspective. *This does not rule out the possibility that operational savings can be achieved if some of the assumptions on the Authority future scope of activities can be better fine-tuned in getting closer to the commencement of its activities.*

INTRODUCTION

The Assignment. *The European Evaluation Consortium 2007* (hereinafter TEEC 2007) has been requested to carry out this Cost-Benefit Analysis of options for the better functioning of the Internal Market in Electronic Communication within the context of the Framework Contract on Evaluation and Evaluation-related (Lot 2), awarded to TEEC 2007 by DG Budget. The specific assignment has been commissioned by DG INFSO.

The Objective. The objective of this study is to assist the Commission in the identification of the costs and benefits of policy options under discussion within the review of the EU e-communication regulatory framework, with a specific focus on the proposed establishment of a light regulatory authority at the EU level in charge of market harmonisation, trans-national markets and, to a limited extent, spectrum management issues. The study is to support the impact assessment the Commission is presently carrying out and deals with the nature, likely size, and final balancing of related costs and benefits. This study also reviews the intervention from a broader ex-ante evaluation perspective, by having particular regard to its logical framework and specific impact on EU budget.

The Scope. The study includes analysis on the five policy areas proposed as the fields of activity of the prospective authority, as detailed in the related draft regulation. The options reviewed cover a wide range of issues: from veto powers on art. 7 remedies, to the analysis and regulation of trans-national markets, and from the establishment of centralised authorisation procedures for pan-European services to mechanisms to improve the secondary trading of rights of use. As agreed with relevant Commission services, the scope of this exercise will not cover universal service and directive 2002/22-related considerations or the transparency measures envisaged under art. 9 of directive the access directive 2002/19 (minimum transparency criteria for unbundling offers) or in the review of the access conditions of art. 6 of the same directive (digital radio and TV).

Results Achieved. The ex-ante analysis component of this exercise has required an extensive classification of the complex matrix of EECMA effects and underlying assumptions in a *logframe* format according to Commission standard methodology and has achieved a thorough classification of all related possible benefits and costs in qualitative terms. The quantitative part of the analysis and its monetisation cannot be expected to provide more than preliminary ideas of the order of magnitude of the Authority possible benefits because of the intrinsic features of the proposed reform. For the time being, the exact scope, and sometimes nature, of the future activities of the Authority can be identified only with a certain margin of approximation, which, in some cases, can be fairly large. This has required an extensive use of educated guesses, strong assumptions and notable simplifications. This degree of uncertainty and necessary speculation is better understood if one considers the rationale itself behind the establishment of the proposed Authority:,i.e. to investigate if welfare losses for society exist, in case quantify them, and take action to propose possible remedies. Moreover, in a number of cases, not only the assumptions, but also the concrete materialisation of the possible benefits are intrinsically uncertain and are, therefore, the subject of speculation.

The Work Constraints. The exercise had to be carried out under severe time constraints and finalised in a six-week period between July and August 2007, with some of the relevant information on proposed EECMA tasks being made available later during the process. This has severely hindered the methodological approach that had to be based on secondary sources only, without having the possibility of testing more sophisticate quantitative models or accessing new sources of information.

Structure of This Report. The remainder of this report is structured as follows:

- Chapter 1 briefly reviews the context of the study;
- Chapter 2 illustrates in role played by the Authority in the options to be evaluated;
- Chapter 3 explains the methodological approach
- Chapter 4 draws a first tentative cost-benefit analysis;
- Chapter 5 provides some concluding comments.

In order to leave the main text of the report as concise and straightforward as possible, a number of relevant complementary parts have been included as annexes. Annex A outlines the current regulatory framework. Annex B deals with methodological and measurement issues. Annex C provides a detailed review of the assumptions underlying the proposed EECMA establishment also in a logframe format. Annexe D examines regulatory risk. Annex E summarises experience from lessons learnt from the establishment of some of the European agencies. Annex F includes the cost-effectiveness analysis for budgetary purposes. Annex G lists the literature reviewed during the study and the sources consulted. Annex H contains abbreviations and acronyms

1. THE BACKGROUND TO THE STUDY

Introduction. This chapter aims to put the exercise into context and provide the non-specialist reader with relevant background information on the underlying policy debate, and briefly outlines the relevant issues at stake. More details on the existing institutional framework are reported in annex A.

1.1 The Policy Context

The Review of the EU Regulatory Framework for Electronic Communications (the "Review")[1] takes its departure point from the recent experience with e-communications regulation, as performed by the five directives of 2002[2]. The Review reiterates the view that such regulatory framework delivered a very good performance — being, indeed, the foundation on which the success story of the development of eCommunications in Europe could be built. At the same time, some strain in the operation of the framework is detected, and the need for a revised regulatory approach is argued.

The development of competition and the consolidation of the internal market are essential elements of this strategy. The fragmentation of the European market into many national markets adds a further dimension to the issue of uneven development of competition and inefficiencies due to missed economies of scale. There still are obstacles to the achievement of a fully integrated EU-wide markets and the intra-EU trade in the delivery of ICT services has grown well below expectations and increasingly represents a matter of concern[3]. Finally, the fragmented mechanism for spectrum management across the EU can be an obstacle for the take-up of innovative services requiring coordinated allocation of the spectrum and this can hinder the overall competitiveness of the EU R&D community on these technologies.

[1] See the Communication on *The Review of the EU Regulatory Framework for Electronic Communications Networks and Services*, Brussels, 26 Sept. 2006 [COM(2006) 334] and related materials: the Commission Staff Working Documents, *Proposed Changes*, Brussels, 28 June 2006 [SEC(2006) 816], and *Impact Assessment*, Brussels, 28 June 2006 [SEC(2006) 817]; the *Responses to the Public Consultation*, Brussels, October 2006, in http://ec.europa.eu/information_society/policy/ecomm/info_centre/documentation/public_consult/review_2/index_en.htm

[2] Namely the Framework Directive 2002/21/EC of 7 March 2002 and the specific Directives 2002/19/EC of 7 March 2002 on Access, 2002/20/EC of 7 March 2002 on Authorization, 2002/22/EC of 7 March 2002 on Universal service, and 2002/58/EC on Privacy and electronic communications.

[3] London Economics in association with PricewaterhouseCoopers, *An Assessment of the Regulatory Framework for Electronic Communications: Growth and Investment in the EU e-Communications Sector – Final Report*, London, July 2006.

1.2 The Regulatory Issues at Stake

Harmonisation of Regulation. The studies and the consultations carried out under the Review identify a trend in the future deployment of services with a European footprint. Such services, on the one hand, are an opportunity to reinforce the internal market, but, on the other hand, bring about regulatory issues of European concern.

There is a general belief that the establishment of coherent, efficient and consistent regulatory procedures across Member States is critical for services with an internal market dimension. This would allow to benefit from economies of scale and to avoid regulatory barriers, which hinder and delay the development of such services. This applies to both national ex-ante regulation of telecom markets and general authorisations released for spectrum use.

For instance, Voice over IP (VoIP) is a prominent example of a service with a pan-European potential which is not being exploited because of differences in the general authorisation conditions across Europe (e.g. access to emergency services, numbering policy, number portability). Lack of regulatory consistency might make it uneconomic for VoIP providers to offer a common service across the EU. At the same time, in the long run, the possible widespread adoption of the VoIP technology by the telecommunication industry has the potential to redefine markets, and make the case for a more harmonised dimension of the EU regulatory framework even more compelling.

The recent EU regulation[4] on international roaming prices has shown the potential of dealing at the EU level with regulatory concerns about services with a cross-border dimension. Indeed, there was fairly general agreement that wholesale prices were too high, but no NRA had legal mandate and enough strong incentives to regulate unilaterally the matter (as beneficiaries of such regulation are overseas operators and consumers).[5] But the identification of other existing markets with a cross-border dimension remains controversial.[6]

In the public consultation, a generic lack of a true internal market and regulatory harmonisation was complained by general industry and consumers' representatives but by a remarkable low number of ICT companies and incumbents. Among the latter, the costs of providing businesses with cross-border services and VoIP appeared as the matters of most concern. National regulators, while acknowledging the need for more harmonised approach to services with pan-European potential, generally opposed any stronger Commission involvement in remedies.

[4] See the press release *EU Roaming Regulation enters into force across all 27 Member States on 30 June*, Brussels, 25 June 2007 [IP/07/870].

[5] See European Regulators Group (ERG), *Effective Harmonisation within the European Electronic Communications Sector: A Consultation by ERG*, Brussels, 2006 [ERG(06) 08].

[6] See the Communication on *Market Reviews under the EU Regulatory Framework (2nd Report): Consolidating the Internal Market for Electronic Communications*, Brussels, 11 July 2007 [COM(2007) 401 final]. Regulation of termination might be another example of services with a significant cross-border dimension, but ERG, in its consultation document on *Effective Harmonisation within the European Electronic Communications Sector: A Consultation by ERG*, Brussels, 2006 [ERG(06) 08], states that "ERG is not aware of any evidence that such an effect is material" (p. 5).

Spectrum Management. The studies on spectrum management have highlighted issues where a coordinated EU approach would enable greater spectrum flexibility and remove procedural "bottlenecks" in innovation. In particular, as stated in a recent Commission Communication, "*by freeing up the power of radio spectrum to stimulate investment in innovation and to increase productivity, the contribution of information and communication technologies (ICT) to the EU's renewed Lisbon Strategy for promoting growth and jobs can be made all the more effective*".[7] The proposed strategy is based on a threefold synergic approach aimed at: 1) getting rid of licensing requirements whenever interference is not considered an issue, 2) establishing centralised authorisation procedures for services requiring regional economies of scope or being intrinsically pan-European, and 3) releasing the potential of secondary trading in making spectrum use more efficient, especially after that licenses have been made homogeneous throughout Europe and the service neutrality principle established.

The public consultation showed widespread recognition of the European dimension of spectrum policy concerns. Respondents also believed that stronger collaboration and coordination in spectrum management is necessary. However, views on specific issues were mixed (e.g. unlicensed spectrum, secondary trading, NRAs rights to redeem unused spectrum) or not sufficiently detailed (e.g. on spectrum authorisations). Finally, most respondents opposed the establishment of a European Spectrum Agency with wide-ranging regulatory powers and supported the current model.[8]

[7] See the Communication on *Rapid Access to Spectrum for Wireless Electronic Communications Services Through More Flexibility*, Brussels, 8 Feb. 2007 [COM(2007) 50], p. 3.

[8] See Hogan and Hartson-Analysys, *Preparing the Next Steps in Regulation of Electronic Communications: A Contribution to the Review of the Electronic Communications Regulatory Framework – Final Report*, Brussels-London, July 2006.

2. THE SCOPE AND RATIONALE OF PROPOSED REFORMS

2.1 Introduction

This chapter will describe in more detail the issues to be evaluated in this exercise and review the rationale behind proposed interventions.

The analysis has been based on the options outlined in the Commission impact assessment, as of July 2007 and namely. in the field of regulatory harmonisation the establishment of the European Regulatory Authority without discretionary decision-making powers (option a) has been compared with a better co-ordination between the Member States (option b); while the Authority contribution to proposed spectrum management reform (option c) has been simply compared to reform of the regulatory framework without the Authority (option d).

There is a major information gap and an asymmetric amount of information available for this analysis. The "services with pan-European potential or cross-border dimension" remain to be clearly identified. Most importantly, while the baseline "no change" alternative poses no estimate problem, the concrete features of a better coordination between Member States remain, under several respects, a matter of speculation, as little operational details have been made available on envisaged implementation modalities.

2.2 The Options

Market Harmonisation. In the field of market harmonisation EECMA activities are articulated along four dimensions:

1. oversight of NRA remedies and advisory role in Article 7 procedures;
2. improved procedures for analysis of trans-national markets;
3. stronger powers for the Commission to act when an NRA does not carry out a market analysis within a given time limit;
4. new EU level procedures for authorisation and regulation of services with pan-European potential.

Table 2.1 below summarises the main features of the two options.

Table 2.1: Main Features of Options in Market Harmonisation Field

	Option A – **European Regulatory Authority without discretionary decision-making powers**	**Option B –** **Better co-operation between Member States**
Oversight of NRA remedies	• Commission to veto NRA remedies and suggest alternatives also in case NRAs impose obligations on non-SMP undertakings	• ERG advisory role enhanced and formalised, especially when Commission issues so called "serious doubts letters". ERG peer review of proposed remedies
Procedures for analysis of trans-national markets	• Trans-national markets susceptible to regulation at the EU level	• Trans-national markets susceptible to regulation at the EU level
Powers for the Commission to act when an NRA does not carry out a market analysis within a given time limit	• The Commission to conduct a market review if an NRA does not commence it within a specified timeframe. Time limit set for NRAs to conduct their market analyses	• None. Traditional EU infringement procedures. Time limit for the above left to discretionary decisions
New EU level procedures for authorisation and regulation of services with pan-European potential	• New regulatory provisions defining services with pan-European potential or an internal market dimension, procedures for coordination of authorisations and selection methods and defining conditions for rights of use	• Specific Council and Parliament Decisions under Article 95 of the Treaty are adopted. This would require a previous Commission Decision harmonising a specified frequency band for a given use and a co-decision procedure for selection, authorisation and conditions of use

2.3 The Role of the Authority

The proposed establishment of the EECMA fits with the streamlining of the EU regulatory framework for e-communications, through two main mechanisms[9]:

- the EECMA is the technical advisory body to the Commission for ex ante market analysis and remedy procedures, as well as for the definition and analysis of trans-national markets;
- the EECMA will deal with the harmonisation of the rights of use across the EU and be involved in the new procedures envisaged for authorisation and numbering of EU-wide services, including identification of related providers. It will also keep the frequency register for secondary trading purposes.

More specifically, in the market regulation field, the EECMA is to:

- provide, upon request, the Commission with an opinion on NRA measures bound to create a barrier to the single market;
- advise and support the Commission in its replacing role of NRAs failing to timely carry out a review of national markets;
- advise the Commission on the definition of trans-national markets and cooperate with the national regulatory authorities in the analysis of such markets and application of remedies;
- issue, upon request, opinions on how to solve cross-border disputes between NRAs.

In the spectrum management and authorisation harmonisation field, together with a broad mandate to deliver opinions on every harmonisation issue likely to represent a barrier to the single market, the Authority has been proposed to:

- assist the Commission in the establishment of harmonised conditions and procedures for the provision of cross-border services hindered by the existence of different national legal and regulatory environments;
- assess the need for a single-selection procedure for the harmonised rights of use, advise on concessionary terms and receive and assess applications accordingly;[10]
- advise the Commission on withdrawal of the above concessions;
- collect and redistribute the usage fees for the rights of use on behalf of Member States;
- advise the Commission on impact of spectrum policy measures and evaluate CEPT policy lines within the framework of art. 4 of the radio spectrum decision.

[9] More generally speaking, the EECMA is to become a centre of specialised and high-level expertise on all economic and technical aspects related to the developing information society, a generic exchange-of-information point between National Regulatory Authorities, and to produce an annual report on the situation of in the European electronics communications market complementing the Commission's own annual implementation report on *European Electronic Communications Regulation and Markets*: .The EECMA is also to act as focal point for dealing with universal service reform issues at the EU level and assist in the implementation of a number of Directive 2002/22 related measures (access by disabled users, 112, number portability, etc.).

[10] The Authority will be independent from the Commission and directly accountable to the European Parliament. The decisions of the Authority can be subject to appeal before a specialised board of appeal, whose decisions are, in turn, actionable before the Court of Justice.

Table 2.2 below provides a preliminary visual comparison of the areas where the EECMA fits and highlights whenever relevant existing alternative provisions.

Table 2.2: EECMA's Role in the Options under Consideration

Market Harmonisation	**Option A - European Regulatory Authority without discretionary decision-making powers**	**Option B -Better co-operation between Member States**
Oversight of NRA remedies and advisory role in Art. 7 procedures	EECMA to provide technical expertise and advice to the Commission, in particular as regards the consistent application of remedies	ERG advisory role enhanced and formalised. ERG peer review of proposed remedies
Improved procedures for analysis of trans-national markets	EECMA to assist the Commission in identifying trans-national markets and coordinate related NRA analysis and application of remedies	Commission identifies and regulates trans-national markets with own means ERG continues in its parallel harmonisation effort
Stronger powers for the Commission to act when an NRA does not carry out a market analysis within a given time limit	EECMA to assist the Commission in identifying trans-national markets and coordinate related NRA analysis remedies application	Traditional EU infringement procedures managed by Commission
New EU level procedures for authorisation and regulation of services with pan-European potential	EECMA to provide support to Comitology procedures in identifying services, defining common authorisations and selection methods and defining the conditions attached to the rights of use on spectrum and numbers and manage related rights.	Ad hoc comitology procedures variously assisted by Commission and RSPG Decentralised management of rights
Spectrum Management	**Option C – With European Regulatory Authority**	**Option D - No European Regulatory Authority**
Progressive introduction of secondary trading in specified bands	EECMA provides technical assistance in the harmonisation of spectrum rights of use and keeps the EFIS register	Coordination via current institutional mechanisms. ERO keeps the EFIS register

2.4 Regulatory Context and Complementary Initiatives

The options should be seen in the light of the broader context of the EU Regulatory Framework reform. In particular, in the broader field of market regulation:

- the number of the ex ante regulated markets is proposed to be reduced from the present 18 to 7 and this can be seen within the framework of a policy trend towards further reduction in the medium term, as markets are expected to become more competitive;
- an amendment is being proposed to ensure that the NRA decisions can be overturned on an interim basis only in very limited circumstances and this over and above Commission promotion of co-operation between national courts and exchange of good practices.

In the field of spectrum management:

- an extension of general authorisations regime and the overall amount of unlicensed spectrum is proposed, according to which National regulators are to release general authorisations by default when spectrum band has become available and justify licensed approach exceptions;
- the introduction of service neutrality concept and the strengthening of technology neutrality. In particular, service neutrality and technology neutrality principles are to be applied to new licenses, with an option for existing ones to be transformed. Technical limitations to technology neutrality in a specific band remain unchanged

Moreover, other relevant complementary initiatives include:
- a more relaxed environment for notifications of markets to the Commission in certain cases; and
- a general strengthening of the political independence of the NRAs.

Finally, it is proposed that the EECMA would replace the ERG as an advisory body to the Commission.

2.5 The Rationale behind the Proposed Reforms

The Rationale Behind. The proposed reforms are to address three main interrelated policy issues:

- to strengthen the regulatory framework, while abiding to the principles of subsidiarity and proportionality, in the light of the increasing technological convergence of markets[11] and the prospects for trans-national services;
- to streamline authorisation procedures for a number of possible pan-European services requiring harmonised spectrum rights-of-use and numbering at the EU level;
- to seed a first EU-wide market-based institutional mechanism to exploit the digital dividend and allow a more efficient pan-European allocation of the spectrum abiding to technology and service neutrality principles.

To do that, the EECMA acts through a threefold mechanism based on a combination of:

1. increased amount of technical expertise made available to Commission services for carrying out their mandatory regulatory duties;
2. reform of the implementation processes of some of the existing regulatory provisions with the ultimate aim of indirectly improving their effectiveness and impact;
3. introduction of new regulatory processes linked to new regulatory measures that are expected to have a direct impact on the market.

In an extremely simplified way, it can be argued that the proposed reform is conceived to have a direct impact on welfare through three main transmission mechanisms, namely: (i) the reduction of the regulatory risks perceived by undertakings venturing in the EU Communications markets; (ii) an increase in the overall value of spectrum; and (iii) a reduction of the overall regulatory costs for firms, including transaction and information gathering costs.

The establishment of the EECMA can be seen in a logframe perspective with reference to: 1) first the realisation of given outputs; 2) then the achievement then of a complex set of expected results and 3) impacts through mechanisms variously based on the provision of technical assistance, the improvement of existing regulatory processes, and the introduction of new ones. The expected impacts can ultimately have a wider impact in terms of incentive to investment, innovation, availability of new services and overall welfare. The logical steps linking this chain of objective are subject to a number of assumptions, risks and operational constraints. The logical framework underlying the EECMA establishment can be summarised as in Tab. 2.4 below.

[11] For instance, Orange, France Telecom's mobile arm, operates in several European countries and now also offers fixed-line broadband and voice services in several of them in order to provide a service bundle. Similarly, O_2, another European wireless operator, is reaching out into fixed-line services in several EU countries. Telecom Italia has launched fixed-line triple-play services in both France and Germany, and Deutsche Telekom is doing the same in France and Spain.

Table 2.4: Logframe Matrix of EECMA Establishment

EECMA Input	Outcome	Expected Results	Impact	Overall Impact
Technical assistance in reviewing NRA remedies decisions	To support Commission veto power in national remedies (a new procedure)	To harmonise national practices in the field of remedies	To reduce regulatory risks for companies To enhance EU-wide competition	Consumer welfare Incentive to investment
Technical assistance in analysing national markets	To support Commission subsidiary role in national market analysis (a new procedure)	To reduce delays in spotting possible cases of significant market power To enforce remedies accordingly, after public and NRA consultation	To restore competition at the national level To reduce regulatory risks/ uncertainties for companies To ensure implementation of remedies	Consumer welfare
Technical assistance in identifying trans-national and cross-border markets	To better enable Commission to define and analyse trans-national and cross-border markets (strengthening of old procedure)	To regulate trans-national markets more homogeneously	To reduce the discriminatory barriers in the provision of cross-border services To reduce regulatory uncertainty To ensure implementation of remedies	Consumer welfare Availability of new services Incentive to investment
Technical assistance in the harmonisation of spectrum rights of use	To turn national rights of use into homogenous titles more easily tradable in secondary market across the EU (strengthening of old possibility with new preliminary procedure)	To expand the market for secondary trading of rights of use To spur secondary trading in Countries with little familiarity with the instrument	To increase the overall value of spectrum for users To increase economic efficiency of spectrum allocation	Consumer welfare Availability of new services Incentive to investment Incentive to innovation
Centralised allocation of pan-European spectrum rights	To better enable Comitology procedures to identify services, define common authorisations, select methods and define	To reduce the time-to-market of applications requiring homogeneous pan-European spectrum rights	To increase the overall value of spectrum for users To increase the economic efficiency of spectrum use	Consumer welfare Availability of new services Incentive to investment

	conditions attached to the rights of use on spectrum and numbers (strengthening of old procedure)	To restrain national licensing from interfering with allocation of spectrum for pan-European use		Incentive to innovation
Management of pan-European allocated spectrum rights	To create a fully centralised one-stop-shopping facility for pan-European spectrum rights users (new procedure)	To reduce the administrative costs of regulatory compliance	To make investment in EU more attractive to outsiders	Incentive to investment Incentive to innovation
Advise the Commission on Impact of Spectrum Measures and evaluate CEPT	To support Commission and RSPG in their monitoring of spectrum policy and issue identification (strengthening of old procedure)	To improve technical harmonisation To increase effectiveness and rapidity of EU regulations To assist CEPT in its reform effort	To allow a faster time-to-market of innovative services To increase the value of spectrum use	Availability of new services Incentive to investment Incentive to innovation

3. METHODOLOGICAL ISSUES

Regulatory cost-benefit analysis (CBA) is a structured means of summarising what economic theory suggests are likely to be the consequences of a policy initiative. The validity of its conclusions is subject to two well known major sets of limitations:

- conceptually, since market-based evaluation of resources can be unreliable (or unavailable) for society as a whole, the CBA operates in a "second best" environment, where the optimum for a given policy problem may not coincide with the real overall optimum (first best);
- practically, CBA implementation has to somehow simplify comparisons of options to cope with the limited availability of data, market complexities and the pervasiveness of value judgements on distributional effects.

Therefore, the CBA should never be considered a substitute to policy judgment, but as an additional tool to support the decision-making process itself.

This CBA will be structured in the customary way: 1) it will make substantiated inferences on the likely effects of the various options; 2) qualitatively compare them; 3) whenever necessary and possible will try to estimate costs and net benefits; 4) and will summarise final advantages and disadvantages.

Annex B provides more information, and covers the measurement of costs and benefits, and sources of evidence and their reliability.

4. COST-BENEFIT ANALYSIS

4.1 Introduction

This chapter draws a cost-benefit analysis of EECMA establishment in the field of market harmonisation. In particular, as far as market harmonisation is concerned the establishment of the EECMA (option A) will be weighed against better co-operation between Member States (option B). The comparisons have been developed according the steps described in Annex C, and namely: 1) an outline of the problem and the identification of the likely effects, 2) a preliminary qualitative comparison, 3) whenever possible, a rough estimate of related costs and benefits, and 4) a final judgment reviewing advantages and disadvantages. The remaining part of this chapter is structured into two parts. The first deals with EECMA role in market harmonisation, the second with spectrum management. Total EECMA-related costs and benefits and key assumptions are summarised in a table at the end of the chapter.

4.2 Market Harmonisation

EECMA role is articulated along four dimensions: 1) oversight and veto of NRA remedies, 2) identification and harmonised regulation of trans-national markets, 3) delayed national analyses, and 4) authorisation of pan-European services.

OVERSIGHT AND VETO OF NRA REMEDIES

Outline of the Problem and Likely Effects. In 2006, in 50 cases when remedies were notified in a notification procedure, Commission commented on proposed remedies and suggested adjustments. All in all, 7 NRA notifications were vetoed on national market definition or significant market power identification grounds, while NRA autonomously decided to take back their notifications in 29 cases. We will assume these figures as proxies of the number of cases the Commission would have probably requested to investigate in-depth proposed remedies. We can expect the Commission to review about 40 to 50 remedies per year, of which 1 or 2 candidates for possible veto procedure requiring further investigation. If the number of regulated market is reduced the overall number of notifications should also decrease, but the number of notifications on markets with significant market power should decrease less then proportionally as well as that of remedies. More details on the size of the problem of remedies are available in a recently issued Commission communication.[12]

Generally speaking, Commission comments on proposed remedies appear broadly related to the implementation of forms of price controls when other remedies to effectively achieve reduction in barriers to entry were available. Remedies proposed so far have been variously harmonized within Member States and across Member States.[13] This includes markets with significant market power where no remedies are proposed, which, although possible and maybe even necessary in legal terms, would appear a net loss of welfare on purely economic grounds, because this behaviour would simply amount to create regulatory risk in the market without providing any welfare benefit to society.[14]

We distinguish here between two possible effects. The fact that a peer review or collective-knowledge based review mechanism of the information collected locally by the NRA is assumed to increase the overall level of analysis. This is expected to decrease the likelihood of sheer regulatory error, defined as the unbiased and symmetric errors regulators can make in appreciating the market situation. If this is the case, the sheer possibility of a veto on top of the peer review process cannot but lower the regulatory risk perceived by the market EU-wide. Some preliminary evidence that the decentralized regulatory approach has resulted in a

[12] Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions on Market Reviews under the EU Regulatory Framework (2nd Report), Brussels, 1.7.2007, COM(2007) 401 final.
[13] Details on the features of these remedies can be found in an ERG *Report on Experiences with Market Definition, Market Analysis and Applied Remedies (Experiences Project)* ERG (05) 51, available at: http://erg.eu.int/doc/publications/erg_05_51_report_mkt_experiences.pdf, as well as in the various ECTA Scoreboards.
[14] ECTA in its regulatory scoreboard significantly scores 0 to regulators detecting significant market power positions without imposing remedies.

substantial increase of regulatory risk across Europe can be found in the literature,[15] but would require econometrical empirical verification. The possible effect would be to improve the "quality" of regulation in specific cases and to reduce the regulatory risks across Europe.

But the evidence available so far from Commission comments points to one more possible benefit deriving from. the existence of a specific type of problem with a number of proposed remedies. If one assumes the Commission is more inclined to see forms of accounting separation or otherwise information-based procedures in place, The EECMA establishment can be expected as a side-effect to be more likely to increase the compliance costs of telecom companies than option B. The way both options are structured is not really aimed to force any NRA to implement any given remedy, but in a way, to reduce their level of regulatory discretion.

Qualitative Assessment. In pure regulatory risks terms, EECMA establishment is preferable to strengthened voluntary NRA cooperation because veto powers from independent third party are more credible a mechanism than consultation with peers in reducing risks of error, as they actually decrease the level of regulatory discretion. It is worth reminding that, when the Authority is established, regulatory risk in the first period after its establishment can also increase because the Authority will lack a track record, and this could create regulatory consistency risks. This can be partly mitigated by the fact that it is the Commission, and not the EECMA, finally issuing the veto and the Commission already has an identifiable track record in commenting remedies that the market can be supposed to have discounted and/or by letting the new system coincide with a regulatory cycle.

Estimation of Costs and Benefits. Costs include direct regulatory costs and estimated compliance costs. Compliance costs are estimable with more difficulty, because in theory there should be none. If one follows the rule of thumb that the 2:1 ratio between regulator's costs applies, this would lead to a first tentative estimation of additional compliance costs worth € 1.0 mn, which is broadly compatible with the assumption that in controversial cases companies will be required to provide additional information worth the cost of an average market analysis (40 times 25,000 €).

Benefits can be indirectly guess-estimated if one considers that the measure is intended to reduce regulatory error and regulatory discretion across the EU. Assuming that benefits as low as 10 % of presently available measurement of regulatory risks (we assume other components to remain unaffected such as the frequency of regulatory cycles and the scope of regulatory powers), this would mean benefits in the region of 0.05 – 0.010 β equivalent, bringing β down to 0.090-0.095. To make a simple example:

- Cost of capital without = 4% + 5% *1,01 = 9.05%;
- Cost of capital with = 4% + 5% * 1.009 = 9.045%.

Life of assets in the telecommunication industry can be safely assumed to be of about ten years, so the total physical value of regulated asset stock can be estimated at around € 250 bn if a simple straight line depreciation method is used. Any reduction in the regulatory risk is, therefore, at least a saving on the return on capital itself and on its replacement cost. So relatively marginal decreases in regulatory risk related costs can bring substantial benefits: in

[15] Oxera, *Cost and Benefit of Market Regulators. Part II Practical Application*. Report prepared for the Dutch Ministry of Economic Affairs. pg. 43. October 2004.

our case as high as € 125 mn return on capital savings and € 12.5 mn saved costs of replacing investments.

The obvious condition is of course higher analytical skills being perceived by the market as improved regulatory quality. If average market premium is brought down to 4%, the resulting benefit decreases accordingly. To be on the safe side, one could argue a potential minimum benefit in the € 50 mn - 120 mn region, which is unevenly distributed and much higher where market is riskier and market premium is higher.

Different assumptions have to be made on cases where the new system persuades or forces through veto NRA to improve remedies, if the problem remains there also in the future. The subject matter in these cases is assumed to be unexploited deadweight effects that are assumed to be particularly important in an industry with high price elasticity and growing demand. A typical price cap provision can lower the affected company by as much as 0.10-0.20 β points in the line of business affected. If we assume our median company with 50% of turnover in regulated markets and 50% of in unregulated markets, the average capitalisation / net won assets affected by the potentially vetoed regulation can be in the € 0.5-1.5 bn region.

The reduced cost of divisional capital is a rough estimate of the loss in terms of rents passed through consumers, i.e. of consumer benefits. This can be as high as 1% of cost of capital = 5-15 mn. But also the depreciation will be affected by the same phenomenon and so the company will fail to invest € 0.5-1.5 mn. If barriers to entry are removed there is an additional potential untapped market worth € € 7.5-22.5 mn if we assume the turnover/investment ratio as rough indicator of price elasticity.

The controversial matter is that, if access is allowed and barriers removed, the new entrant decision of investing rather than exploiting the situation is not banal. And this usually explains disagreements in how the situation is assessed by the parties, i.e. a disagreement on the existence of untapped demand. If better analytical knowledge allows the system to exploit this potential and improve consensus on how to better exploit deadweight effects the yearly benefit is likely to be in the € 150 - 600 mn region depending on the assumptions and the number of actual cases.

Final Judgement - Advantages and Disadvantages. The potential benefits are substantial but their materialisation depends on management issues and level of expertise and are conditional on an the existence of an effective appeal mechanism that does not reduce regulatory risks by simply depriving ex ante regulation of any effectiveness. The EECMA could substantially contribute to improve regulatory quality and exploit potential deadweight effects. This has to be balanced with the parallel objective of avoiding too many cases of patent conflict with NRAs not to raise consistency concerns in the market. This would happen with any stalemate conflict situation following a veto. Access to good quality information on which to judge the various cases is another precondition.

It is reasonable to assume that certain additional categories of benefits can materialise over time, but if markets subject to ex-ante regulation should decrease in the future so would be the level of expected benefits. The same applies to any “regulatory holiday” option where substantial amounts of future investment would be deregulated. It has to be expected that benefits are unevenly distributed across Europe and can be much higher where the problem of regulatory risk and exceeding discretion is perceived as material. To avoid problems with

Countries with a high regulatory quality as a potential co-risk factor, the EECMA should be able to deliver best practice advice immediately. The newly established Authority must appear credible and committed from the very beginning. Management problems at the commencement of activities can even end up creating more regulatory risks. Separation of tasks with Commission provides some partial additional insurance against this risk.

Tab 4.1 – Costs and Benefits – Oversight of NRA remedies

	Option A	Option B
Direct costs of market regulator	• Share of EECMA annual costs: € 0.7 mn	• Increased ERG costs (unknown)
Direct costs of regulated firms • Regulatory compliance costs • Costs of specific regulatory proceedings	• Controversial cases required to submit more detailed information? € 1 mn. Higher accounting and administrative burdens € 2 mn?	
Indirect regulatory costs/benefits • Regulatory uncertainty/certainty • Cost of litigation • Negotiation costs / Increased liquidity in the market • Moral hazards (insolvency risks) • Improved quality of regulation	• Commission veto imposes more consistent remedies • Decreased regulatory risks: € 50 mn – 120 mn • Appearance of new authority in the market creates per se regulatory risk	• Reputational incentives (peer review) improve quality of national remedies. Decreased regulatory risks are structurally lower than under option A
Impact on competition • Distortion of incentives to competition / Enhanced incentives to competition • Deterrent effects on predatory behaviour		
Induced economic costs / benefits to the market • Reduced product/service quality/ Increased product/service quality • Restrictions on market functioning and availability of new products/services / Enhanced market functioning and availability of new products/services • Allocative inefficiency/efficiency (consumer welfare) • Productive inefficiency/efficiency (technology)	• Increased allocative efficiency if new measures are more appropriate: €150-600 mn	• No peer review process can substitute for disagreement with assessor of last resort. No substitute for real veto. Persuasion would be reached otherwise
Impact on innovation		
Distributional impact	Potential new entrants suffering from inappropriate remedies and companies located in lower than average quality regulatory environment Member State benefit more than others. NRAs bear costs in option B	

TRANS-NATIONAL MARKETS

Outline of the Problem and Likely Effects. No trans-national markets have been identified so far under the terms of the Framework Directive agreement[16]. Commission has regulated the international roaming market, but on its own initiative and with a different legal basis. Significantly, in this case, to address the problem the Commission had to adopt an ex-ante regulation with no discretionary powers because the ordinary Framework mechanism had proved ineffective to cope with the issue.

VoiP is acknowledged, as a market with unexploited pan-European "potential", but because of lack of general authorisation conditions across Europe[17].. At the same time concerns substantiated with anecdotal evidence are voiced by some telecom operators about extensive and well-entrenched price and non price discriminatory practices among incumbent wholesale operators in certain client-defined market segments across Europe for the provision of services with a global dimension.[18]

In these conditions of fundamental disagreement on the subject matter, it is difficult to speculate on the likely effects of the options at stake.[19].

Qualitative comparison. In economic terms the case for centralised supervision of regulation of services with a trans-national component can be made whenever local authorities have little incentive in unbundling markets with both a national and a trans-national component. This allows operators to exploit significant market positions in the latter to cross-subsidise the first, because while the benefits would be EU-wide and from their point of view uncertain, material costs for domestic consumers in terms of decreased cross-subsidies would be certain (for a more detailed description of so-called waterbed effects, see case study on termination in volume II). Whether this is also a cause of lack of consumer benefits depends on regulated company's ability in concealing the amount of extra rents that do not end into national cross-subsidies, but this seems a fairly reasonable assumption with some preliminary empirical

[16] Debate is ongoing on whether these markets exist and which they are. So far consensus has been reached only on markets that would require a more harmonised approach, namely broadband access markets and fixed and mobile termination markets, but ERG and NRAs position is that there is no such thing as a single European market in any wholesale network access product, because of sheer lack of physical geographic substitution of infrastructure. At the same time, provisions for a single European price for an unbundled local loop or for mobile termination were rejected together with provisions on uniform requirements on the forms of bitstream access available, because of economy of density considerations.

[17] It is recognized that the trend towards VoiP-based NGN is likely to increase the range of VoiP-based services where a higher degree of regulatory consistency will be one day necessary, but for the time being, no such services have been identified on a pan-European basis

[18] The case for pan-European harmonised regulation was recently made for multi-site multinationals by a BT-sponsored study (See the Economic Benefits from Providing Business with Competitive Electronic Communications Services. A study sponsored by British Telecom, June 2007).

[19] The proposed authority could: 1) monitor and regulate markets authorised as pan-European; 2) highlight discriminatory behaviour specifically hindering the provision of cross-border services; 3) pave the way for the possible impact of VoIP on telephone services that would require a radical redefinition of regulatory strategies across Europe because the intrinsic features of the VoIP technology have the potential to make old market definitions completely irrelevant for pricing and market definition purposes..

confirmation in other non-European markets[20]. Moreover, the existence of wide possibilities for regulatory arbitrage[21] is one of the possible causes of VoIP success in Europe, especially when compared with the US situation, and this could also explain the fact that the business community appears to be one of the earliest adopter of VoIP services in the EU.

Estimation of costs and benefits. Given the exceeding speculative nature of the subject we have refrained from any attempt at quantifying costs and benefits, although based on Commission data estimates of direct regulatory costs can be made at a yearly € 5.9 mn if two such markets are found. This would more costly than the average EU27 market review carried out at the national level by the NRAs which has been estimated at some € 2.3 mn each (see annex of the impact assessment for details). Indirect regulatory costs should be in the range of € 24 mn (two market review cycles for two markets EU-Wide).

Final Judgement - Advantages and Disadvantages. The EECMA establishment opens more options and is *prima facie* economically well-grounded as far as certain economic incentives are concerned. There are very few elements to estimate economic pay-offs, as expected impact on the market is exceedingly difficult to quantify and can only be the subject of highly speculative guess-estimates, also because the scope of the intervention itself is largely indeterminate. Legal rights of access to confidential business information at the Member state level appears an operational difficulty potentially hindering most of the added value of both options, as the agency would have in all likelihood to depend on NRA for information gathering and these reportedly have information gathering problems on their own[22].

[20] Very preliminary indications about the fact telephone operators get adapted to regulators' behaviour and understand their bias in favour of residential consumers to extract rents in the business customers market were found with reference to the US market, but would require much more robust confirmation in the EU context. See, T. Duso, *Lobbying and Regulation in a political economy: Evidence from the US cellular industry*. 2005, pp 251-276 Public Choice.

[21] VoIP arbitrage opportunities at present already include among others: 1) qualifying services as long-haul transmission to avoid universal service surcharges; 2) obscuring the origin of traffic to making international traffic appear domestic and long distance traffic appear local, to obtain the most favourable access price; 3) characterizing traffic as local instead of long haul, to generate a reciprocal payment obligation (instead of a one-way access charge); 4) distorting or obscuring the origin of traffic and the method of transmission to reduce or avoid charges imposed by another carrier for delivering the traffic to the intended recipient; and 5) offering telecommunications services as ancillary to, or a minor transport element for, an enhanced information service. For a more detailed description of possible impact of VoIP on market definition see BT study

[22] The availability of detailed accounting information on the specific cross-border dimension of companies' operations is one of the reasons that theoretically explain why the Commission had better recourse to price-cap type interventions in the field of cross-border roaming and preferred another type of regulatory approach.

Tab 4.2: Costs and Benefits – Procedures for Analysis of Trans-National Markets

	Option A	Option B
Direct costs of market regulator	• Share of EECMA annual costs: € 5.9 mn	• Increased ERG costs? • Alternative means?
Direct costs of regulated firms • Regulatory compliance costs • Costs of specific regulatory proceedings	• Accounting/information systems	
Indirect regulatory costs / benefits • Regulatory uncertainty/certainty • Cost of litigation • Negotiation costs/increased liquidity in the market • Moral hazards (insolvency risks)/ improved quality of regulation	• Decreased regulatory risk because of reduced discretionary powers	• EU being forced to issue second best regulation for lack of regulatory management instruments • Decreased regulatory risk because of national consistency • EU being forced to issue second best regulation for lack of fine-tuned regulatory management instruments
Impact on competition • Distortion of incentives to competition / Enhanced incentives to competition • Deterrent effects	• Deterrent effect on predatory behaviours • Enhanced incentives to compete on a pan-European/cross-border basis	• Less than under option A
Induced economic costs / benefits to the market • Reduced product/service quality/ Increased product/service quality • Restrictions on market functioning and availability of new products/services / Enhanced market functioning and availability of new products/services • Allocative inefficiency/efficiency (consumer welfare) • Productive inefficiency/efficiency (technology)	• Increased allocative efficiency if new measures are more appropriate (lower prices) • Increased quality of services	• Less than under option A
Impact on innovation		
Distributional impact		

NATIONAL MARKET ANALYSIS

Outline of the Problems and Likely Effects. The e-communications regulatory framework currently in force does not set a definite deadline for NRAs to carry out market analyses. Since 2005, the Commission has initiated infringement proceedings against Member States who have failed to notify market reviews. Infringements procedures opened for failure to carry out market reviews as reported in table 4.3 below can be taken as a preliminary indicator of the present size of the problem.

Tab 4.3: Problems with Lack of Markets Analyses Experienced in the 2005-2006 Period

	2005		2006		
Country	**Letter**	**Reasoned Opinion**	**Letter**	**Reasoned Opinion**	**Comment**
Belgium	18			2	
Czech Republic	18				All the market analyses were finalised and notified to the Commission by August 2006
Denmark			3		
Germany			2		
Estonia	18			17	
Cyprus	18				The first notifications were registered in January 2006, and the NRA very quickly accomplished the first round of its market review (17 markets analyzed within a year)
Latvia	18			??	Up to January 2007 the NRA had notified 17 of the 18 markets
Luxemburg	18			15	Significant progress has been made since the issue of the Reasoned Opinion: NRA had notified most market reviews (16) by the end of 2006
Malta			3		
Poland	18			14	The first market review has been notified in April 2006, yet 15 out of 18 markets were notified by November 2006
Portugal			3		

However, delays in carrying out market analyses have been mainly triggered by problems with the transposition of the regulatory framework rather than operational difficulties. Once the Framework had been transposed, the NRAs on average finalized all their market reviews pretty fast. If 11 delays across 4 countries were experienced in 2006 if one assumes learning by doing and reduction in the number of relevant markets, in the worst of cases the number of reviews that could be yearly conducted by the Agency when it starts its activities in 2010 could be reasonably assessed in the 3 - 5 annual range.

Qualitative Assessment. The EECMA role is justified mainly as an additional administrative incentive to reduce delays in carrying out market analysis. Because of language barriers and logistical difficulties the EECMA would be at a substantial cost disadvantage in substituting for NRAs in this activity. Benefits are possible to the extent that in the underlying markets significant market positions are found and remedies consequently needed and enforced.

Estimation of Costs and Benefits. The ratio of compliance to regulatory costs has been decreased to compensate for EECMA cost disadvantages in carrying out market analysis on a national basis.

If an average of 75% significant market positions is found for any delayed market analysis, this would mean from 2 to 4 remedies action that should have been inflicted. If each of them had a potential € 20 – 40 mn, consumer benefit this would bring to a total maximum yearly € 40 mn - 160 mn benefit.

Final Judgement Advantages and Disadvantages. Based on available evidence the option is not intended to significantly affect the regulatory regime, but is mainly justified on administrative equity rather than economic grounds. Economic benefits are relatively marginal and conditional on the fact that NRA experience delays in carrying out market analyses and European appeal system makes them effectively actionable. Rights of access to local information might also be an issue to see benefits actually in place.

Tab 4.4: Costs and Benefits – Powers for the Commission to Act when an NRA does not carry out a market analysis within a given time limit

	Option A	Option B
Direct costs of market regulator	• Share of EECMA annual costs: € 2.7 mn (centralised access to local information much more costly than decentralised)	• Commission initiating infringement procedure
Direct costs of regulated firms • Regulatory compliance costs • Costs of specific regulatory proceedings	• Staff to follow issues, accounting/information systems, consultancy legal expenditure	• Lower costs (Commission found that the cost of one market review for NRA at the national level can vary from €100,000 to €900,000)
Indirect regulatory costs/benefits • Regulatory uncertainty/certainty • Cost of litigation/deterrent effects • Negotiation costs / increased liquidity in the market • Moral hazards (insolvency risks)/ improved quality of regulation	• Increased regulatory certainty (time limit set)	• Less regulatory certainty (time limit discretionary)
Impact on competition • Distortion of incentives to competition / Enhanced incentives to competition	• If remedies are needed speedier intervention. Less barriers to entry	• A lengthier process to remove barriers to entry if needed
Induced economic costs / benefits to the market • Reduced product/service quality/ Increased product/service quality • Restrictions on market functioning and availability of new products/services / Enhanced market functioning and availability of new products/services • Allocative inefficiency/efficiency (consumer welfare) • Productive inefficiency/efficiency (technology)	• Higher discounted value of net consumers' benefits (lower price)	• Lower discounted value of net consumers' benefits (lower price)
Impact on innovation		
Distributional impact	Incumbents are net losers, to the extent lack of analysis favours incumbents predatory behaviours	

NEW AUTHORISATION PROCEDURES FOR PAN-EU SERVICES

Outline of the Problem and Likely Effects. The introduction of services in the market can be delayed or hindered by lack of pan-European general authorisation procedures. While satellite services are the typical case in point, VoIP is a special case in which through common access to pan-European market, operators would also be given universal service obligations. So there is one prevailing equity aspect under consideration in VoiP that is not fully reflected in our analysis, as it relates to aspects outside our mandate. As far as costs are considered, the EECMA establishment is slightly more expensive than option B, as the value of direct costs attributable to the Authority would add to the costs of the Comitology procedures and national licensing, but the centralised management of rights can be estimated to partly compensate for this. EECMA-related possible benefits substantially amount to a speedier introduction of products in the marketplace. In the past, instances were reported of satellite-based services experiencing problems because of regulatory harmonisation requirements or failed to be launched altogether because of regulatory inconsistencies across Europe. Given the speed of technological competition in the e-communications market this has the potential of putting some technological platforms at a competitive disadvantage or even hindering the sheer launching of services.

Qualitative comparison. Economies of scale and better management of coordination aspects represent a strong argument in favour of the EECMA establishment regardless of any quantitative consideration, just because a permanent structure would replace looser co-ordination mechanisms.

Estimation of costs and benefits. While direct costs are known, no proxy source could be found for indirect compliance costs. In this case we are less confident the usual 4:1 ratio can be used as a proxy. More conservative estimates are probably justified, but only a survey among users could confirm this assumption.

The assessment of the broad orders of magnitude of benefits that could materialize under option A are estimated by discounting the cost of possible delays in the introduction of new services in the market by making reference to similar comparable cases, such as:

- ***Satellite-based Broadband on Trains***. A study recently carried out by Deutsches Zentrum für Luft- und Raumfahrt, Avanti Communications and ARS Traffic and Transport Technology with support from the European Space Agency (ESA) estimated the annual market value for Broadband on Trains services across EU 25 at some € 9.6 billion in 2010. Assuming that the pan-European dimension is an essential pre-condition for the development of such a market (i.e. the entire market value is of relevance, not only the share attributable to international passengers) and that the Agency will reduce the time to market of this new service by one year, the estimated benefit arising from option A can be roughly estimated at some € 9.1 bn. Vice versa, if only the "cross-border" component of revenue is considered the estimated value of the benefit decreases to about ***€ 180 mn***[23];
- ***Mobile Communication Onboard Aircraft.*** According to a market research recently conducted by OnAir's on 1,450 passengers using the 20 most-travelled European routes

[23] The estimate of the "cross-border" component in trains is based on Eurostat figures.

and 5 transatlantic routes, in 2009 the annual market for on-board mobile phone services could be worth € 1.5 bn, of which about € 630 mn attributable to the cross-border flights.[24] In case an Authority could have been able to speed up the market take-off by one year, the benefit entailed by option A can be assessed at some ***€ 600 mn***;

- ***Mobile satellite services in the 2 GHz frequency band.*** According to TMF Associates, a partnership between a MSS operator and a satellite TV operator could provide spectrum and funding for deployment of a new nationwide 4G wireless network in the US by 2010, capturing a total of 13.5 million terrestrial and 2.5 million satellite users by 2015, and generating annual service revenues of US$ 5.3 bn. Based on these forecasts and splitting terrestrial and satellite revenues as a proportion of the respective number of users, the satellite component would generate a turnover of around € 625 million (i.e. around 15% of total revenues). Assuming that an Authority enables to speed market up-take of such services by one year, the agency might bring about benefits of about ***€ 600 mn***.

Advantages and disadvantages. EECMA establishment is clearly preferable to option B if increased administrative efficiency will effectively enable a reduction of time to market of new services with a pan-European potential. A more accurate estimate of demand for pan-European authorisation rights would require a 10-year technological forecast of possible trends in spectrum use. A recent Commission study confirms this potential demand, which would be at any rate subject to substantial forecasting risk (see annex C on assumptions). Some recently issued reports argue for a decreasing and marginal demand for such satellite based services for telecommunication purposes in the future, but a huge market seems to be ahead when the Galileo is available in GPS-tracking applications and other location devices.

Evidence for nomadic services is mixed. As far as GSM in aircrafts is concerned, these have also been proposed as a possible subject of national general authorisations[25]Hi-capacity broadband delivery in high speed train is a potential candidate for truly EU-wide licensed cross-border access, but satellite-based applications are considering a general authorisation regime.

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Tab 4.5: Costs and Benefits –New Authorisation Procedures for pan-EU Services

	Option A	Option B
Direct costs of market regulator	• Share of EECMA annual costs: € 7.9 mn • Costs of comitology procedures (presumably reduced as compared to option B) • Costs of ECC-ERO technical harmonisation (presumably reduced as compared to option B)	• Costs of comitology procedures • Costs of ECC-ERO technical harmonisation
Direct costs /benefits of regulated	• Company savings in undergoing	• Higher

[24] According to Eurostat, the share of the total number of passengers transported by air in the EU 25 carried on intra-EU flights was set at 42% in 2005.

[25]See http://www.ofcom.org.uk/research/telecoms/reports/aircraft/aircraft.pdf. Since the aircraft is considered Member State territory for spectrum management purposes wherever they are in the world and the national regulators are responsible for compliance with visiting aircraft regulations. At any rate, the problem of interference with terrestrial systems is likely to require global ITU agreement whenever the aircraft flies outside EU airspace.

firms • Regulatory compliance costs • Costs of specific regulatory proceedings	one tendering procedure • Company savings in having one contact point for management of rights	compliance costs due to fragmentation?
Indirect regulatory costs/benefits • Regulatory uncertainty/certainty • Cost of litigation/deterrent effects • Negotiation costs / increased liquidity in the market • Moral hazards (insolvency risks)/ improved quality of regulation		
Impact on competition • Distortion of incentives to competition / Enhanced incentives to competition	• Providers of services requiring centralised EU authorisation no longer at competitive disadvantage vis-à-vis competitors nationally authorised	• Services with pan-European potential might be hindered
Induced economic costs/benefits to the market • Reduced product/service quality/ Increased product/service quality • Restrictions on market functioning and availability of new products/services / Enhanced market functioning and availability of new products/services • Allocative inefficiency/efficiency (consumer welfare) • Productive inefficiency/efficiency (technology)	• If increased administrative efficiency reduces time to market of new services, their discounted added value minus (discounted) added value of substituted services • Net added value of new services, if regulatory barriers hinder sheer provision (e.g. VoIP)	
Impact on innovation	• Complementary goods for new services introduced in the market • More regulatory certainty reduces risks of doing R&D	• R&D expenditure moves elsewhere to develop products
Distributional impact	Holders of previously granted licenses in competing services on a national basis might suffer from reduced value of their assets if competition is not restrained or if they do not receive financial compensation	

5. CONCLUSIONS

The table 5.1 below summarises the results of the cost-benefit exercise. Based on the assumptions reported hereby[26] the proposed establishment of a EECMA has the potential to produce economic benefits far exceeding its budgetary costs by a factor of some 10-30 times. The degree of confidence in the achievement of these benefits varies, being higher in some cases and more subject to unpredictability and management risks in others. On the more conservative side, it is sufficient to assume a marginal reduction of the regulatory risk across Europe being adequately reflected in the cost of capital for the industry, or just one case of a one-year time saving in the enablement of a medium-size technological platform requiring the allocation of pan-European spectrum to repay several years of the Authority's operations. On top of that, additional benefits are to be expected from the other, less predictable, areas of activity of the Authority. Just to mention a rather marginal point, if estimates of the satellite industry are taken as reference, the reduction of information costs made possible by the existence of a centralised pan-European reference point for spectrum use can bring, on its own, potential benefits in the region of yearly € 0.5 – € 6 mn.

[26] Generally speaking, the assessment of the possible benefits of the EECMA establishment remains an inevitably speculative exercise because results in a number of areas ultimately depend on external factors that are uncertain. Moreover, the scope of the activities of the Authority cannot be entirely defined at the moment: as it is the Authority itself that will have to define the markets it will cover. This makes concrete identification and quantification of related benefits even more uncertain. This was further compounded by the fact that the Authority is expected to produce results in areas - regulatory risk and transaction costs, where economic measurement issues are also controversial. Nevertheless, the reader is always put in a position to judge how different assumptions would impact on results and draw his or her different conclusions. The results presented here are for their intended purpose: providing policymakers with a reasonable estimate of the orders of magnitude of the issues at stake and highlight, whenever possible, side considerations not reflected in the figures.

Tab. 5.1 Summary table of costs and benefits related to the establishment of the EECMA

EECMA contribution in the various policy areas	Direct Costs of EECMA	Other Regulatory Costs	Possible benefits (orders of magnitude)	Key Assumptions
Oversight of NRA remedies	€ 0.7 mn	€ 1- 2 mn	€ 50 – 120 mn	• EECMA reduces by 10% regulatory risk across EU • In addition, there are some yearly 40 NRA remedies with hidden unexploited deadweight effects - potential benefit € 150 - 600 mn
Replacement of NRA not carrying market analysis in time	€ 2.7 mn	€ 10.8 mn	€ 20 - 80 mn	• 1-2 delays in carrying out market analysis are experienced on a yearly basis
Authorisation and regulation of services with pan-European potential	€ 7.9 mn	In theory none	€ 180 - 600 mn	• Every three years the launch of one pan-European market is shortened by one year bringing one-off benefits
Other operational and management activities	€ 16mn			
TOTAL COSTS AND	**€ 27 mn**	**€ 12 mn**	**€ 250- 800 mn**	
Potential additional costs /benefits				
Procedures for analysis of trans-national markets		€ 24 mn	€ 300 - 600 mn	• If 1-2 transnational markets were identified and regulated in the period

The largest part of the benefits above is not replicable by the present European Regulators Group loose co-ordination structure. A simple peer-review without any veto power is not an equally credible mechanism to reduce the risk for regulatory error across Europe or to decrease perceived market uncertainty related to regulatory discretion factors. The European Regulators group has been very limitedly involved in spectrum management issues and lacks any operational experience in this field, also because some of its national member organisations do not have specific competencies on the subject. In some other areas of the proposed Authority's mandate, ERG involvement is simply not possible (replacement of missing national analyses) or severely hindered by lack of sufficient incentives or legal mandate at the national level (trans-national markets).

Of course, the actual materialisation of the benefits above depends on 1) the EECMA being able to represent regulatory best practice and being recognised by the market as a highly

competent body committed and consistent in the achievement of its mandate (and this is therefore subject to a certain degree of management risk) and 2) the actual requests for pan-European spectrum rights of use, which ultimately depends on technological and market trends clearly outside of the Authority's control (and this is therefore subject to a certain degree of forecasting risks not dissimilar from that of a company operating in the underlying industry). Available present evidence of the future demand for the Authority's services is reasonably strong, but the underlying unpredictability is also strong. The intrinsic uncertainty about the size of the future demand for the EECMA's services might suggest the need to fine-tune its operational viability and economic sustainability after a certain period of time.

Conversely, there are other important qualitative considerations in support of the Authority that are not adequately quantified or monetised in a cost-benefit analysis. There are preliminary indications that the telecom market might naturally evolve towards technological and management models that will make the concepts used for present definition of markets for regulatory purposes hardly relevant and will require on the contrary a much more homogenous and co-ordinated regulatory approach EU-wide. In the long run, it is also reasonable to assume that the enablement of competition between different new technological platforms will represent one of most important economic benefits of the Authority. In fact the Authority could substantially contribute to reduce the regulatory risks of R&D projects in the e-Communication field that require the achievement of EU economies of scale for entering the market and the presently face considerable uncertainties in the prospective availability of spectrum. Any reduction of such risk could therefore increase the propensity to invest in R&D and contribute to bridge the gap between actual and socially desirable level of investments in a market-efficient way. To this aim, it is fairly irrelevant that two Authority-related mechanisms – pan-European secondary trading and centralised authorisation of spectrum use - will probably find themselves competing for the same market. What really matters is that neither of these mechanisms will be left to interfere with the parallel trend towards applications requiring general authorisation requirements for reasons other than technical interference. In this respect, any indirect support the Authority can provide to spur general authorisations harmonisation will probably be an additional important benefit unaccounted for in our analysis.

While most of the benefits related to the establishment of the Authority can be achieved once the new EU regulatory environment for e-communications has been approved and transposed by the Member States, the rationale for postponing action in the field of harmonisation of rights of use till the date the Authority has been established and become operational is not immediately apparent in economic terms, as this would simply amount to further postponing related possible benefits. So this must be justified by political feasibility considerations or because of other technical and managerial difficulties in the present institutional context. A throughout assessment of the cost-effectiveness of putting one-off tasks inside a permanent Authority instead of creating ad-hoc temporary task-forces would require a review of the overall European administrative machinery that falls outside the scope of this exercise. Much in the some vein, this cost-benefit exercise is unable to comment on how the establishment of the Authority could interact with the parallel reform of the European Conference of Postal and Telecommunications Administrations and its Electronic Communications Committee branch.

It is worth reminding that the methodology used in this exercise is unable to capture equity considerations and the analysis has restrained from entering the controversial debate on the relation between ex-ante regulation and long term impact on investment, which is considered under another strand of the same impact assessment. In other words, the benefits of ex-ante

regulation have been considered as a given, in line with the broader findings of the impact assessment for the revision of the overall regulatory framework for e-Communications. This represents a limitation in that some of the options included in the first strand of the impact assessment might eventually reduce the demand for the Authority's services and, therefore, impact on its prospective benefits. Also the Authority involvement in universal service considerations covered under another strand of the impact assessment has not been evaluated, but this represents a reasonably marginal bias in the analysis.

This cost-benefit analysis certainly discounts major methodological difficulties, because the scope of the Authority activities cannot be precisely defined at the moment (see trans-national markets for instance) or are intrinsically uncertain and therefore not only related benefits but also costs are uncertain. To cope with this circular argument a number of educated guesses on the likely scope of the Authority activities based on available knowledge had to be made in this report and this inevitably introduced an element of subjectivity in the analysis. This was further compounded by the fact that the Authority is expected to produce results in areas - regulatory risk and transaction costs, where economic measurement issues are also controversial. Nevertheless, the reader is always put in a position to judge how different assumptions would impact on results and draw his or her different conclusions. The results presented here are for their intended purpose: providing policymakers with a reasonable estimate of the orders of magnitude of the issues at stake and highlight, whenever possible, side considerations not reflected in the figures.

To sum up, even by making rather pessimistic and prudential scenarios of potential benefits and related costs, this cost-benefit analysis concludes that the EECMA establishment in the field of market harmonisation and spectrum management, if everything is considered, has the potential for substantial economic benefits by far exceeding related costs, and, therefore, favourably assesses their implementation as described in the draft impact assessment document under consideration. The proposal is also fully justifiable from an EU budgetary perspective. This does not rule out the possibility that operational savings can be achieved if some of the assumptions on the Authority scope of activities can be better fine-tuned in getting closer to the commencement of its activities.

ANNEX A – THE EXISTING INSTITUTIONAL FRAMEWORK

Ex-Ante Regulation of the Telecom Market. In order to reconcile the aim of creating a consistent regulatory approach throughout the single market with better local knowledge of market conditions and technological legacies, ex-ante regulation of telecommunication markets is currently delegated to National Regulatory Authorities (NRAs) operating based on guidelines agreed by the Commission. A process of notification and consultation with the Commission and other NRAs is established under the Article 7 of the Framework Directive. To ensure consistency of NRAs' measures, the Commission may request the notifying NRA to withdraw the draft measure if it considers the “assessment of the market” boundaries or of "significant market power" (SMP) are not in line with competition law principles (known as the "Commission veto power”). For the time being, this veto power does not extend to the proposed remedies.

Advice and assistance to the Commission in consolidating the internal market for electronic communications networks and services is currently provided by an intergovernmental body: the European Regulators Group for Electronic Communications and Services (ERG) established by Commission Decision 2002/267. The Group, at its own initiative or at the Commission’s request, is to advice and assist the Commission on any matter related to electronic communications networks and services. The ERG is composed of the heads of the various NRAs and their representatives. It works based on an annual working programme agreed with Commission services and operates through quarterly meetings held in the various Member States. Since 2005, it has had a permanent secretariat within DG INFSO offices, but receives no other EU financial assistance.

The ERG structure and activities largely coincide with those of the parallel Independent Regulators Group (IRG) that was spontaneously established in 1997 together with the approval of the first EU Regulatory Framework on communications, with the aim of allowing a group of NRAs to share their experiences and points of view on matters of common interest. The IRG operates through several working groups and has created a dedicated integrated information system – IRGIS - to electronically share information on Members’ regulatory practices, also as a service for industry operators. In practice, the IRGIS portal provides a link to the various NRA’s sites. Creation of ERG in 2002 did not bring about discontinuation of IRG, as the membership basis of IRG is larger and includes also non-EU countries.

The ERG decision preambles explicitly state that the ERG is also to coordinate activities in the field of radio spectrum policy and to liaise with the EU radio spectrum policy group.[27] However, it is worth noting that, until 2007, spectrum management issues, although within the remit of many (but not all) ERG members, have largely remained outside ERG’s ordinary activities. Not all ERG Members have competencies in this field, which is increasingly becoming a matter of concern, as technical and business convergence between services occur and next generation networks come to the market.[28]

[28] On the subject see OECD, The Implications of Convergence for Regulation of Electronic Communications. DSTI/ICCP/TISP(2003)5/FINAL, 12-Jul-2004: http://www.oecd.org/dataoecd/56/24/32983964.pdf

Spectrum Management. In recent years, substantial steps to develop a more coherent radio spectrum policy at the EU level have been made. In 2002 the institutional and regulatory framework for spectrum management was radically changed: the Radio Spectrum Decision[29] (RSD) marked a fundamental milestone as it first recognised that the efficient and effective use of spectrum had become a crucial policy issue in the area of electronic communications services and networks and, secondly, because it innovated the environment of regulatory bodies accordingly.

The RSD established the Radio Spectrum Committee (RSC) — which is composed of representatives of the Member States and chaired by a Commission representative — in order to assist the Commission in the development and adoption of technical harmonisation measures. The RSC mandate, together with the formulation, preparation and implementation of Community radio spectrum policy and harmonised conditions for the availability and efficient use or radio spectrum, includes the provision of information related to the use of radio spectrum. The RSC has authority to adopt decisions which are binding on Member States and, generally, technical implementing measures are adopted as a result of mandates given to the European Conference of Postal and Telecommunications Administrations (CEPT). However, when it is necessary to adopt harmonised measures that do not fall within the remit of the CEPT, the Commission can adopt harmonisation measures on its own with the assistance of the RSC.[30]

Being established since 1959, CEPT far pre-exists the RSC. Today, it is an organisation federating national administrations of 48 European countries. Yet a *de facto* "EU footprint" of CEPT is not in doubt, as countries of the EU, EEA and EU candidate countries account for around 95% of CEPT funding. CEPT first established two committees on e- communications issues, namely the European Radiocommunications Committee (ERC) and the European Committee for Regulatory Telecommunications Affairs (ECTRA). These committees handled harmonisation activities within their respective fields of responsibility and adopted recommendations and decisions. Later on, as a response to the convergence in the telecommunications sector and the requirements of the information society, the two committees were merged in the Electronic Communications Committee (ECC).[31] The ECC is today both a technical advisory instance to the Commission and the co-ordinator of technical negotiation positions in World Radio-communication Conferences (WRC). Work is normally carried out through working groups and project teams. In particular, there are several working groups (WG), including the WG on frequency management, which covers all frequency allocation policy issues except for WRC preparations, and the WG on spectrum engineering, which deals mainly with issues of compatibility to support allocation changes.

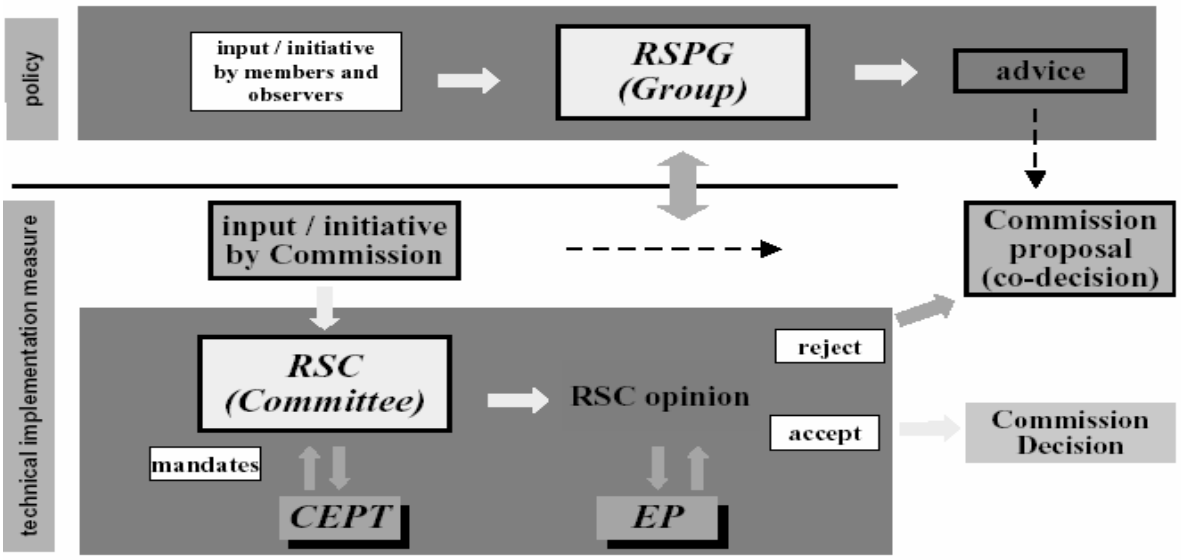
[29] See Decision No. 676/2002/EC of the European Parliament and of the Council on a regulatory framework for radio spectrum policy in the European Community (Radio Spectrum Decision), Brussels, 7 March 2002.

[30] Where it is necessary to adopt harmonisation measures for the implementation of Community policies which go beyond technical implementing measures, the Commission may submit to the European Parliament and the to Council a proposal on the basis of the Treaty.

[31] As part of the general reform being undertaken within the CEPT, specifically the changes to the former ERC and ECTRA, whose functions have been merged to form the Electronic Communications Committee, and, in order to increase efficiency, it was decided to replace the European Radio Communications Office (ERO) and the European Telecommunications Office (ETO) with a single European Communications Office (ECO).

In July 2002 the institutional framework was enriched by the establishment of the Radio Spectrum Policy Group (RSPG), with a less technical-oriented harmonisation mandate.[32] The RSPG, composed of one high-level governmental expert from each Member State as well as of a high-level representative from the Commission, assists and advises the Commission on radio spectrum policy issues, coordination of policy approaches and, where appropriate, on harmonised conditions with regard to the availability and efficient use of radio spectrum necessary for the establishment and functioning of the internal market. The relationship and the differences in the missions between, on the one hand, the RSPG (which concentrates on policy issues) and, on the other hand, the RSC (which deals with technical implementation measures) are usually clear, although, occasionally, doubts in the appropriate allocation of a particular task have emerged. Co-ordination of activities between the EU spectrum committees and the CEPT has been less easy to achieve. Indeed, the CEPT can deal with detailed implementation arrangements. Hence, the EU and the CEPT have agreed to minimise duplication of efforts and, therefore, they have established a system of formal communications and cross-membership. However, further work is reportedly required to ensure consistency between CEPT and EC decisions.

Figure 1.1: Current spectrum decision mechanism



Source: F. Greco, EC, presentation at the TILEC workshop on frequency spectrum management, 7 May 2003

Harmonised availability of information regarding spectrum use within the Community. Harmonised availability of information regarding rights of spectrum use is of paramount importance for a transparent and effective market-based spectrum policy. Indeed, information relating to radio spectrum is a key requirement for many players in the eCommunications market, such as network operators and equipment manufacturers. In particular, trading of rights

[32] See the Commission Decision No. 622/2002/EC of 26 July 2002 establishing a Radio Spectrum Policy Group.

to use frequency requires clear, reliable and up-to-date information on the actual use of spectrum.

To meet these objectives, the Commission has recently published a Decision on harmonised availability of information regarding rights of use of spectrum within the Community.[33] In fact, insufficient satisfaction with the current systems of information on the use of spectrum, the "*increasing harmonisation of spectrum use in Europe and the growth in multi-national provision of electronic communication services has created interest in a European spectrum information portal, to enable quick and easy access to data from each EU country*".[34]

Such information is usually provided by the national authorities responsible for spectrum management. Nevertheless, the study undertaken by AEGIS-Bird and Bird-IDATE on behalf of the Commission found that, despite previous efforts, information on the use of spectrum is still made publicly available by Member States with a varying amount of detail, in different formats and with notable differences in ease of access and updating intervals.

At European level, the ECC launched the European Frequency Information System (EFIS) in 2002. This system is a portal for spectrum information and it currently allows search and comparison of frequency allocations, frequency applications and radio interfaces. In a report for the RSC of September 2006, the ECC stated that "at present, 25 countries have provided frequency allocations and applications information for EFIS, and 4 administrations have uploaded detailed and comparable radio interface information".[35]

As there was substantial agreement by Member States and the industry for using EFIS in order to improve the international information system, the Commission issued a mandate to the CEPT to demonstrate the feasibility to use EFIS as a common information portal, in accordance with the objectives contained in the mandate.[36] Previously, "a cost benefit analysis indicated that the projected annual cost to ERO to develop an enhanced spectrum information portal […] and based on EFIS would be in the range € 50,000 – 100,000. The corresponding cost savings for the industry were evaluated in the region between € 492,000 and € 6.18 million." In addition,

[33] See Commission Decision No. 2007/344/EC on Harmonised availability of information regarding spectrum use within the Community, Brussels, 16 May 2007. The Framework makes it a legislative priority for the collection, publication and dissemination of radio spectrum information.

[34] See AEGIS-Bird and Bird-IDATE, Study on information on the allocation, availability and use of radio spectrum in the Community. Final report, Montpellier, IDATE, February 2005, p. 8. The purpose of this study was to identify the information provided on management and use of the radio spectrum by EU national authorities and through EU-wide facilities such as EFIS, and to assess the extent to which this information meets the needs of spectrum users and other interested parties.

[35] See ECC, EFIS (ERO Frequency Information System). Final report in response to mandate to CEPT on the use of EFIS for publication and access to spectrum information within the Community, Copenhagen, ERO, September 2006. The report, *inter alia*, firstly, explains the current set up, facilities and contents of EFIS; secondly, it gives detailed information on the suitability of EFIS as the common European portal for frequency information; finally, it provides information on the plans for incorporating the necessary new features in EFIS to meet future requirements for a common European portal.

[36] See European Commission, Mandate to CEPT on the use of EFIS for publication and access to spectrum information within the Community, Brussels, 8 Dec. 2005 [DG INFSO/B4].

substantial benefits were anticipated in terms of increased innovation and competition in the wireless sector from improved information provision.[37]

The RSC accepted the final report of the CEPT on 5 October 2006[38] and, on 16 May 2007, the Commission published the Decision[39] aimed to develop an enhanced spectrum information portal based on EFIS. This Decision, which will enter into force on 1 January 2008, requires Member States to provide information regarding the use of radio spectrum on their territory for each frequency band individually and for use of radio spectrum in general. Also, Member States are asked to update the information (at least once a year until 1 January 2010 and twice per year thereafter).

The following information shall be provided for each frequency band:

- service allocations as defined by the Radio Regulations of the ITU;
- applications using the choice of terms available in EFIS;
- radio interface specifications;
- individual rights of use.

The provision of information on individual rights of use shall apply from 1 January 2010. In addition, Annex 2 to the Decision states that: "Information on Rights of Use may be limited to frequency bands used for the provision of electronic communications services, which are tradable in accordance with Article 9.3 of Directive 2002/21/EC or which are granted through competitive or comparative selection procedures pursuant to Directive 2002/20/EC. For relevant frequency bands Member States shall provide in accordance with the requirements of Directive 95/46/EC and Directive 2002/58/EC and Community and national rules on business confidentiality, the following information:

1. the identity of the radio frequency right holder;
2. the expiry date of the right or, in the case where there is none, the expected duration;
3. the geographic validity of the right by at least providing the information whether the right is local (i.e. one station), regional or nation-wide;
4. an indication of whether or not the right is tradable".

[37] See AEGIS-Bird and Bird-IDATE, Study on information on the allocation, availability and use of radio sepctrum in the Community. Final report, Montpellier, IDATE, February 2005, p. 10.
[38] See RSC, 17th Radio Spectrum Committee meeting. Chairman's summary report, Brussels, 17 Oct. 2006.
[39] See Commission Decision No. 2007/344/EC on Harmonised availability of information regarding spectrum use within the Community, Brussels, 16 May 2007.

ANNEX B - METHODOLOGICAL AND MEASUREMENT ISSUES

1. Methodological Approach to Cost-Benefit Analysis

Attempts at quantification and monetisation will: a) whenever possible, be specific and concrete; b) distinguish between one-off and continuing costs and benefits; c) aim to provide an indicative idea of the stakes involved (number of instances, volume of assets affected); and d) aim to identify not that much precise figures of costs and benefits, but rather indicative upper or lower bounds to allow a rough appreciation of the orders of magnitude at stake. For the purpose of this analysis, social costs and benefits considerations will not be reviewed, because these mainly attain universal service issues and effects on disadvantaged customers that lie outside the scope of this exercise.

Moreover, for simplification purposes, we will consider costs and benefits from a pure market perspective and refrain from any attempt at identifying sources of costs and benefits that are not captured by the price system. In other words, our figures are expressed in GDP-comparable terms. This is not bound to represent a major limitation, as social aspects are not included, but for incentives to innovation, as better explained below.

Finally, the various options can also have distributional effects that will have to be reviewed separately, i.e. a specific negative or positive impact on some categories of the existing stakeholders. In this specific case, these could include: a) certain categories of spectrum users; b) incumbents or competitors; and c) Member States and their NRAs.

2. The Measurement of Costs and Benefits

Categories of Costs and Benefits. Three main categories of costs and benefits: 1) direct, 2) indirect, and 3) induced (see table 3.1 below) have been identified for this exercise. The reason for this more complex than usual distinction is that the EECMA establishment is not a regulatory reform in the usual meaning of the word, but attains to the regulatory processes, thereby indirectly influencing the impact of regulation, which remains the ultimate the source of costs and benefits. So it acts through a regulation-mediated impact mechanism. Therefore, while direct costs are, fairly intuitively - those incurred on a cash basis - the EECMA establishment is expected to produce indirect costs and benefits, which in turn will have an impact on the way underlying regulation impacts on firms and consumers at large, which are - in our definition - induced impacts.

Direct regulatory costs include:

1) the costs of running the Authority. These have been allocated to the various policy areas based on the assumptions reported in Annex C.

Indirect regulatory costs and benefits represent a very important logical category in our analysis and include:

2) the compliance costs that regulated companies or other affected stakeholders must bear to comply with general regulatory requirements because of specifically EECMA-

originated action. This is intended to capture the well known fact that the more resources are spent on regulators, the more the regulatory compliance costs companies have to bear;

3) the costs of compliance with the new specific regulatory proceedings introduced in the EECMA regulation (typically the Centralised Authorisation Procedure);

4) the increased and decreased regulatory risks, which are a very important category in our analysis, as extensively described in Annex D below. As will be seen, regulatory risks may translate into efficiency benefits of both dynamic and static type, i.e. with or without additional investment;

5) deterrent effects/moral hazards represent incentives to certain behaviours. They typically can be predicted in their direction, but quantified with difficulty as this would imply estimating the probability of a certain behaviour in given condition, a task far exceeding the purpose of our exercise. So they are usually dealt with qualitatively, except when they have been assumed as a given. Litigation costs also have a probability component;

6) transaction costs are those incurred in making an economic exchange. They can be explicit and, then, their measurement is banal. In our case, they are more subtle because they represent the hidden costs (often of an informational nature) hindering a company from making a trade. Unless one is an insider, they can be hardly estimated in advance, but are usually assessed ex-post by comparing ex-ante expectations with actual results. Part of the difference is represented by (hidden) transaction costs;

7) increased liquidity/"thickness" of a market is a subcategory of transaction costs that has a cumulative dimension. Liquid markets are more efficient than illiquid markets in eliciting an efficient price. So the higher the number of subjects taking part to transactions, the more liquid a market is, the more efficient the pricing mechanism results. Conversely, speculative/hoarding mechanisms are artificially-induced scarcity of goods in order to raise prices and make pricing inefficient and extract positional rents, often by exploiting privileged access to information.

Table 3.1 - Main Typologies of EECMA Costs and Benefits for CBA Analysis Purposes

Costs	**Benefits**
Direct costs of market regulator	
Direct costs of regulated firms • Regulatory compliance costs	

• Costs of specific regulatory proceedings	
Indirect Regulatory Costs • Increased Regulatory Risk • Costs of litigation • Moral hazards[40] • Speculative / hoarding behaviour	**Indirect Regulatory Benefits** • Decreased Regulatory Risk • Deterrent effects • Reduced transaction costs • Increased liquidity in the market (market thickness)
Induced Economic Costs to the Market • Distortion of incentives to competition • Reduced product/service quality • Restrictions on market functioning and availability of new products/services • Allocative inefficiency (consumer welfare) • Productive inefficiency (technology)	**Induced Economic Benefits to the Market** • Enhanced incentives to competition • Increased product/service quality • Enhanced market functioning and availability of new products/services • Allocative efficiency (consumer welfare) • Productive efficiency (technology)
Incentives to Innovation	**Incentives to Innovation**
Social costs	**Social Benefits**

Source: the scheme has been adapted from Oxera, *Costs and Benefits of Market Regulators*, Report for the Dutch Ministry of Economic Affairs, October 2004

[40] A very special case of moral hazard in ex-ante regulated utilities would be their incentive to increase their level of debt and overall risk of insolvency. See Taggart R.A. (1985), "Effects of regulation on utility financing: theory and evidence", *Journal of Industrial Economics*, 33(3), 257-276 and Spiegel Y. e Spulber D. (1994), "The capital structure of a regulated firm", *RAND Journal of Economics*, 25(3), 424-440. This risk would be even higher, the higher the share of fixed costs on the total, see Spiegel Y. (1996), "The choice of technology and capital structure under rate regulation" *International Journal of Industrial Organization*, 15, 191-216 (1996).

Induced costs and benefits relate to the more traditional categories of welfare aspects reviewed in cost benefit analyses, and namely:

- consumer or producer welfare in static terms, so called allocative efficiency; and
- consumer or producer welfare in dynamic terms, so called technological efficiency or competition effect.

Both dimensions can be variously articulated into price and quality terms (lower prices, increased quality of services, imposed uniformity, etc.) and related to the appearance of new competitors, as typically happens with so-called deadweight effects in sectors experiencing high elasticity of demand, i.e. for which level of consumption significantly increases for small reductions in the level of prices (like the e-communication industry is generally assumed to be). The concrete achievement of these welfare effects can depend on the removal of different types of restrictions in competition or in market functioning, including regulatory asymmetries themselves. Finally, impact on innovation is typically defined as companies' propensity to invest in R&D and introduce innovative products.

Consumer Welfare Assessment Approach. In ordinary conditions the assessment of consumer welfare would require complex models for the estimation of price elasticity and the calculation of consumer surplus and deadweight effects on a market by market and country by country basis. Due to time and data constraints and the need to consider all ex-ante regulated EU markets across all EU Countries, we had recourse to an oversimplified and stylised approach whose underlying rationale is described in Annex C. We have distinguished between regulatory risk: i.e. the possibility of regulatory error and regulatory quality: defined as the different degree in which regulatory measures manage to exploit deadweight effects (i.e. in opening markets) and assumed that both effects can be reasonably captured by the beta coefficient in financial markets. This equals to assume that one of the possible additional impacts of the EECMA on welfare goes through a revision of NRA remedies with preference given to more complex (and usually costly for companies in compliance costs terms) ways of spurring competition and remove barriers to entry as respect purely static allocation measures (price caps and the like). So our approach intrinsically focuses on the deadweight effect only and takes for granted that static efficiency is already included in NRA reviewed propositions. A very quick and summary review of the nature of past Commission comments on remedies confirmed us in this understanding. Then, we have assumed that resulting investment because of increased competition turns into consumer welfare for any rate of return on investment level higher than the cost of capital.[41] This is admittedly an overestimation, but since also the

[41] This is a kind of reversed Harberger's type approach that assumed that a company with significant market power can behave as a monopolist and when hit on its rents its behaviour in financial markets, estimated as the loss in the amount of expected profits that diverge significantly from the average return on capital (so called excess profits) could be taken as a very rough proxy of welfare gain. This line of reasoning despite its numberless weaknesses shares the same Harberger's view that "*the best we can hope for from these exercises is to get a feeling of the general orders of magnitude that are involved"* See Harberger, A.C. *Monopoly and Resource Allocation*, American Economic Review, 54, 1954.

underlying beta effect is an overestimation we are safe about being at the upper bound of estimate.[42]

There is only partial consensus in the economic literature on how the overall effect of promoting ex-ante competition can translate into broader industry competitiveness in terms of fostering investment, spurring innovation and, therefore, indirectly increasing consumer welfare from the economic point of view. Since the argument is the subject matter of the first strand of the Commission impact assessment and is somewhat controversial, we have restrained from attempting any estimates of long-term dynamic effect of ex-ante competition, and, much in the same way, of the induced relation between ex-ante regulation and incentive to innovation.

Finally, EECMA -induced allocative and productive efficiency in the e-communications industry could have macro-economic effects on the other sectors of the economy, but this impact would require some modelling of cross-industry effects to be appreciated. It is reasonable to assume that any increase in the e-communications industry efficiency is going to enable possible horizontal productivity effects, but the size of this intervention is unlikely to produce any notable similar effect.

Underestimation of Innovation Effects. The approach followed makes the assessment of the benefits brought about by improved variety of product/services offered in the marketplace particularly underestimated. Actually, the valuation of new goods and services introduced in the market is one particularly controversial area in econometrics[43], especially in the areas affected by fast technological progress, like eCommunications.[44] For simplification purposes, cost-benefit analyses usually deal with new products as if they were a positive value *per se*, without attempting to quantify them, or use their net consumer surplus just as a lower bound proxy. The approach is admittedly oversimplified, but, since it was used in cases reported just for exemplificative purposes - where the margin of error and the intrinsic randomness in estimation is already huge -, we believe this oversimplification is not particularly relevant. Box B.1 below reports our approach to the discounting of innovation effects over time.

There is one more major element of benefit that has not been fully reflected in our quantification effort, namely the fact that the Authority by reducing the regulatory risk of investors (usually estimated in some 5% of total R&D risk) might significantly contribute to increased R&D expenditure.

[42] This is not the only case of structural overestimation. For instance a source we have extensively used in this study assumes that incumbent holders of spectrum are somehow blind and unable to anticipate the self-damage inflicting behaviour on their main line of business that secondary trading would have on them. So they would rationally trade “efficiency” gains to get “competition” losses. Nevertheless, we remain persuaded that the magnitude of orders remains fundamentally correct and have been happy to use that source for comparable purposes.

[43] See on the subject: http://www.stanford.edu/~tbres/research/hausman%20recomment.pdf

[44] There has been a long debate on whether and by how much radically change-inducing new goods and services introduced in the economy are underestimated for GDP purposes, if they are accounted for based on their net value.

Box B.1 - Dealing with Time and Delays

Indirect costs include the costs of delays in the issuance of regulation or enabling a regulatory environment and these costs have received recently increased attention in the analysis of regulatory reforms because of their growing importance. To compare costs and benefits over time, their present discounted value is generally used. Since innovation and the introduction of new products into the economy are often deemed a value *per se*, one can come to the intuitive (and nowadays prevailing) view that faster regulation easing faster introduction of products and services in the marketplace is always a good thing. The counterintuitive argument runs that the product societal environment found at the moment it was regulated can not be unduly played backwards in time as if it were a *coeteris paribus* condition, and that, on the contrary, in many an occasion it is regulatory delay that allows a product/service to reach that degree of maturity and societal acceptance allowing its widespread success in the marketplace,[45] so that each case should be assessed on an *ad hoc* basis. For the purpose of this analysis, it will be assumed that market introduction issues can be assessed regardless of societal acceptance issues, and the following simplified discount approach will be followed.

The quantification of benefits deriving from a one year reduction of time to market of a new service has been calculated as the sum of the present value of the differences between the market value generated in t and in t-1. However, based on the assumptions that: 1) the life cycle of new products/services will be fairly short (market saturation being achieved after 5 years); 2) the development of new products/services will typically follow a logistic growth curve (resulting into higher incremental benefits in early years, when the discounting effect is lower); and 3) the adoption of discount rate of 4%, as recommended by the Commission's Impact Assessment Guidelines,[46], the present value of the estimated benefit will not be much lower compared to the market value of the service at the saturation level.

For illustrative purposes, the calculations made in the case of the market for broadband on train, for which 5-year revenues projections were available, are summarized in table B.2 below. As anticipated, the total present value of the benefit, € 9.1 billion, is only slightly lower to the turnover generated when the service has become diffused - the last year taken into consideration (i.e. € 9.6 billion).

Table B.2: Estimation of Benefit associated Broadband on Train (in million €)

Time Period	**0**	**1**	**2**	**3**	**4**	**5**
Turnover without Agency		4.238	5.580	7.151	8.543	9.612
Turnover with Agency	4.238	5.580	7.151	8.543	9.612	9.612
Incremental Benefit	4.238	1.342	1.571	1.391	1.069	
Present Value of Benefit	***4.238***	***1.290***	***1.453***	***1.237***	***914***	

3. Sources of Evidence and Data Reliability

Sources of Evidence. Assessing the costs and benefits of the options critically depends on obtaining access to relevant sources of evidence. This can be achieved through a combination

[45] An example of this argument applied to the telephone cellular industry in the US can be found at http://www.fcc.gov/Bureaus/OGC/Reports/cellr.txt
[46] Annex 12 of the Commission IA Guidelines SEC(2005) 791.

of inferences from previous experiences and existing knowledge-basis. Given the subject matter, the analysis had to be based on a number of inferences and analogies from previous experiences (such as for instance indications on management risks drawn from the lessons learnt with the establishment of other EU agencies, see Annex E), or supported by quickly available data that non-necessarily are the best available estimates. To compensate for this, extrapolations and conjectures have been frequently drawn from past Commission studies.

Due to time and resource constraints, this exercise has been based on secondary sources only, without any attempt at drawing *ad hoc* models or make special inquiries. Available secondary sources used include, together with Commission studies: 1) the results of the consultation process and the various consultation documents and studies produced by the industry to comment on regulatory reform; and 2) business and academic papers with particular reference to market-sensitive information reported in official company documents or published in peer-reviewed academic journals. All the business and academic sources used are reported in footnotes and collected in the G.

Key Proxies. To compensate for the lack of large scale studies on the regulatory compliance costs of firms recourse was made to a proxy drawn from a 2003 example published in a Dutch-Government commissioned study according to which total regulatory costs of companies in the telecom sector are on average 0.3% of turnover. This makes regulatory compliance costs in the industry in line with findings in the financial sector, according to which there would be a rough 4:1 ratio between indirect compliance costs and direct regulatory costs. Since the survey also showed some economies of scale in compliance costs, it is reasonable to assume that marginal costs can be lower till reaching 0.1% of turnover, or a 2:1 ratio.[47] The Commission has made a more specific survey of the cost of compliance for market analyses, and the unit cost was found to vary from € 5,000 to € 50,000. Details are reported in the annex to the impact assessment. Information gathering costs in the field of spectrum management were taken from an EU-commissioned study.[48]

The limited available experience with secondary trading of spectrum rights worldwide makes recourse to scenario estimates inevitable. To ensure consistency with other Commission sources used in the impact assessment, extensive use of an EU-commissioned study on secondary spectrum trading has been made. No proxy value has been found for transaction costs, as in other markets the prices of licenses as assets can be highly volatile and differently valuated according to market conditions.[49] It is reasonable to assume that the sheer way these rights are defined, modalities in which secondary trading is to take place, and the relation between the amount of spectrum made available for trading and demand will heavily affect transaction costs, irrespective of any specific EECMA role.

[47] Source: adapted from Oxera, *Costs and Benefits of Market Regulators*, Vol. II Report for the Dutch Ministry of Economic Affairs, October 2004.
[48] See AEGIS-Bird and Bird-IDATE, Study on information on the allocation, availability and use of radio spectrum in the Community. Final report, Montpellier, IDATE, February 2005, p. 8.
[49] In 2005, in its financial prospectus to potential shareholders, one of the first US companies active in spectrum leasing, how, in their first year of operations, the value of their spectrum licence assets had to be halved because of the wide price response in a thin market to erratic FCC auctions and private purchases of neighbouring frequencies. See for reference, http://www.secinfo.com/d14D5a.z381q.htm

As reported in annex D below, regulatory risks have been measured with reference to a company's precise self-estimate in β [50] equivalent-terms in an EU market. As the company is a multinational traded in several stock exchanges, this was taken as a very rough and random proxy of market perceived regulatory risk for that company across Europe. In reality, there are reasons to believe that regulatory risk considerably varies countrywide, thereby indirectly reflecting national regulatory quality.[51] The determinants of regulatory risks have considered, first of all, time and the sheer existence of regulatory discretion and errors in appreciation. These can be mitigated by commitment, and consistency. This is consistent with the key assumption that regulatory risk can never be nil once a company has been made the subject of regulation.

Given the impossibility of analysing 18 markets in 25 countries, the "average" telecommunication company has been defined as a company with € 20 bn capitalisation as a rough proxy of own assets, of which roughly half in regulated markets[52]. Since the distribution of telecom companies is skewed by a few large competitors, the median company has been assumed to have € 10 mn capitalisation. Other assumptions adopted include:

- the average risk free return rate is set at 4% (which is also consistent with Commission discount rate for cost-benefit analysis);
- the average equity risk premium is set at 5%;
- the company average β is estimated at 1.00 (a value broadly in line with the standards of rate of return regulations and consistent with future regulatory emphasis on wholesale markets whose β is lower);
- gearing is considered as a given so no debt effects have been incorporated; and
- the investment/turnover ratio is 15%.

Table B.3 below reports the possible costs and benefits of the various options (classified in terms of the nature of the expected benefits), the main qualitative indicators that can be used to assess the importance of the related problems and their possible means of measurement and

[50] The beta coefficient risk derives from the capital asset pricing model and is defined as the expected return on equity as a function of risk-free return rate $K_E = R_F + \beta_E (R_M - R_F)$ where: K_E = firm's cost of equity, R_F = risk-free rate (typically treasury bonds) and R_M = average return on the market portfolio and β_E can be seen as the a measure of the asset's sensitivity of the asset's returns to market returns, i.e. its non-diversifiable risk On an individual asset level, measuring beta can give clues to volatility and liquidity in the marketplace.

[51] Not to say company-wide, which could be seen as a reverse indicator of regulatory capture.

[52] Fifty per cent can be regarded as a conservative assumption of the average share of regulated revenues for a company with significant market power in Europe. The related share of regulated assets is probably higher than 50%, because assets are used both to deliver wholesale and retail services. For instance in the fixed sector, the market share of incumbents in retail markets (voice + BB) is around 50-60%, but the proportion of the incumbents in the total fixed network assets is much higher (90%, perhaps 80% when including cable-operators' assets). In the mobile sector, market 15 is unregulated to a large extent in Europe, but markets 16 and 17 are fully regulated (when considering the Reg. on roaming). So we should obtain around 70% of revenues. And radio broadcasting infrastructure, which represent perhaps 5% or less of the total telecom assets, is partially regulated. To sum up, it can be assumed that some 75% of telcos assets which are regulated and the corresponding figures for regulated revenues must be around 50-60%.

related difficulties. One-off benefits can be measured on a case-by-case basis, by extrapolating what the cumulative effects in the next few years can be based on past similar experiences.

Table B.3 – Summary of Problems with Measurement of Relevant Variables and Data Sources

	Policy areas	Nature of benefits	Main sources of qualitative evidence for judgment	Possible quantification means	Measurement or data reliability problems and need for proxy
MARKET HARMONISATION	Oversight of NRA remedies	Continuous benefits	No previous experience. Letters of serious concern as proxies Incentives as reported in economic theory	Fairly arbitrary because effects are on a case-by-case basis Extrapolation from fictitious case studies	Extrapolating benefits from real life cases would require lengthy and detailed case-by-case market analysis
	Procedures for analysis of trans-national markets	Continuous benefits	Just one example in the past Two - three other possible candidate markets for the time being	Extrapolation from case study Scenario analysis	Estimating number of future cases Would require simulation of effects on 25 markets
	Powers for the Commission to act when an NRA does not carry out a market analysis within a given time limit	Continuous benefits with stochastic component	Past number of infringement procedures as a proxy	Extrapolation from past case studies and assumptions on Commission behaviour about remedies Less regulatory risk for companies	Estimating number of future cases Would require detailed analysis of single national markets
	New EU level procedures for authorisation and regulation of services with pan-European potential	Service continuous compared with ad hoc procedures but series of one-off impacts	Number of applications in the past Comparison with other countries' experiences Expert opinion	Market forecasts Extrapolating data from past case studies	Forecast demand Estimate value of new services Lack of specific data on costs compliance

ANNEX C – EECMA LOGICAL FRAMEWORK: UNDERLYING ASSUMPTIONS, RISKS AND CONSTRAINTS

The EECMA logframe and its underlying assumptions are subject to three main, partly interrelated, types of risks and possible constraints:

- ***Forecasting risks.*** Present trends show that there might be an increasing demand for services with pan-European potential/cross-border dimension to be authorised at the European level under the coordinated system. But the e-Communication industry is fairly unpredictable in its technological evolution, underlying consumers' preferences and regulatory requirements. The EECMA establishment is therefore subject to inevitable forecasting risks, to the extent that it is uncertain to what extent convergence and other technological trends will actually create a potential demand for pan-European services and, consequently, increase that demand for homogeneous regulation the Authority is conceived to address. A consistent move towards interference-avoiding technologies, for instance, could require a shift in the focus of the Authority's mandate. However, in such a fast-changing environment, the possibility that regulatory factors interfere with the development of technologies or make the sheer adoption of certain services impossible has the potential to create huge welfare losses for society and hinder innovation.

- ***Timing.*** The Authority is expected to start operations in 2010 and to become fully operational in 2012. By that time some of the priorities it is called to address might have been solved otherwise or have become less urgent. Ex-ante remedies partly appear a possible case in point, as NRAs go through a learning curve in their various market review cycles. Conversely, the EECMA establishment could have the paradoxical effect of postponing actions on important matters until the agency is established, thereby ultimately accruing on social costs. This could be the case of VoIP cross-border services, for instance. Finally, delays in taking action may also paradoxically result in some provisions of the regulatory framework crowding out the demand for EECMA services. For instance, delays in establishing a reference framework for secondary trading of rights of use may provide an incentive to increase the demand for centrally authorised rights of use, or delays in having a centralised authorisation system in place provide a further incentive to try the general authorisation regime.

- ***Institutional Relations.*** The establishment of the EECMA would add one more institutional layer to an already fairly complex institutional framework[53], thereby unintendedly increasing the risk of institutional conflict and, therefore, of regulatory uncertainty. This would include the possibility of disagreements between the Authority and the Commission[54], between the

[53] For instance, one of the reported problems of the EU-CEPT radio spectrum governance mechanism lies in its limited intelligibility to any external non EU-based observer. The EECMA could simply accrue to this aspect of the problem.

[54] See for instance the disagreements between EMCDDA and DG Justice and Home Affairs on the content of the advice provided on classification of new illicit substances bordering Commission powers.

Authority and the NRAs, and between the Authority and the CEPT-ECC system. So, disagreements on remedies could end up in institutional stalemates, or Member States may be unwilling to share Authority's view and give up their discretionary power over regulating certain spectrum-based services at the national level. Moreover, the CEPT system is presently undergoing a reform process to address its main weaknesses that are generally perceived in the lengthy and cumbersome decision-making process, its insufficient emphasis on strategic[55] and economic issues. It has therefore to be assumed that this parallel reform process will not end up in any overlapping between future ECC-ERO tasks and the newly established EECMA ones.[56]

Furthermore, the initiative is subject to the usual management risks in the attainment of the expected outputs and to parallel bottleneck effects that could potentially hinder the achievement of the expected results and impacts, irrespective of any effectiveness consideration, and namely:

- ***Management Risks*** defined as the usual internal operational risks hindering effective transformation of inputs into quality outcomes, i.e. the Authority institutional mandate could be theoretically reached on paper, but its achievement is made impossible by management or governance problems;

- ***Parallel Bottleneck Constraints*** make the achievement of a given objective impossible because of simultaneous parallel regulatory difficulties in other fields. For instance, the procedure through which Member States decide to reserve certain spectrum bands or number ranges for cross-Community use could result in delays in practice, technical harmonisation barriers at the EC level may take longer than expected, the introduction of new services may be hindered by other significant regulatory barriers stemming from other policy areas (data protection, privacy, electromagnetic pollution, etc.).

Table B.1 in the next page summarises what appear to be the main underlying assumptions and related risks of the EECMA logical framework and highlights the main sources of evidence available to support the rationale behind key assumptions.

[55] CEPT has a Regulatory Affairs working group. This group focuses on the possible distorted competition created by its own decentralised decision-making process (and not by the pre-existing situation) and on the investigation of regulatory mechanisms to facilitate the deployment of radio applications that can be operated as an underlay or overlay service, on a licence free or a licence exempt basis. So general authorisations would be under the CEPT umbrella and centralised rights become a EECMA matter.

[56] In theory this should not happen, as the CEPT-ECC reform is expected to build on its technical expertise and international ITU recognition and not to address its present weaknesses.

Table B.1: Underlying assumptions and key risks of EECMA establishment

Incremental Effects	Key Assumptions	Key Risks
EECMA helps harmonise remedies practices	Remedies proposed by NRAs are not always best practice solutions in the light of local market conditions and could be improved.	Learning and diminishing need for remedies makes activity redundant in the long run Activity fosters conflict with Commission and NRAs
EECMA supports Commission in national market analysis	NRAs fail to timely identify markets where ex ante measures are needed	Management risk: EECMA cannot effectively have access to relevant local information
EECMA helps create a common set of regulatory practices on cross-border markets	Pan-European and cross-border markets deserving homogeneous regulation exist and related remedies being dealt with more homogenously	Timing: these markets, when existing, would require more urgent action Forecasting risks: there will not be many such similar problems in the future but the few known ones
EECMA creates preconditions for secondary trading of rights of use and manages related information register	Lack of uniformity in rights of use represents an obstacle to the development of secondary trading Access to information is a key component of transaction costs in the field	Mistiming: this problem would require urgent action Bottleneck constraints: technical difficulties in implementation represent the main obstacle and cannot be easily solved
EECMA sets up centralised allocation of pan-European spectrum rights	Deployment of pan-European services is hindered by lack of central authorisation mechanism	Forecasting risks: competition from general authorisations or secondary trading regulatory mechanisms Timing: different stages of EECMA-induced uneven development of regulatory mechanisms might hinder regulatory neutrality Bottleneck constraints: technical harmonisation aspects represent the main obstacle and can not be easily solved
EECMA manages pan-European allocated spectrum rights	The lack of a one-stop shopping facility is perceived as a source of additional costs by businesses[57]	Management issues foster conflicts and disagreements with M. Increased risk of litigation
EECMA supports EU policymaking process and CEPT technical efforts	Technical advice can contribute to improve the policymaking and regulatory process	Institutional overlapping fosters conflict with CEPT

[57] Member States would still retain the power to issue their parallel national rights of use complementary to pan-European rights.

ANNEX D – THE REGULATORY RISK

The nature and implications of regulatory risk. The nature of regulatory risk has long been controversial because of its diverse causes and effects and its measurement remains an issue still to be definitely solved in the economic literature.

Regulatory risks raises for the very simple fact that companies are regulated. And regulation depends on companies being found to have significant market power. In the EU regulatory framework such a condition is sufficient to assume that companies will somehow exploit this market power through monopolistic behaviour decreasing consumer welfare. Therefore, regulatory remedies are needed to compensate for this loss of consumer welfare, which is assumed to be a given in legal systems endorsing ex-ante regulation.[58]

Regulatory risk is defined in terms of increased requirements in terms of return on investment for the regulated firm, because its profits are more uncertain.

The sheer existence of regulatory risks draws from uncertainty about the interaction between the regulated company and the existence of a legal framework affecting its returns[59]. A part of the regulatory risks simply derive from the ex-ante unpredictability of the interaction between any ex-ante given rule and its results in the presence of market risks. This is compounded by the existence of regulatory discretion whenever regulation is not implemented through a complete set of rules defined in advance, but through the adaptation of pre-specified rules to changing circumstances. This is justified from a societal viewpoint whenever the costs and length of legislative amendments processes are considered to exceed those of relying on discretionary regulatory decisions made within the terms of more open-ended standards.

To sum up, from the societal viewpoint: 1) regulatory-related market risks are justified by monopolistic rents; and 2) regulatory discretion is there to adapt rules to changing circumstances and can be justified whenever the costs of having ineffective rules and managing the system overcomes the costs of legislative amendments.[60] But regulatory discretion creates its own risks through both unpredictability of final results and the sheer frequency of decisions, when these exceed the life of relevant assets or are shorter that the life-span of proposed investments. This might result in additional volatility. There can be factors mitigating the unpredictability of final results and regulator's errors, and regulator's learning effects in

[58] Therefore, the matter whether ex-post controls are more efficient from the welfare point of view than ex-ante controls will not be dealt with in this report. For our purposes, we will assume that the issue has already been settled as a given. It is worth noting that in some cases the distinction is not so evident as ex post competition remedies in the US *de facto* amount to ex ante regulations without any discretionary power and could be analysed as such. The point was rightly made in *The Economic Benefits from Providing Businesses with Competitive Electronic Communications Services,* A study sponsored by British Telecom group. 2007, at http://www.btplc.com/Thegroup/Regulatoryinformation/Consultativeresponses/BTdiscussionpapers/Electronic/Economicbenefits.pdf

[59] The textbook case is that of a legal provision not subject to discretionary future re-evaluation setting universal service obligations in terms of prices and lines made available to the public. This considerably increases the company's exposure to market risks (demand and technological evolution) and therefore the variability of its perspective returns on investment.

[60] See note before.

distinguishing pure market factor-related price changes from hidden indicators of significant market powers is certainly one of them, but it remains the fact that, even if the regulator were "on average" right in assessing the situation and inflicting "right" remedies from the societal viewpoint, the regulated company would be in any case at a loss[61] for any concave profit curve, a fairly common assumption indeed. This creates a strategic incentive to regulated companies never to be co-operative in sharing information with regulators, and to resist any remedy.

The measurement of regulatory risk. One of the most controversial issues in regulatory risk assessment is its measurement. To assess regulatory risks one would need a reliable measure of the cost of capital for the regulated firms. To this purpose, the CAPM model is commonly used. Although this model does not enjoy the unanimous support of financial economists, it is widely used by regulators and business people alike and can be considered as the standard reference tool for this purpose. A key assumption of the CAPM asset pricing theory is that only factors that co-vary with the market portfolio in equilibrium affect a firm's cost of capital. Therefore, 'regulatory risk' arises only when the effects of regulator's actions co-vary with the market portfolio(s). Any regulatory action that has an effect that can be reduced/eliminated through market portfolio diversification does not contribute to risk.

Economists differ in their assessment of whether this kind of risk is not priced by the CAPM, but investors consider it at any rate (i.e. it is a limitation of the model) or the risk is not priced because it does not exist[62] because a well-diversified market portfolio holder considers it negligible.[63] In practical terms, this has narrowed the focus of the search for the meaning of regulatory risk to actions that do not have diversifiable effects, but do have systematic effects.

This source of systematic regulatory risk is particularly acute when the regulator has a large amount of discretion, in terms of both the frequency and the scope of actions. If the regulator is constrained to make only small changes infrequently, then there is little systematic regulatory risk from this source. The reason is that companies must make educated guesses about their future level of profits and this is based on past experience. One could simplify by saying that regulatory behaviour has two purposes: the first is the achievement of consumer welfare and the second is "signalling" the future regulatory trends to regulated companies, which has a direct

[61] On this important point see H. Ergas, J. Hornby, I. Little, J Small, *Regulatory Risk*, A paper prepared for the ACCC Regulation and Investment Conference, March 2001

[62] On this point, see S. Wright and Smithers & Co D. Miles. *A Study into Certain Aspects of the Cost of Capital for Regulated Utilities in the U.K*. 2003.

[63] The example reported in the literature of a regulatory action which is not reflected in CAPM pricing of risk is a price cap imposed on a firm having some kind of technological monopoly on a market (or a perfectly coordinated collusive cartel), so that no other firm gains when the regulated firm loses which is clearly a non diversifiable risk. However one could argue this could be the equivalent of a purely systematic risk increasing overall business returns because of increased consumer spending power. If large enough this effect would be captured indirectly as a decreased firm β. This is compatible with the findings of some simulation exercises. Ergas and Small (1999) "*The Rental Cost of Sunk and Regulated Capital*", CRNEC Working Paper 17. On this key point, see also: S. Wright and Smithers & Co D. Miles. A Study into Certain Aspects of the Cost of Capital for Regulated Utilities in the U.K. 2003 that makes a distinction between price caps with shock on costs that increases a company's β.

effect on cost of capital. Signalling can be seen as composed of two separate qualities, consistency and credibility[64]:

- Consistency in decision making is an important factor in influencing the degree of regulatory risk. If regulatory decisions are perceived as random, the resulting inability to make reliable predictions about the regulator's future decisions adds non-market risk and, thereby, increases the firm's exposure to regulatory risk. On the contrary, if the regulated company notices that regulation is consistent, it will not expect future regulation to deviate very far from its average, reliability of expectations is enhanced and, consequently, the regulatory risk faced by firms reduced;[65]
- Credibility of the regulator's commitment improves the rational and statistical expectation of the firm. Credibility of commitment ultimately depends on regulators' professionalism, and degree of independence from political interference. This reduces vagaries in attempts at "expropriating" fair returns on sunk costs, for considerations others than consumers' welfare. Credibility has a mutually reinforcing effect on the reduction of regulatory risks; as long as companies appreciate the otherwise unnecessary effort attached to the value certainty has for them. Rapidity in decision-making is certainly a component of this.

This argument also applies to geographical tenure considerations. The pooling of regulatory functions makes it certainly possible to reduce regulatory risk, although the sheer fact that a regulator has wide jurisdiction does not mean per se that the resulting potential for risk reduction will be achieved. In cross-related markets there is no doubt that society would be far better off with numerous regulators all generating strong (consistent and credible) signals rather than with one regulator behaving erratically. There is also little doubt that, if markets are interrelated, a consistent regulator is much better than erratic local regulators in reducing regulatory risks.

While very much attention has been paid in the literature to the effects that the various regulatory schemes can have on firms' incentives toward cost reduction and investment, very little empirical research has been made about the impact of regulation on a firm's cost of capital, and most of it has concentrated on the impact of regulation models[66] (the set of rules) or on utilities other than e-communication. Some more information is sometimes available from consultancy works. Here findings have been varied depending on the point of view of the various authors and their position on whether the CAPM prices all the relevant risk, or there is a component not priced by the model which is therefore endogenous to β itself and can somehow be captured by its variance. The latter was the approach followed in the definition of costs and benefits of market regulators in a report commissioned for the Dutch Ministry of Economic Affairs[67]. Companies commenting on the beta applicable to its rate of return regulation[68] has defined regulatory risk as purely not "systematic" and not measured by the CAPM, but to be

[64] See on this point, H.Ergas, J. Hornby, I. Little, J Small, *Regulatory Risk*, A paper prepared for the ACCC Regulation and Investment Conference.
[65] See also on this point R.J. Gilbert and D.M. Newbery, 1994, The dynamic efficiency of regulatory constitutions, RAND Journal of Economics, 25, 538-54.
[66] See for instance, I. Alexander, C. Mayer and H.Weeds *Regulatory Structure and Risk and Infrastructure Firms: An International Comparison,* World Bank Policy Research Working Paper No. 1698, November 30, 1999 also in http://www.geocities.com/ian_alexander_1967/alexander-mayer-weeds.pdf.
[67] Oxera, *The Costs and Benefits of Market Regulators – Part Two – Practical Applications*, Report prepared for the Dutch Ministry of Economic Affairs. October 2004.
[68] http://www.pts.se/Archive/Documents/SE/Vodafone_svar_WACC_220803.pdf

compensated to investors (therefore implicitly stating that CAPM is not a reliable measure of cost of capital for investors). This non systematic risk is then quantified in 0.10 β-equivalent. Very rough calculations show that if the same principle had been applied in other countries with other companies the calculated value could have been higher. Researchers interested in the impact of change in the regulatory model (systemic regulatory risk) have found that this can have an impact as high as 0.20-0.30 β points[69]. Broadly similar conclusions have been reached by consultants analysing the telecom market in other geographical contexts[70] and concluding that regulatory risks accounts for roughly some one fifth of total β.

To sum up, available evidence, although preliminary and controversial, indicates that regulatory risk can be measured both in β terms and as β variance, with the first component capturing substantial regulatory decisions, especially when this affects prices, and the second more related to regulatory style and quality. We are aware of no research trying to specifically weight the various components of this "specific" regulatory risk in terms of discretionary powers, timing and frequency of decisions, consistency of decisions and commitment in implementation. If such an analysis were done, these variables would be probably found to have some degree of correlation: intuitively commitment and level of discretion would probably be related, as well as consistency and timing. In empirical terms, it can be certainly said that regulatory risk can never be zeroed, for the simple fact that time and asymmetrical information exist.

[69] N. Francis, P. Grout. The impact of policy uncertainty on regulated companies, August 2000
[70] Monitor Group. *Comments on beta and on the risk-free when using the CAPM to calculate WACC for NZT*. July 2003.

ANNEX E – LESSONS LEARNT FROM THE EU EXPERINCE WITH AGENCIES

Available Evidence from Other EU Agencies. There are not so many EU agencies that can be compared to the EECMA to forecast possible operational difficulties. The *Office for the Harmonisation of the Internal Market* (OHIM) in Alicante (operational budget of over € 140 mn) can register within three months from application a EU-wide trademark, while operating in a context of varying legal systems and traditions. The definition of operational languages has been a problem and the office has long waited before receiving European business recognition. The number of initial applications has widely exceeded original expectations (some 43,000 vs. 15,000) and has slowly doubled in the subsequent ten-year period till reaching some 77,000 in 2006. Part of the increase (some 30% of 2006 applications) is simply due the renewal of trademarks granted at the beginning of agency's activities. US companies are among the Agency's main clients. Litigiousness is non negligible as on average one out of five trademarks granted end up in oppositions, and, of these, some one tenth goes before the ad hoc Boards of Appeal. Performance standards have represented a problem from the very beginning of Agency's activities. OHIM was supposed to release a trademark in a 90 day period from request, and to leave an additional three months for challenging registration. In 2006 some 60-65% of applications were published after 8 months from receipt, and only 20% of oppositions were notified after 4 months from the end of the adversarial part of the procedure. As a result some 80-90% of non-opposition receiving applications are registered after 18 months from receipt. Technical errors have affected in the past some 5-10% of applications.

The ***European Aviation Safety Agency*** (EASA, operational budget of about € 70 mn) is a technical agency drafting safety technical norms and providing related technical advice to the European Commission and the Member States. It carries out EU-wide inspections and has been proposed to manage in the future the rules and procedures for civil aviation operations; the licensing of crews in the Member States; and the certification of non-Member State airlines[71]. As such, it more closely resembles ECC-ERO's mandate than the EECMA's. Much in the same vein also the ***European Maritime Safety Agency*** (EMSA, operational budget of € 48.2 mn) provides technical and scientific advice to the Commission in the field of maritime safety and prevention of pollution by ships and updates and develops technical legislation. They also carry out inspections and investigations. The agency also plays a role in the legal field of liability and compensation issues by analysing arrangements related to places of refuge and pollution and

[71] In 1994 the European Parliament and the Commission considered the possibility of establishing a single air traffic control body to remedy the fragmentation of the national-based system. The proposed agency faced national sovereignty problems, as it became clear that this would involve ceding sovereignty to a third body. Since Eurocontrol as an intergovernmental body already existed, the Commission at that time proposed to create a two-tier regulatory environment with regulatory and administrative supervision competence separate from in-the-field technical and management issues and to delegate the first to Eurocontrol as an intergovernmental body and the second to national authorities. In 2002 the Commission became part of Eurocontrol and coordinated Member States positions therein and four "open sky over Europe" directives were issued. The observatory role of developments in the European market has been delegated to an external contractor issuing an annual report.

supporting Commission in developing policy related to places of refuge, wreck removal, bunker oil and hazardous and noxious substances.

The ***European Medicines Evaluation Agency*** (EMEA, operational budget of € 154.5 mn) manages a centralised procedure with Member State veto power for the EU registration of pharmaceuticals parallel to mutual recognition procedure and the Agency must be compulsorily used for biotechnological products. The Agency has a fixed period to reach an opinion and its establishment allowed applicants to shorten delays decreasing the value of market protection and ensure a more harmonised protection of their products EU-wide. The agency has increased its budget fivefold since establishment and in 2006 managed some 50 applications, of which 18 orphan drugs receiving EU support. No problems have been reportedly experienced in meeting performance standards, but the system is going under management distress to process the growing number of requests for variations and line extensions. The EMEA system, as anticipated, has not really replaced the mutual recognition procedure, and related inconsistencies have caused a steep increase in referral and arbitrary procedures of various type. Measures are being studied on how to decrease disagreements between national authorities. In certain areas one out five mutual recognition procedures are referred to EMEA arbitration and a special ad hoc coordination group for mutual recognition and decentralised procedures had to be established. The EMEA has also been increasingly requested to monitor parallel distribution agreements allowing products centrally approved to be distributed EU-wide by a company independent from the marketing authorisation holder. The agency is generally recognised as a centre of expertise in the field.

Other agencies more information exchange-oriented include, among others the European Environment Agency (EEA), the European Centre for Monitoring Drugs and Drug Addiction (EMCCDA), the European Agency for Occupational Safety and Health at Work (OSHA) and the European Network and Information Security Agency (ENISA) In their first years of operation these agencies have variously met operational difficulties in implementing their mandate. Since they have to become the European acknowledged centre of expertise in monitoring policy performance in their given fields their activities can run smoothly to the extent there is policy agreement between Member States on underlying policy issues. Otherwise they are exposed to lack of progress due to lack of data harmonisation, disagreement about analytical methodologies, lack of specialised resources, difficulties in liaising with Member States and other operational inefficiencies. This may result in perceived poor communication of results, ultimately questioning Agency's contribution to MS policymaking[72].

Conclusions. Past experience shows that agencies are subject to management risks, namely:

1) speeding-up the decision making process in controversial areas cannot be necessarily achieved through statutory provisions;
2) enhancing the technical and informational basis depends on the quality of hired staff and the willingness of MS to share information and agree analytical methodologies. The latter factor also plays a key role in potentially controversial dissemination of best practice;
3) there can be substantial mistakes in identifying ex ante the workload of an Agency;

[72] ENISA appears to be the latest such case in point. See its recently commissioned evaluation: http://ec.europa.eu/dgs/information_society/evaluation/studies/s2006_enisa/docs/final_report.pdf

4) harmonisation work of a quasi-judicial nature tend to skyrocket over time and become more conflictual;
5) monitoring the homogeneous implementation of policies across Europe critically depends on access to local information.

ANNEX F – COST-EFFECTIVENESS ANALYSIS FOR BUDGETARY PURPOSES[73]

Methodological Approach

The analysis focuses on the establishment of EECMA and assesses its cost-effectiveness with reference to the enhanced baseline situation, i.e. the evaluation question on whether *the potential impact of the establishment of EECMA justifies the investment to be made in both human and budgetary resources.* Since the impact has been extensively reviewed in the chapter above, this part more directly reviews the underlying costs and their allocation to the various policy areas. The starting point for this analysis has been a preliminary budgetary allocation prepared by relevant Commission services.

The Evaluation Approach. After a preliminary review of the estimated budget appropriations for the establishment and operation of the Authority, the total value of human and financial resources have been allocated to the various activities to be performed by the Authority. Then, for each of the main inputs to be provided by Authority, the rationale behind the assumptions of the original allocations has been assessed based on the expected amount and value of the outputs that will be carried out. For the reasons already explained above and the existing degree of indeterminacy in the actual scope of EECMA activities the review is, inevitably, based on an element of subjective judgment, but related conclusions are argued with reference to the evidence available. And indeed, in order to allow testing the degree to which a modification of assumptions determine results and show their robustness, whenever feasible and appropriate, a scenario analysis of the results achieved has been conducted.

Sources of Costs Overestimation. The amount of costs included is subject to estimation errors due to following two factors:

- as anticipated in various parts of the report, CBA and cost-effectiveness exercises are incremental in nature, i.e. calculations are net of benefits and costs related to the baseline scenario. Therefore, the costs incurred in the "with EECMA" situation should be decreased of the Commission appropriations which would have been allocated in case the Authority had not been established. But no information is available. Therefore, expenditures related to the set up and operation of EECMA have been fully taken into account, without considering any possible parallel cost saving;

- the Authority is expected to generate revenues to offset the costs of administration by retaining a share of: 1) the administrative charges imposed on undertakings relating to a common selection procedure, and 2) the usage fees for rights of use of radio spectrum or numbers issued pursuant to a common selection procedure. But, as agreed with relevant Commission services, the question of revenues for the Authority will not be dealt by this cost-effectiveness exercise and, therefore, these positive flows have not been taken into account because deemed marginal as rights-of-use will be passed to Member States. This explains

[73] This analysis is based on an earlier cost model of the proposed Authority. Subsequent to this analysis, the costs of activities covered in this annex were amended.

the big difference with other EU agencies[74] largely relying upon similar income flows, thereby significantly reducing their impact on the EU budget. However, these revenues, although irrelevant for budgetary purposes are likely to represent additional transfers to the Member States to the extent that auctions for some pan-European services were not really possible before;

Gathering of the Empirical Data. The review of cost-effectiveness has been mainly based on quantitative data from desk research sources and budgetary information directly provided by the Commission. The analytical classification process has been made possible by exchange of information with Commission services. These have been complemented by qualitative information gathered through secondary sources. The sources reviewed for this part of the evaluation included:

- the annual reports of and the similar ex-ante evaluations of other European agencies (such as the Fundamental Rights Agency)[75];
- the budgetary files provided by the Commission including data on forthcoming financial perspectives on the EECMA.

The Costs of the EECMA

The EECMA is expected to become operational in January 2010 and, consistently with the common development pattern of an agency, a growing budget is foreseen over the first years to take account of the inevitable transition period. All in all, the total cost of the Authority is estimated in the region of € 115-120 million, with yearly appropriations of some € 22 million at cruising speed, therefore, representing a doubling of current amount of DG INFSO technical assistance Commission budget amounting to € 20 million in 2006.

Human Resources. Once fully operational the Authority will have a staff of 110, consisting of 25 administration and management staff and 85 operations staff: the ratio between administrative and operations staff is about 1:4, in line with other European agencies. The allocation of operations staff among three main operations areas also appears as broadly consistent with their respective forecasted workload, as reviewed in the next section.

Table H.1: Human Resources of EECMA

	Administration & Management	**Operations**				**Total**
		National Markets	*Pan-European Markets*	*Other Activities*	**Sub-total**	
Administrators (AD)	**8**	*16*	*12*	*9*	**37**	**45**
Assistants (AST)	**6**	*5*	*8*	*3*	**16**	**22**
External Staff	**11**	*16*	*9*	*7*	**32**	**43**
TOT	**25**	**37**	**29**	**19**	**85**	**110**

[74] For instance, the large budget of the Office for the Harmonisation of the Internal Market is fully covered by revenues accruing from the operation of the office, whereas other agencies, such the European Aviation Safety Agency and the European Medicines Evaluation Agency, internally generate between 61% and 73% of resources needed to cover operating expenditures.
[75] European Policy Evaluation Consortium (EPEC), Preparatory study for the impact assessment and ex-ante evaluation of the Fundamental Rights Agency Final Report, February 2005.

Source: Elaboration from Commission data

Financial Resources. The start-up and ongoing costs to be incurred by the Authority over the 2010-2015 period under the usual three main titles are summarized in table H.2 below. The distribution among staff, operating and administrative costs, accounting for 51%, 30% and 18% of total yearly costs respectively, is substantially aligned with the one of other European agencies, such as the European Chemicals Agency (ECHA) or the European Food Safety Authority (EFSA).

Table 5.2: Financial Resources of EECMA - 2010-2015 (in thousands €)

	2010		**2011**		**2012**		**2013**		**2014**		**2015**	
	€	***%***	**€**	***%***	**€**	***%***	**€**	***%***	**€**	***%***	**€**	***%***
Title I – Staff	5.621	*47*	82.123	*49*	11.279	*51*	11.279	*51*	11.279	*51*	11.279	*51*
Title II – Administrative expenditures	3.100	*26*	3.560	*21*	4.000	*18*	4.000	*18*	4.000	*18*	4.000	*18*
Title III - Operational expenditures	3.225	*27*	4.900	*29*	6.700	*30*	6.700	*30*	6.700	*30*	6.700	*30*
Total resources	**11.946**	**100**	**16.673**	**100**	**21.979**	**100**	**21.979**	**100**	**21.979**	**100**	**21.979**	**100**

Source: Elaboration from Commission data

Cost-effectiveness analysis of the main activities

To assess the cost-effectiveness the Authority, all tasks to be performed have been grouped firstly into three areas corresponding to the major objectives to be achieved, and namely: (1) address the issue of regulatory inconsistency and delays in conducting national market analysis and promoted in the identification of trans-national markets; (2) improve EU level procedures for authorization and regulation of services with pan-European potential, and (3) other residual activities.

The table below summarizes the cost structure of the three main areas activities of the Authority over the forecasted period 2010-2015. A preliminary allocation of the various cost items to different areas has been made in strict co-operation with Commission services. In particular, the allocation of staff costs as well as of operational expenditures is based on preliminary indications provided by relevant staff within DG INFSO. As for the allocation of remaining costs, i.e. other (administration and management) staff expenditures and administrative costs – a simple rule was applied: the allocation among the three areas of activities was based on their relative importance as measured by the share of operations staff costs and operational expenditures involved in the various activities. In particular, the following percentages were adopted: 1) National Markets Harmonization: 42%; 2) pan-European Markets Development: 36%, and 3) Other services: 22%.

Table H.3 Financial Resources of EECMA's main areas of activity, 2010-2015 (in thousand €)

	2010	2011	2012	2013	2014	2015	TOTAL	
	€	€	€	€	€	€	€	%
National Markets	**5.034**	**7.140**	**9.222**	**9.222**	**9.222**	**9.222**	**49.061**	**42%**
Staff	2.358	3.446	4.793	4.793	4.793	4.793	24.978	
Administrative	1.300	1.493	1.678	1.678	1.678	1.678	9.507	
Operating	1.375	2.200	2.750	2.750	2.750	2.750	14.575	
Pan-European markets	**4.222**	**5.865**	**7.868**	**7.868**	**7.868**	**7.868**	**41.560**	**36%**
Staff	2.012	2.940	3.961	3.961	3.961	3.961	20.798	
Administrative	1.110	1.274	1.432	1.432	1.432	1.432	8.112	
Operating	1.100	1.650	2.475	2.475	2.475	2.475	12.650	
Other Activities	**2.689**	**3.668**	**4.888**	**4.888**	**4.888**	**4.888**	**25.913**	**22%**
Staff	1.250	1.827	2.524	2.524	2.524	2.524	13.173	
Administrative	690	792	890	890	890	890	5.040	
Operating	750	1.050	1.475	1.475	1.475	1.475	7.700	
Total resources	**11.946**	**16.673**	**21.979**	**21.979**	**21.979**	**21.979**	**116.535**	

Source: Elaboration from Commission data

ACTIVITY 1 - NATIONAL MARKETS HARMONIZATION

Tasks. Under this heading three main types of services provided by the Authority[76] are included, namely:

(i) the provision of opinions in cases where the comments on remedies including those where a veto is being considered;

(ii) the provision of advice and assistance to the Commission in relation to the analysis of a specific national market, when an NRA failed to do it within the required timeframe, and

(iii) the provision of assistance in the identification and analysis of trans-national markets.

Operational staff. The overall amount of operations staff allocated to the market harmonization activities (37) appears broadly consistent with the assumption that efficient operations will require one task manager for each country (25) and one for each market (8), the residual 4 staff are assumed to be mainly dealing with legal support and advice activities.

Operational expenditures. As far as operational expenditures are considered, the vast majority costs will be incurred in the implementation of tasks (ii) and (iii), whereas, given their tight time limit (4 weeks), opinions on draft measures are likely to be elaborated mainly internally. In particular:

[76] Actually, a fourth activity should have been included, namely the issuance of opinions to the NRAs on the measures to be taken in case of cross-border disputes (on request from NRAs). However, given its comparatively limited relevance as well as the lack of available quantification of related benefits, this activity will treated as residual in the analysis.

- as anticipated in section 4.1, the amount of national market reviews annually performed by the Authority can be set in the 3 – 5 range (totaling 25 analyses over the forecasted period). Due to the comparatively more limited knowledge of the national context as well as the substantially higher difficulties in accessing local information presumably faced, the value of the operational cost per review incurred by EECMA can be reasonably evaluated as the double of the estimated average cost of a market review performed by an NRA, i.e. at some € 170.000. Therefore, the operational expenses incurred in reviewing national markets have been estimated at over € 700.000 per year, on average;
- a comparatively higher unitary cost has been assumed in the case of trans-national markets given the higher complexity of the analysis, i.e. € 200.000. In the case that two trans-national markets will be identified and analyzed over the forecasted six-year period (say one every three years), the Authority will perform 54 analyses (i.e. 2 markets multiplied by 27 countries), resulting into average yearly operational expenditures of about € 1.7-1.8 million.

The sum of the estimated values of operating costs incurred in conducting activities (i) and (iii) is substantially in line with figures provided by the Commission, setting the annual operational costs sustained by the Authority, when fully operational, at € 2.750.000.

Costs allocation among different tasks. The allocation of costs among the three main services provided by the Authority has been conducted based on the following assumptions:

- as far as task (i) is concerned, we assumed that the direct cost (operation staff plus operating expenditures) incurred by the Authority for delivering an opinion on a draft measure will be € 10.000, in line with the monthly salary paid to statutory staff, whereas when a more thorough advice will be required before the withdrawal of remedies, the cost the analysis will augment to € 50.000. As anticipated, these services will be provided internally, and, therefore, the incidence of staff costs was set as high as 90%. The total value of direct costs has been based on the hypothesis that the Authority will review 210 draft measures (with an average of 35 per year) and provide detailed advice on 5 to 10 total remedies candidate for veto;
- the allocation of the reaming operation staff costs among activities (ii) and (iii) has been determined according to a ratio of 1:2, consistently with amount of analyses expected to be performed (i.e. 25 national markets vs. 50 trans-national markets);
- finally, the allocation among the three services of other staff expenditures and administrative costs has been based on the same principle adopted to split these costs among the three main activity areas, i.e. according to their relative importance as expressed by their relative share of operations staff costs and operational expenditures. In particular, the following percentages have been adopted: (i) review of draft measures and remedies: 8%; (ii): national market analysis: 29%, and (iii) trans-national markets identification and analysis: 63%.

Based on these assumptions the annual amount of EECMA budget absorbed by these tasks can be assessed as follows:

- Task (i): between € 690.000 – 760.000;
- Task (ii): about € 2.7 mm;
- Task (iii): about € 5.9 mn.

Conclusion. Commission estimates of human and financial resources to be allocated to various tasks aimed at improving market harmonization appear coherent with the amount of output to be

produced. However, it is worth noting that their plausibility crucially depends upon the actual existence of at least two trans-national markets. If, for instance, only one trans-national market will be identified, the amount of resources allocated to cover direct costs (operations staff and operating costs) can be deemed in excess of about € 11 million over the whole period, i.e some yearly € 1.8 mn

Activity 2 - Pan-European Markets Development.

Tasks. Under this heading all the following services provided by the Authority are included, namely:

(iv) the provision of assistance in the identification of services with a cross-Community potential which would benefit from a common selection procedure under general authorization regime;
(v) the delivery of opinions on the implementation of common selection procedures for rights of use;
(vi) the review and processing of applications from undertakings for rights of use;
(vii) the selection of the undertakings;
(viii) the provision of assistance in the monitoring of compliance with the conditions attached to rights of use.

Operational staff. The overall amount of operations staff allocated to these activities (29) appears broadly consistent with the assumption that efficient operations will require one task manager for each country (25), one task manager for each new service with a cross-Community potential under general authorization regime (2), and two task managers for each identified pan-European market (2).

Operational expenditures. The vast majority of operational expenditures will be incurred in the implementation of tasks (iv) and (v). In particular:

- under the assumptions that two services will be annually identified under task (iv) and the cost borne for a country-level opinion will be worth € 20,000, the amount of operational expenses annually absorbed by this activity can been estimated at Euro one million;
- as far as activity (v) is concerned, only one e-Communication service is assumed to be identified per year, however, the unitary operating cost of these analyses, given the greater complexity, involving, *inter alia*, the identification of relevant information and the assessment of actual/potential demand, is assumed to be higher, set at € 1.000.000.

The difference between own estimates and figures provided by the Commission on operating costs incurred in conducting Activity 2, i.e. € 2.000.000 and 2.475.000 respectively, is fairly modest and can be, at least partly, attributed to the implementation of the other tasks.

Costs allocation among different tasks. In the case of Activity 2, all tasks can be considered as functional to the achievement of one single objective – the development of new services with a pan-European potential - and, therefore, no distinction between costs incurred to carry out specific tasks has been conducted. The overall amount of EECMA budget annually absorbed by this activity is, therefore, equal to our previous estimate of € 7.868.000 (see table H.3).

Conclusion. Similarly to what stated with reference to Activity 1, the plausibility of Commission budget allocation to Activity 2 appears substantially reasonable provided that a relevant number of markets with pan-European potential are identified. In this case, the importance of such assumption is extremely relevant given the fairly important number of pan-European services expected to be identified and analyzed, i.e. 18, in total. The importance of the divergence between Commission figures and own estimates following to changes in the numbers of pan-European services identified by the Authority over the forecasted period as well as in the hypothesized value of the operating costs per analysis is reported in the table H.4 below. These amounts should be augmented/diminished of the value attributable to the under/over-utilization of human resources.

Table 5.4: Comparison of Operating Costs of under Different Scenario

	Annual operating costs (€)	Difference between Commission data and own estimates (€)	Variation (%)
Commission data	***2.475.000***		
Pessimistic Scenario: • One new services identified under general authorization at a cost of € 10.000 per country; • No new service requiring harmonized rights of use identified	***250.000***	***-2.225.000***	*-90%*
Base Scenario; • Two new services identified under general authorization at a cost of € 20.000 per country; • One new service requiring harmonized rights of use identified at a cost of € 1.000.000	***2.000.000***	***-475.000***	*-19%*
Optimistic Scenario; • Three new services identified under general authorization at a cost of € 30.000 per country; • Two new service requiring harmonized rights of use identified at a cost of € 1.500.000	***5.250.000***	***2.775.000***	*112%*

Information & communication and other services. Under this heading the following main tasks to be performed by the Authority[77] are included, and namely:

(ix) the dissemination and exchange of information between the MS, the NRAs and the Commission, involving the collection, processing and publication of information relating to the technical characteristics, quality and pricing of eCommunications services, eCommunications markets in the EU, commissioning or conducting studies on eCommunications networks and services and the regulation thereof;

(x) the management of the spectrum information register and of the mobile roaming database;

(xi) the redaction of annual reports on developments in the eCommunications sector.

[77] Actually, other minor activities should have been included, such as the provision of assistance to the Commission on eAccessibility issues or the administration and development of ETNS. However, given its comparatively limited relevance as well as the lack of available quantification of related benefits, these activities will treated as residual in the analysis.

Operation staff. The overall amount of operations staff allocated to these activities (19) appears broadly consistent with the assumption that efficient operations will require one staff for regular and content maintenance of each database (2), and over 15 people for other information, communication and dissemination tasks.

Operational expenditures. Two main sources of operational expenditures have been identified: the cost of updating the information sharing tools, including the spectrum register and the mobile roaming database, and the expenses incurred to produce/organize publications and events. As far as the former cost driver is concerned, Commission data reports an annual value of € 375.000. However, this cost item appears unclear in the light of subsequent information stated in a recent Commission working document on the ERO Frequency Information System (EFIS)[78], stating that "updating of information in EFIS is the responsibility of Administrations".

Conclusive Remark

All Authority activities can be considered as cost-effective and potential benefits largely exceed the allocated budget, as in the case of Activity 2. However, this result radically depends upon the fulfillment of main assumptions that trans-national markets are identified and new services with a pan-European potential are actually identified and developed. For instance, in case one single market with pan-European potential will be identified and developed, given the extremely important value of benefit it will bring about, the investment in Authority could be considered worthy (i.e. difference between the present value of benefits and costs still remains in the positive side), but the EECMA could be hardly considered as a cost-effective tool, taking into consideration the significant amount of allocated resources being underutilized.

[78] Radio Spectrum Committee working document on Final Report from CEPT in response to the Mandate on Spectrum Information, RSCOM06-75, Brussels, 27 September 2006.

ANNEX G – BIBLIOGRAPHY

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ANNEX H - ABBREVIATIONS AND ACRONYMS

ACCC	Australian Competition and Consumer Commission
ATC	Ancillary Terrestrial Components
BT	British Telecom
CAPM	Capital Asset Pricing Model
CBA	Cost-Benefit Analysis
CEPT	European Conference of Postal and Telecommunications Administrations
CERP	Comité Européen de Réglementation Postale
CGC	Complementary Ground Components
COCOM	Communications Committee
CPP	Calling Party Pays
DFC	Discounted Cash Flow
DG	Directorate General
DG INFSO	Directorate General for Information Society
EASA	European Aviation Safety Agency
EC	European Commission
ECB	European Central Bank
ECC	Electronic Communications Committee
ECHA	European Chemicals Agency
ECTA	European Competitive Telecommunications Association
ECTRA	European Committee for Regulatory Telecommunications Affairs
EEA	European Environment Agency
EECMA	European Electronic Communications Market Authority
EFIS	European Frequency Information System
EFSA	European Food Safety Authority
EITO	European Information Technology Observatory
EMCCDA	European Monitoring Centre for Drugs and Drug Addiction
EMEA	European Medicines Evaluation Agency
EMSA	European Maritime Safety Agency
ENISA	European Network and Information Security Agency
EP	European Parliament
EPEC	European Policy Evaluation Consortium

ERC	European Radio Communications Committee
ERG	European Regulators Group
ERO	European Radio Communication Office
ESA	European Space Agency
ESOA	European Satellite Operators Association
ETNO	European Telecommunications Network Operators
ETNS	European Telephone Numbering Space
ETO	European Telecommunications Office
ETSI	European Telecommunications Standards Institute
EU	European Union
EUTC	European Union Telecommunications Committee
FCC	Federal Communications Commission
FMO	Fixed Network Operators
FTM	Fixed-to-Mobile
GDP	Gross Domestic Product
GPS	Global Positioning System
GSM	Global System for Mobile Communications
ICT	Information and Communication Technologies
IRG	Independent Regulators Group
IRGIS	Independent Regulators Group Integrated Information System
ITU	International Telecommunication Union
LLU	Local Loop Unbundling
MAN	Metropolitan Area Networks
MNO	Mobile Network Operators
MRP	Milestone Review Process
MS	Member States
MSS	Mobile Satellite Services
MSV	Mobile Satellite Ventures LP
MTR	Mobile Termination Rates
MTS	Mobile Termination Services
NGN	Next Generation Networking
NPV	Net Present Value
NRA	National Regulatory Authorities
NTIA	National Telecommunications and Information Administration
OECD	Organisation for Economic Co-operation and Development

OHIM	Office for the Harmonisation of the Internal Market
OSHA	European Agency for Occupational Safety and Health at Work
PUC	Public Utilities Commission
R&D	Research and Development
R&D&TI	Research, Development and Technological Innovation
RSC	Radio Spectrum Committee
RSD	Radio Spectrum Decision
RSPC	Radio Spectrum Policy Committee
RSPG	Radio Spectrum Policy Group
SME	Small and Medium-sized Enterprises
SMP	Significant Market Power
S-PCS	Satellite Personal Communications Systems
US	United States
VoIP	Voice over IP
WACC	Weighted Average Cost of Capital
WAPECS	Wireless Access Policy for Electronic Communications Services
WG	Working Groups
WRC	World Radiocommunication Conferences