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## Conference Paper

# Electronic communications regulation in Europe: An overview of past and future problems

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## **Electronic Communications Regulation in Europe: An Overview of Past and Future Problems**

### ***Abstract***

*For many years electronic communications has been one of the most important areas of policy intervention for the European Union. Liberalisation and privatisation of the telecommunications industry have been very important topics of the policy debate in the two decades starting from 1990 to 2010. In these years the EU developed a sophisticated regulatory framework inspired to the principle of favouring entrance of new players in the sector and characterised by a strong pro-competition flavour. More recently, however, the necessity to mobilise important investments for the creation of new Next Generation Networks, capable of delivering to European citizens all the benefits of the digital revolution, has shed doubts on the validity of the established framework. This paper discusses the solutions adopted during the liberalisation process and summarizes some of the key future challenges to the existing regulatory framework.*

(JEL K23, L43, L51, L96)

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## *Introduction*

In this paper, we provide an overview on the interventions and the main issues faced by European telecommunications policy after the liberalisation of the markets. In particular, we will analyse problems connected to four main areas of policy intervention: the fixed telephony market; the mobile telephony market; the Internet; the European Single Market goal and the appropriate institutional approach to regulation.

For each area of intervention, we examine the issues that led to the creation and the consolidation of the present regulatory framework. In particular, the demand for a liberalisation of the sector from former state monopolies, which was at the heart of the creation of a pro-competitive/pro-entrance approach in Europe, seems to be the main driver to the current regulatory framework. Then, we look at the situation as it is nowadays. Today, we are faced with a set of new issues that will affect the future of the European telecommunications markets. The main question is how to create the right conditions to spread the economic and social advancements promised by the digital revolution, such as those needed to encourage investments in Next Generation Networks. After two decades and more of European market regulation some new fundamental questions have to be answered by the European Union and by national regulators, which appear as the natural evolution of how the industry and technology have developed so far. The paper is organized as follows. Section 1 lists old and new problems in the evolution of the fixed lines markets after the liberalisation. Section 2 examines the mobile industry, its rapid evolution and the present necessity for more band and better spectrum management. Section 3 analyses the role of the Internet and of the Internet's native companies in relation, and in conflict, with traditional services and operators in electronic communications. Section 4 deals with the long-term demand for the creation of a European Single Market, also in relation to the evolution of sector regulation and the need of supranational coordination. A brief conclusion follows.

### *1. Fixed lines: from service competition to infrastructure competition to NGNs.*

The starting point of European telecommunications policy was the concomitance of the necessity to liberalise and to privatise the State monopolies, in order to unleash the potential of competition and to improve efficiency. In parallel, there was the objective to create and sustain the creation and growth of a common internal market for electronic communications.

The start of the modern phase of European telecommunications policy can be set with the publication of the Green Paper on the Development of the Common Market for Telecommunications Services and Equipment (COM(87)290), whose purpose was to liberalise the markets in telecommunications terminal equipment and provide for the abolition of special or exclusive rights to import, market, connect, bring into service and maintain telecommunications terminal equipment. This was the first step towards the liberalisation of all the telecommunications markets, which culminated in the '90s with two important interventions: the Open Network Provision and the Full Competition Directive.

In 1990 the so-called Open Network Provision (Directive 90/387/EC) determined the liberalisation of voice telephony and infrastructures, with the aim to create the conditions for allowing other operators to gain access to the national telecommunications networks on fair and non-discriminatory terms and thereby to compete with the established incumbents while sharing their infrastructure where indispensable. The Directive set the rules for open access to the networks of the old monopolies so that the new entrants could offer services in competition - on equal terms - with the ex-monopolies. This objective to open the sector to competition led to the introduction of asymmetric regulation: ex-monopolies, or incumbent operators, were imposed obligations that new entrants did not face. These included, progressively, the obligation to offer an interconnection to their networks at cost-oriented prices and the duty to allow access to essential components of their network, especially, as key access regulatory instruments, bitstream and local loop unbundling (LLU). These rules were, and still are, the milestone for the creation of a sustainable competition based on new services but also on (partial) new infrastructures, in the European telecommunications arena.

The Open Network Provision laid the basis for the Interconnection Directive (97/33/EC), which provided detailed conditions to ensure an open and efficient interconnection of networks as an instrument to foster competition, both in regard to access and to final services to customers. The Interconnection Directive stated that interconnection charges should follow the principles of transparency and cost orientation, implying, amongst others, the publication of a reference offer and the obligation to have separate accounts for wholesale and retail operations for all vertically integrated operator.

In parallel, the introduction of the competition directive (Directive 90/388/EC) and the amending act, called Full Competition Directive (Directive 96/19/EC), required Member States to cease to grant special or exclusive rights to national telecommunications operators, as this practice constituted an improper restriction to trade in the internal market. Certain services exempted from the previous Directive 90/388/EC in recognition of the problems posed by deregulation and the additional time required to find solutions were finally liberalised. In fact, the main feature of the Full Competition Directive was to require Member States to liberalise voice telephony, bringing to completion the liberalisation process of telecommunications services in Europe.

The whole set of provisions regarding the telecommunications sector, before the fundamental 2002 reform, is sometimes referred to as the 1998 package, because in 1998 the obligation was imposed on governments to liberalise entry into all their telecommunications markets. The main objective of this set of interventions was to conclude the early stage of the market liberalisation of the telecommunications sector through the implementation of an asymmetric regulation, which defined the rights of new entrants, imposed restrictions to the historical operator in order to open its network face infrastructure, as well as defined Universal Service Obligations (USO) in the interest of consumers (Cave and Prosperetti, 2001).

Indeed, the decision to eliminate State monopolies and to sustain the birth and growth of a new liberalised, competitive, and harmonised, telecommunications market in Europe, introduced the necessity to find a balance between static and dynamic efficiency. At the beginning of this process, immediately after the liberalisation of the markets, it was necessary to create the conditions to reach a workable level of competition, concentrating the regulatory rules on the limitation of market power and the creation of a level-playing

field between old and new competitors on the same telecommunications platform. This necessity was due to the fact that there was only one network, owned by the incumbent operator, and it was fundamental to concentrate *ex-ante* regulation on achieving service competition downstream, impeding abusive practices from the incumbent.

The goal to maximise static efficiency, though, generally comes in conflict with the need to reach also dynamic efficiency: a high level of competition lowers the operators' profits and therefore their incentive to invest (Aghion and Howitt, 1992). The objective of the European regulatory intervention, however, was to create competition, so that entrants could earn enough expertise, market share and profits to be able to invest on their own network and eventually reach a situation in which infrastructure competition would become a reality and the most invasive rules could be phased out, particularly regarding mandatory access to elements of the incumbent's network. This idea of using services-based competition as a stepping-stone to infrastructure-based competition has been theorised under the name of "*ladder of investment*" theory (Cave and Vogelsang, 2003; Cave, 2006).

In 2002 the European telecommunications regulatory framework was completely revisited to take into account of the need for a more flexible, technology neutral, regulatory setting, requested by the rise of the Internet and the convergence between services once offered on different technological platforms. The new regulatory package<sup>1</sup> fully promoted the so-called ladder of investment (LOI) approach by putting an accent on the formulation and implementation of access policy, not only to contrast the enduring of competitive bottlenecks, but also to foster a gradual move towards infrastructure-based competition. The reform was heavily based on the use of competition policy tools, such as the Significant Market Power (SMP) concept, essentially correspondent to the dominant position in competition law, and definition of relevant markets, a typical competition instrument.

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<sup>1</sup> The new regulatory package consisted of the Framework Directive (2002/21/EC), the Access Directive (2002/19/EC), the Authorisation Directive (2002/20/EC), the Universal Service Directive (2002/22/EC), the Radio Spectrum Decision (676/2002/EC), the Directive on Privacy and Electronic Communications (2002/58/EC) and the Regulation on Unbundling of the Local Loop (2887/2000/EC).

But, more importantly, all the principles inspiring the reform were competition based: the idea behind the whole regulatory design was to lay down the terms under which *ex-ante* regulation would be needed only until a more self-sustainable kind of competition would take place in the telecommunications market, and thereof the sole *ex-post* antitrust regulation would be sufficient.

A wide theoretical and empirical academic debate on the success of the 2002 framework, and in particular on the LOI theory, has not yet given a definitive answer as to whether the theory actually works in the real world as a way to accompany and foster entrant's investments (Cambini and Jiang, 2009; Bourreau et al., 2010). Robust empirical evidence is difficult to provide due to the lack of data at micro-level (local exchange level), so aggregate data on investment (Grajek and Roller, 2011) or proxies (Waverman et al., 2007) have been used. A recent study by Bacache et al. (2013) using micro-data finds the interesting results that the LOI hypothesis works in the case for entrants who climb the ladder from bitstream access to LLU, but not from LLU to building their own fibre networks. Bouckaert et al. (2010) find that only inter-platform competition is the main driver to spur investment in broadband networks.

In reality, European telecommunications markets witness a rather slow deployment of investment in NGN, which can be due to the current period of demand uncertainty and financial crisis, but partially may also depend on the regulatory setting in force (Digital Agenda Scoreboard, 2013). In such circumstance, co-investment plans between different industry operators can constitute a solution, even if they may create new competitive bottlenecks depending on the co-investment agreement conditions (Cambini and Silvestri, 2013; Cambini and Silvestri, 2012). Antitrust scrutiny of such agreements, but also regulation of the access conditions to the new network, may become essential tools in order to guarantee an open network development in the market, particularly with respect to the access conditions for the outsiders of the agreement. Different possible compensation mechanisms for insiders to the agreement, exchange of information, and other related problems are now under theoretical and practical scrutiny (Nitsche and Wiethaus, 2011; BEREC, 2012).

Another crucial variable in this process is constituted by the access conditions to the legacy copper network, which may or may not favour investment and/or transition to the

NGN (Bourreau, Cambini and Hoernig, 2012; Bourreau, Cambini and Dogan, 2012; Inderst and Peitz, 2012). The copper network, in fact, constitutes an imperfect substitute to the NGN, enacting a replacement-effect for incumbent and alternative operators. Revenues made on copper constitute an opportunity cost in using the NGN rather than the copper network.

The European Commission is trying to set new rules for the NGN according to a more flexible approach, trying to ensure incentives to invest and competition altogether, considering also the importance of the copper network regulation during the transition. A recent document by the European Commission contains a draft Recommendation on non-discrimination and costing methodologies for the regulation of NGN. The objectives of this document, as also acknowledged by BEREC in the comments to the Recommendation, are: providing for pricing flexibility of NGN services; ensuring effective non-discrimination and sufficient competitive constraints; guaranteeing predictable and stable regulated wholesale copper access prices, which are also consistent with the principle of cost-orientation; and, ensuring a level playing field between incumbent and alternative operators through the implementation of effective and proportionate non-discrimination obligations which facilitate downstream competition.

The draft Recommendation applies the principle of the Equivalence of Inputs in order to guarantee non-discrimination between incumbent and alternative operators. Regarding the possibility of price squeeze, the draft Recommendation says that the NRA can decide whether using an Equally Efficient Operator, or a Reasonably Efficient Operator standard, to ensure that the offers made by the incumbent operator are technically replicable by alternative operators.

The transition between copper network and NGN is at present the frontier of the new equilibrium through which the European Commission tries to revive the LOI theory in an environment in which investment in new future-proof networks is the key challenge to regulators. The NGA Recommendation (2010/572/EU), acknowledges the need to take into account of the fact that the transition from copper-based to fibre-based networks may change the competitive conditions in the different geographic areas, consequently, geographically differentiated remedies should be applied where appropriate.



A general question can be asked as to whether countries with a lighter regulatory burden have performed better in terms of investment, market growth and competition. The US, for example, have turned to a more market-based rather than interventionist approach in telecommunications regulation, in fact, policy intervention is mostly *ex-post*. In the US investment in broadband has a solid and growing base, with strong private capital expenditure, but both in the mobile market and in the fixed market, the level of competition is lower, with two leading operators covering almost all of the market. In Europe, instead, there are numerous telecommunications operators, offering more diversified services and choices but they also appear less keen or able to invest in new networks. European telecommunications operators suffer, with respect to their US analogous, from the smaller dimension, which put them in a disadvantaged position also against Internet native worldwide operators when competing on the same services. European traditional telecommunications operators, also through ETNO, are asking the commission and NRAs to loosen the regulatory burden and to let the market proceed towards a path of consolidation. According to their view, a pan-European market could only become possible if traditional network operators were allowed to increase their dimension and overcome the current state of fragmentation, which is a handicap to the growth and the competitiveness of the European telecommunications market.

In synthesis, while the detailed judgment on the LOI strategy is still under analysis by theorists, there is no doubt that bringing competition, through access and interconnection regulation on the legacy networks, at the national level, has been a European success. The new problem is how to replicate this success with NGN networks, but, beforehand, how to contribute to the deployment of the NGN networks in Member States.

## ***2. Mobile lines: problems of the new competitive environment and the future of spectrum management.***

Initially, the mobile markets were not considered as markets subject to the same competitive issues, such as competitive bottlenecks, as the fixed telephony market, characterised by the presence of one legacy network to be considered as an “essential facility”. Mobile markets presented immediately the opportunity for a more symmetric

structure, which did not required a regulatory intervention as intrusive as the one needed to create competition in the fixed telephony markets after decades of monopoly.

Nonetheless, a serious regulatory problem with important implications for competition emerged almost immediately: a crucial element in the telecommunications markets is constituted by the interconnection between customers using different operators. Mobile operators at the start of the industry used to set mobile interconnection rates through negotiation and commercial agreements, with the regulator only intervening when parties failed to agree<sup>2</sup>.

In Europe, from the start, the interconnection charge has been based on the Calling Party Network Pays (CPNP) system, in which the originating operator pays a per-minute charge to the operator that terminates the traffic being exchanged. At the same time, users are charged under the Calling Party Pays (CPP) system, where the person who makes the call pays for the entire cost of that call but pays nothing for any call received. Under this regime, interconnection charges tend to be quite high and to be reflected in the final charges to the users. In the process of termination, in fact, the request to speak to a certain customer poses the operator who terminates the call in a sort of monopolistic position, being the only network that can satisfy the request of concluding the call, therefore, a competitive bottleneck is generated. The high charges resulting from this system are considered by regulators and economists the inefficient result of such competitive bottlenecks.

An alternative to the European retail charging mechanism is the Receiving Party Pays (RPP) used in the US, where the person receiving a call pays all or most of the cost. In the mobile sector, this refers to payment of the “airtime charge” or premium for the actual termination on the recipient’s handset, while the originator might still pay a lower fee due for the fixed line segment of the call. This retail charging arrangement usually coexists with a Receiving Party Network Pays (RPNP) system, where an operator receiving a call pays a charge to the originating operator. Thanks to this mechanism, the termination charges are kept quite low, without need of a regulatory intervention. The reason is that the retail price reflects the call termination cost, therefore operators tend to keep these

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<sup>2</sup> Interconnection charges are the payments made by operators to compensate each other for the traffic exchanged between their networks.

latter low, with a RPNP system. Sometimes operators decide to eliminate the call termination charges completely, adopting a Bill and Keep (BAK) system (Marcus, 2004). The RPP mechanism is not applied in Europe because it was considered costly and disruptive for operators, given the resistance from customers to pay for received calls, the risk of lower penetration rates and, ultimately, the risk of turning off of mobile phones. On the other side, though, an RPNP system does not require any termination rates regulation and tends to generate more minutes of conversations per call.

The new European regulatory framework of 2002 (Directive 2002/21/EC) required regulators to review interconnection rules in order to reach a more harmonised framework and to better monitor the level of interconnection charges. As a result, many European countries introduced price controls for mobile interconnection charges, most commonly on mobile termination and sometime also on mobile origination. Nonetheless, the level of interconnection charges in Europe remained very high and undoubtedly well above industrial costs in most member States throughout the decade. Furthermore, as a matter of fact, the high level of fixed-to-mobile termination charges created a perpetuating situation in which fixed telephony's customers were financing the growth of the mobile market and operators by paying overly high tariffs.

In May 2009, the European Commission reacted to a situation that judged very unsatisfactory by adopting a Recommendation on the regulatory treatment of fixed and mobile termination rates throughout the European Union (Recommendation 2009/396/EC). The Recommendation was designed to remove cross-subsidies between fixed and mobile services, leading to a reduction in fixed-to-mobile retail tariffs, higher fixed-to-mobile call volumes and the inclusion of fixed-to-mobile calls in flat rate call packages (TERA Consultants for the EC, 2009). In the end, the final objective was to determine a decrease in the final tariffs to consumers, considering the high level of termination charges as fruit of a market distortion that should be corrected. BEREC, the institutional body coordinating National Regulatory Authorities (NRAs), supported the European Commission's initiative, by affirming that the 2009 Recommendation would be sufficient in the short-medium term to bring a positive benefit to consumers essentially through the "level" effect of lower termination rates.

The Recommendation set out strict principles for national regulatory authorities to follow when setting fixed or mobile termination rates. The main aim of such intervention was to improve the CPNP system so that the termination charge would reflect as much as possible the efficient economic cost. The long-run incremental cost (LRIC) model was recommended as the methodology that NRAs should use to ensure termination rates based on the costs incurred by an efficient operator.

The European Commission considered that high termination charges had two main effects, both highly undesirable: distort competition between fixed-line and mobile operators and services and constitute a barrier to entry and expansion for new players in the mobile market, especially when combined with significant on-net/off-net call price differentials. In fact, the possibility to exploit high termination rates for off-net calls was creating a specific problem for competition in the mobile industry: it would favour the largest operators, allowing them to price discriminate new entrants and smaller operators by attracting customers through low, or even zero, prices for on-net calls within their large networks financed by the high termination rates for off-net calls, a phenomenon dubbed by economists as “tariff mediated externality” (Armstrong and Wright, 2009).

In an effort to contrast the regulatory evolution pursued by the Recommendation, several mobile operators sponsored several studies tending to show that lowering mobile termination rates would not necessarily reduce prices for consumers, because other tariffs - such as subscription charges - would be likely to increase. Actually, a theoretical effect, called the “waterbed effect”, was discovered: the reasoning behind the effect being that, given the competitive bottleneck that generates from having exclusive access to the user who is being called, each potential mobile customer comes with a “termination rent”, which leads mobile operators to compete for these customers, by offering them attractive deals. If regulation cuts these termination rents, then mobile operators may compete much less aggressively for the mobile customers and the retail tariff paid by customers would unavoidable tend to go up (Genakos and Valletti, 2008).

However, in recent times, the reiterated complaints from many mobile operators about the fall in profit caused by the reduction of termination rates, induced by the widespread application of the 2009 Recommendation on rates’ reduction by NRAs, tend to confirm

that, in reality, the “waterbed effect” was not particularly relevant and termination rates’ reduction ultimately reached the final customers.

As a last point about the termination debate, it is interesting to recall that a third option, besides CPNP and RPNP, for regulating the relation among network operators, exists and may be used with either CPP or RPP system for customers’ tariffs: it is the so called Bill and Keep (BAK) system, where each operator agrees to terminate calls from another network at no charge.

Moving to a BAK regime would completely bypass the bottleneck monopoly and associated distortions of conventional CPP regimes, yet enable operators and customers to choose between CPP and RPP (Littlechild, 2006). There have been several studies at European level trying to assess the opportunity to switch to a BAK system, instead of to an “improved” CPNP system (TERA Consultants for the EC, 2009). One of the important reasons for the change of the charging method, aside from eliminating the monopoly bottleneck in termination and the related cost of regulation, is setting the same interconnection charging method across different technologies. Creating a common, technology neutral, charging principle may become a very important target for policy with the convergence of services such as voice, video, Internet, and data traffic in general, and with the advent of NGN. Indeed, the IP-based networks charging scheme has been from the start a BAK system, unregulated and subject to net neutrality obligation. BEREC acknowledged the potential long-term importance of positive “system” effects which the introduction of BAK could carry, but, it considered that the frictions in the switch would have been difficult to control, so each Member State in the short-medium term could stick to the “improved” CPNP (BEREC, 2010).

Nowadays, the most important issue for the mobile sector future appears the crucial demand for spectrum availability in face of a surge of spectrum usage due essentially to mobile data transmission. The spectrum is a finite and unique resource, which can be used both for commercial services, like information and communications services, and for the supply of traditional public services, like education, health and public safety. Spectrum can also help in bridging the digital divide for the area non reached by broadband connections, since mobile penetration and mobile connectivity can be a powerful driver of broadband diffusion. In some Member States, mobile penetration is

much higher than fixed telephony penetration, for example in Romania. For all these reasons, an optimised use of the spectrum can generate great societal benefits and an increase of European competitiveness in the global arena.

The ways to gain the greatest benefits from the spectrum are not straightforward though, as there are several potential modes of assigning and managing the rights of use - geographically, time-wise, and frequency-wise. In a first phase, the European policy regarding the use of the spectrum has been directed at creating a coordinated pan-European introduction of selected uses of the band, e.g. Directive 87/332/EEC for the GSM communications, Directive 91/287/EEC for the cordless technology. At that time, the main issue to address was the technical coordination of the use of the spectrum in the different Member States.

The first move towards a European policy for spectrum harmonisation is constituted by the Green Paper on Spectrum Policy (596/1998/COM) This Green Paper aimed at initiating a public debate on how to approach the creation of a European level spectrum policy program, which started to be recognised as a crucial goal for the competitiveness and the economic role of the EU in the global market. A framework for Radio Spectrum Policy in the EU was then included in the 2002 regulatory framework for electronic communications<sup>3</sup>, particularly through the Radio Spectrum Decision (676/2002/EC).

The Radio Spectrum Decision established the policy and regulatory tools to support the coordination of national policy approaches for the availability and efficient use of radio spectrum. This decision somehow institutionalised spectrum policy in Europe, establishing the Radio Spectrum Committee, with the task to help the Commission in solving technical hurdles, and the Radio Spectrum Policy Group (RSPG), with the function to issue opinion or produce reports on specific and strategic radio spectrum policy issues. A constant effort towards harmonisation has characterised the European spectrum policy in the subsequent years, as proven by the numerous decisions having harmonisation as their main object<sup>4</sup>.

In the last few years, the rapid increase of mobile electronic means of communications such as smartphones, tablets, or other connected devices, such as video games consoles,

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<sup>3</sup> See Footnote 1.

<sup>4</sup> See

[http://europa.eu/legislation\\_summaries/information\\_society/radiofrequencies/l24218a\\_en.htm](http://europa.eu/legislation_summaries/information_society/radiofrequencies/l24218a_en.htm).

determined an impressive growth of data traffic, which has doubled in 2012, with mobile data traffic alone estimated to have increased by 69% (Digital Scoreboard, 2013). Consumers tend to demand more and more for ubiquitous Internet access and for wireless technologies, substituting or complementing fixed broadband access.

Besides ubiquitous service, consumers expect also quality of service, which is also a more demanding task with the type and variety of services used over the Internet. This tendency triggers the demand for more capacity, which is casting a light on the risk of spectrum crunch in Europe.

It seems clear, though, that the problem is not the scarcity of the spectrum *per se*, but its misuse or underuse, which leads to a severe under-exploitation of the available spectrum in Europe. On these issues the US situation is probably as rigid and complex as the European one.

The traditional approach to spectrum in Europe, was based on assigning the right to use a certain band of the spectrum for a specific purpose, this strategy cannot follow the changes needed after the rapid developments in technology and the convergence of telecommunications. This difficulty, often recalled by operators, has a strong regulatory underpinning: the fragmentation of the rights to use the radio spectrum, due to the local assignation procedures and the different national regulatory framework, which is a serious limit to an efficient use of the resource.

The challenge now is, not only laying the ground to new releases of spectrum, which will enlarge the overall availability of bands, but also trying to change the regulatory setting in the direction of the most flexible and optimised use of existing already assigned bands. Indeed there are several ways to escape a spectrum crunch: reallocating the spectrum, via releases of more spectrum, mergers among mobile operators or reallocation of existing rights to the spectrum; changing the spectrum market mechanisms, which means the rules of auctions, the creation and the working of secondary markets, the pricing mechanisms; trying to control traffic growth, via a better network architecture; adopting new technologies, like cognitive radio.

In 2012, the European Parliament and Council issued a document which points to several of these directions, the Radio Spectrum Policy Programme (Decision 243/2012/EU). This Decision is motivated by several important objectives: creating a common and consistent

framework on spectrum management across Europe, to eventually reach a digital single market in the EU; promoting the principles of efficient use and effective management of spectrum, as well as technological and service neutrality, to reach more flexibility in the use of the spectrum; ensuring optimal refarming of released bands interested by the digital dividend.

In a subsequent document “Promoting the shared use of radio spectrum resources in the internal market” (COM(2012) 478 final), the Commission invited administrators and firms to identify Beneficial Sharing Opportunities (BSO) in given bands. BSO are described in the Collective Use of Spectrum (CUS) model - which provides all users with shared or "collective" usage rights to access a particular band and an interference solution mechanism - and in the Licensed Sharing Access (LSA) model - in which different users need a license to have access to a shared band. The Commission suggests a procedure driven by the demand of new spectrum users, BSO applicants, to enable a process based on CUS or LSA. However, the Radio Spectrum Policy Group seems to point at LSA as a better sharing method insofar as it guarantees higher quality of service and more coordination between incumbents and new users.

LSA appears to have certain advantages over CUS: it can be implemented rapidly in Europe under the existing EU regulatory framework for electronic communications; it aims at offering a predictable quality of service, well-defined rights of use and obligations; and it can foster a progressively increased harmonisation of frequencies for mobile internet access and use (Parcu *et al.*, 2012).

In synthesis, traditional bottlenecks that induced high termination rates and high costs for customers and inappropriate cross subsidies between fixed and mobile networks appear to be essentially overcome. In the mobile sector the focus is now primarily on the necessity to respond to a surging demand for video and data transmission on mobile networks, a demand that requires for a much more efficient, innovative and harmonised use of spectrum in Member States.



### ***3. Internet's native companies and the clash with traditional operators of electronic communications markets.***

The 90s in electronic communications are primarily the years of the Internet. They have witnessed an explosive growth of different electronic markets and the rise of the so-called e-commerce. A multi cited 1999's article of *The Economist* stated: *"The explosive growth of the Internet promises a new age of perfectly competitive markets. With perfect information about prices and products at their fingertips, consumers can quickly and easily find the best deals. In this brave new world, retailers profit margins will be competed away, as they are all forced to price at cost..."*.

The fundamental function of a marketplace is to facilitate demand and supply matching, by letting the information flow more smoothly between buyers and sellers. In this respect, early research on electronic marketplaces highlighted the multiple advantages that both buyers and sellers could obtain by making transactions on online platforms (Bakos 1997, 2001).

In sum, low consumer search costs, the absence of spatial product differentiation, the possibility to switch supplier at potentially zero cost, altogether they all should promote competitive pricing. In addition, the efficiency of consumer search can highly benefit from the use of search intermediaries, i.e. search engines that find and compare all commercial conditions on products (prices, delivery time, availability, shipping costs, etc.). Low set-up costs for websites and the distributional systems promote low concentration. Thus, compared to traditional retailing, Internet retailing seems to present the characteristics of a more efficient, almost frictionless market.

Empirical and theoretical analyses though proved soon enough that these suppositions did not turn out to be completely or even partially right. Even in the nearly perfect markets, price dispersion still exists due to consumer preferences both on price and non-price attributes of the goods and services, such as reputation (Brynjolfsson et al., 2009). These results are also confirmed in studies finding evidence of both extraordinary strong price competition but also of obfuscation strategies on behalf of retailers on intermediary websites (Ellison and Ellison, 2009). Obfuscation strategies can be adopted by online retailers to increase buyers' search costs, and, consequently, decrease competitive

pressure. Therefore, the Internet certainly brought more efficiency but did not remove all frictions from markets involved in the e-commerce.

For many sectors though, mainly media and editorial markets like newspapers, magazines, the music industry, but also for the advertising sector, the spread of the Internet imposed a radical change of the business model. In the media and music industry, the chance to get digital versions of the products online means tackling directly the traditional business model based on the physical selling of the good. These sectors were impacted by a truly radical change and suffered a dramatic decrease in profits during the process.

In the advertising market, the Internet started playing a key role thanks to the availability of a huge amount of new and high quality data on Internet users' preferences and characteristics, which allowed to tailor advertising messages much better than with other traditional media, and, therefore, increased the attractiveness of advertising online at least for the most Internet oriented part of the population.

Business on the Internet started developing in a powerful and disruptive manner, changing the way many businesses worked for decades and diffusing new ways of searching for goods and selling them to customers. Today, it is clear that the Internet is not only a new technology, which may have a specific effect on how business is conducted in certain sectors, but also it is a market place *per se*, as the enormous success of over-the-top firms demonstrates.

In particular, it is not breaking news that it is possible to offer certain services, such as voice telephony and instant messaging, using the Internet instead of the traditional telecommunications networks. In these last years, the rapid spread of smartphones, tablets and other connected devices has dramatically increased the use of over-the-top services by customers. This phenomenon has determined a decline in revenues from voice and text messaging for telecommunications companies, while instead over-the-top companies have witnessed a large increase of business revenues and profits. Over-the-top companies also benefit from operating on a worldwide scale, thanks to the ubiquitous nature of the world wide web technology.

In Europe, telecommunications operators have traditionally relied much on service revenues – especially for the mobile operators, also thanks to the high termination rates –

and less on access revenues and data revenues. Traditional telecommunications operators are now seriously concerned with the loss of revenues and overall with the asymmetries of various aspects of telecommunications regulation with respect to the Internet environment, which leaves over-the-top operators freer in offering their services.

Telecommunications operators claim that such asymmetries place them in a disadvantaged position with respect to over-the-top companies, regarding in particular: privacy and data protection, e.g. data retention, *ex-ante* vs *ex-post* rules, rules of notice, consent; tax issues, e.g. global dimension of over-the-top companies; rules of competition and regulation, e.g. replicability obligation on telecommunications products, reporting obligations, open standards and interoperability obligations, bundles offering, minimum quality of service. According to telecommunications operators, all these asymmetries play a determinant role in causing the loss of revenues that they are witnessing. As a consequence, traditional operators' profits are decreasing, slowing down their network investment plans, along with the period of financial and economic crisis, threatening the achievement of one of the top goals in the European Digital Agenda, investment in new networks. Besides, regulatory asymmetries should be removed anyway in the intent of assuring technological neutrality.

The raising demand for services running on the web, pushed also by the applications offered by over-the-top operators, is triggering demand for more bandwidth and even more ubiquitous Internet access, a phenomenon which *per se* would request a renewed effort in network investments. There is the impression that data traffic is growing faster than the infrastructure needed to carry it and that, at the same time, there is a disconnection between sources of revenue and sources of costs<sup>5</sup>. On a business level, there surely is an issue of disruptive innovation that over-the-top services have brought forward in electronic communications markets. At the same time, the Internet constitutes an incredible opportunity for all telecommunications companies, creating a surge in the demand for services, even if at present the transition from traditional to Internet based services may nevertheless cause a loss of revenues.

Similarly to what is happening in the US, the new business model for telecommunications companies may progressively shift from a services based revenue

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<sup>5</sup> ITU Secretary-General, Dr Hamadou I. Touré, 20 June 2012.

model to a business model based more heavily on revenues from access and data, which would also imply a new impulse on network investments. ETNO (the association of largest traditional operators), however, maintains that, at least for the moment, the decline in voice revenues is far from being offset by growth in broadband access and data charges (ETNO, 2013).

For the European Union and national regulators it is essential though to establish a technologically neutral approach to the services offered by over-the-top and telecommunications operators. Two main points to this regard are the treatment of data and the issue of net neutrality.

The treatment of data seems to be crucial because it constitutes an important business factor in general and even more on the web. Over-the-top companies take advantage from the fact that the current European regulatory framework on data protection does not cover the most recent technological developments, whereas telecommunications companies operate under well-defined rules for the treatment and retention of users data. A proposal for a regulation which will unify data protection within the EU and will include the new issues raised by the use of the Internet - e.g. social networks and cloud computing - has been released at the beginning of 2012, the General Data Protection Regulation (GDPR). This proposal, which is being discussed, introduces, among others, a general obligation for companies who want to access, use or store personal data (including biographical information, social information, sensitive information) to ask for consent, the right to data portability, the “right to be forgotten”, and concludes adding clear rules for transfers of data outside of the EU. It is an important step in the direction of a pan-European regulatory framework for the use of data, which will equalize conditions between over-the-top players and telecommunications companies in Europe. However, it is essential that the new EU Data Protection Regulation strikes the right balance between data protection and creating economic and social opportunities and benefits from technology and data.

The issue of net neutrality is also central to the debate between telecommunications operators, who are the network providers in Europe, and over-the-top companies. In some way, the net neutrality regime is a vertical and specialized declination of the paradigm of technological neutrality, which works also horizontally by equalizing conditions on

different technological platforms. In the past, there have been several cases of discrimination against over-the-top services by fixed and mobile network providers in Europe. BEREC investigated existing practices and found that several fixed and mobile network operators applied restrictions, including blocking or slowing down certain services, affecting a significant number of subscribers in Europe (BEREC, 2012). Differentiation based on objective characteristics of the service could in principle be acceptable, but discriminating behaviours against companies who drive up the demand for services is not only unlawful, but also symptom of misaligned incentives.

Telecommunications operators ask policy-makers and regulators for the application of a non-restrictive approach to net neutrality, which would allow a differentiation of services on the base of value and quality. In particular, they require the freedom to make commercial agreements involving end-to-end quality of service delivery between telecommunications operators, over-the-top companies, and content providers. They envisage in this as a possible solution to the loss of revenues faced by telecommunication companies (ETNO, 2013).

Lastly, telecommunications companies ask regulators for a lighter approach to consolidation and horizontal cooperation within the sector, which, in their view, would reinforce the ability of European players to compete with over-the-top global operators.

A parallel set of issues regarding the importance of the so-called *app portability* is gaining momentum in the over-the-top market. Competition in internet markets sees two very big companies, Apple and Google, providing the operating system on the connected devices and an extremely long list of application developers who offer applications on those platforms. Apple has always aimed to keep the control over its customers by creating a “walled garden”, i.e. an environment that controls the user's access to web content and services, thus filtering the actual variety of content which can be reached by the user. Google's system Android, instead, was set to a more open standard, with an unrestricted marketplace for applications. Such differences, and the possibility to use the same applications across different platforms will gain more and more importance in business terms, but also at competitive level: in an interconnected digital market, with converging technologies, the chance to have access to a certain platform will soon gain a significant policy dimension.

In synthesis, the Internet is delivering also in Europe extraordinary benefits in terms of innovation of services and business models. Some traditional services have been heavily impacted and are suffering, but regulation cannot alter market dynamics trying to preserve the past, indeed it can try to accompany the change assuring a level playing field. The most pressing problem appears the conflict between traditional telecom operators and over-the-top global companies: at the moment probably the best solution seems to go beyond the rhetoric of the global conflict and face each contentious issue on the specific merit.

#### ***4. The search for a European Single Market and the right level of regulation.***

The creation of a single internal market has always been one of the most relevant goals of the European Union's intervention in electronic communications. To reach this goal, the European telecommunications policy has first tried to achieve the harmonisation of the principles and rules of operation of electronic communications markets in the different Member States. The Open Network Provision, that we already recalled, set the basic rules for open access to the networks of the old monopolies so that the new entrants could offer services in competition with the ex-monopolies in all Member States. The provision was the first intervention aimed at harmonising technical interfaces, access conditions, usage conditions and tariff principles among the different Member States.

In 2000, the European Commission with the Electronic Commerce Directive (Directive 2000/31/EC) pursued the definite purpose of setting up an internal market for electronic commerce among the different Member States. The framework aimed at providing common rules regarding transparency, information requirements for online service providers, commercial communications, electronic contracts and limitations of liability of intermediary service providers.

Nonetheless, these first interventions towards the creation of a single internal market in Europe were fragmented, as they were directed at selected segments of the whole electronic communications picture.

The regulatory framework for electronic communications of 2002 was the first intervention with a truly far reaching ambition: take account of the growing convergence between telecommunications, broadcasting and information technology and push Europe toward a harmonised and unified framework (Directive 2002/21/EC and related, see Footnote 1). The purpose of harmonisation also regarded the area of spectrum policy, as expressed by the Radio Spectrum Decision in 2002 (Decision 2002/676/EC). One of its main purposes was to establish a legal framework to ensure that the conditions for the availability and effective use of the radio spectrum were also harmonised among Member States.

Today, however, there is a common recognition that the results reached so far toward the establishment of a European single market are insufficient.<sup>6</sup> The real problem to be solved, however, seems to be the creation of an internal single market that effectively unifies national markets in terms of network availability and access, spectrum usage and competition rules. Without establishing the conditions for such a common market, a pan-European dimension of networks, in fixed or mobile, cannot be reached or sustained.

As also recognised by Commission's officials, a real common telecommunications market in Europe would probably need a regulatory intervention less oriented towards immediate competition, nevertheless, an "antitrust holiday" is deemed impossible as any process of market consolidation in Europe should be monitored rigorously (Madero, 2013).

It is important to underline that in a specific area the European Commission has decided to intervene directly to strike down barriers between Member States markets. We refer to international mobile services and mobile roaming prices. Roaming regards the provision of text messaging, voice calls and mobile Internet across countries. Such services used to be freely surcharged according to the agreements between telecommunications operators belonging to different countries. Roaming prices, therefore, were exceedingly high and

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<sup>6</sup> In a study for ETNO, necessary steps to reach the digital single market are identified in: the need to deregulate access to the network, particularly for NGN; the correction of regulatory dissimilarities among over-the-top players and telecommunications operators; the establishment of a more flexible and efficient procedure for spectrum assignment and use, in order to speed up the deployment of new mobile networks; the consolidation of the mobile market; the further harmonisation of rules and regulation; the elimination of remaining frictions to the exploitation of cross-borders synergies. Clearly, it constitutes a long list of missing pieces.

<http://www.etno.eu/home/press-corner/etno-press-releases/2013/245>

totally unconnected to industrial costs due to a lack of competition for roaming customers. The European Commission first intervened in 2007 (Regulation 2007/717/EC) to broaden access and cut down roaming charges. The Regulation imposed a price cap, the so-called Eurotariff, both at wholesale and at retail level, and required more transparency in the information given to customers for voice calls roaming prices. The 2007 intervention was meant to be exceptional and temporary, so that if afterwards normal market conditions had been re-established in the market for roaming calls, the regulation would expire in three years. The Commission, together with the national regulatory authorities, monitored the development of the prices and the price cap was extended to text messaging and to data traffic in 2009 (amending act Regulation 2009/544/EC).

More recently, however, a new Regulation was introduced (Regulation 2012/531/EC) which extends the price ceilings both at wholesale and at retail level, for voice, text messaging and mobile Internet with the aim to bring down to virtually zero the difference between national and roaming tariffs within 2015.

Operators' immediate reaction is against the elimination of roaming, which they do not consider as a necessary step to the creation of a single digital market. However, there is a strong will at European political level to make this change real, as abolishing the persistent price differences is considered a crucial step to stimulate innovation and to create a genuine digital single market.<sup>7</sup>

In the fixed network market, the path to reaching a European single market seems less straightforward, given the different speed of transition from copper network to fibre network in the various geographical areas. As we have previously recalled, the NGA Recommendation suggests the introduction of geographically differentiated remedies, when the introduction of fibre alternative would create substantial differences in the competitive conditions in different areas. It is clear that local conditions of broadband markets will matter and will have to be taken into account by telecom authorities to ensure a rapid and smooth switch to NGA, at least in the near future. All previous questions examined regard fundamental choices of the correct regulatory approach. If we

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<sup>7</sup> See the recent Press Release by the European Parliament <http://www.europarl.europa.eu/news/en/pressroom/content/20130708IPR16828/html/Calling-from-abroad-mobile-roaming-fees-must-go-by-2015-say-MEPs>.



switch from substantial issues to the institutional instrument applied to implement the regulatory models, it emerges that there were two main options in Europe that could have been chosen at the outset: operate at central level through a formal European body or devolving regulation to national regulatory authorities, thus enforcing a subsidiarity principle. The option to leave each Member State to create its independent regulatory framework would have contrasted with the single market *raison d'être* of the European Union and was never seriously considered.

The European body could have been a stand-alone institution, or a pan-European organisation, a sum of the various national regulatory bodies. However, the institutional model chosen by the EU for the liberalisation and harmonisation of the telecommunications market was to direct the market change through instruments such as Directives, Regulations and Communications at European level, but delegate implementation of such provisions to the different Member States, allowing for a certain freedom of choice within a predetermined framework.

The model was a practical application of the principle of subsidiarity, which is a general principle of European law. Such principle seeks to find the right balance of responsibility, allowing interventions to be placed at the most optimal level, in order to reach the desirable market structures in the EU. The main aim of the subsidiarity principle applied to market regulation is finding the appropriate division between regulatory issues with an impact on cross-border markets, where EU level regulators should have prime authority and predominantly national issues for which the Member States should have prime responsibility. This line of action works particularly well in the area of competition law, where infringements can actually be of a supra-national or of a national or local dimension, and so easily assigned to the Authority better positioned to intervene.

In telecommunications regulation, the principle of subsidiarity implied the creation of a general framework, than leaving a certain room for action to national bodies in the implementation and adaptation of such framework to national circumstances. This approach was seen as the most appropriate, even though one of the main aims of telecommunications regulation, and more broadly electronic communications regulation, has been since the start the harmonisation of national markets and, eventually, the creation of a European Single Market.

Somehow, this partially decentralised approach created the need to continuously balance the power between the Commission and the Member States, and between Commission and national regulatory authorities. National Governments were also reluctant to give away the full regulatory control. A spontaneous solution to the need of coordination and cooperation in the implementation of various telecommunications regulatory provisions came with the constitution of a network of regulators, the Independent Regulators Group (IRG), which was formed in 1998 by a group of national telecommunications regulatory bodies to discuss and share experiences still in the first phases of the liberalisation process.

The national regulators network got gradually involved more and more in the process of regulation by the Commission, with the institution of the European Regulators Group (ERG) in 2002, at the time of the establishment of the New Regulatory Framework.

The process of strengthening regulatory coordination had a decisive subsequent step with the establishment of the Body of European Regulators for Electronic Communications (BEREC). BEREC was set up with Regulation CE No. 1211/2009 with the aim to improve and unify the implementation of the European regulatory framework, providing advice to the Commission and Member States, promoting greater harmonisation, improve collaboration and discussion among national regulatory authorities, the Commission and the stakeholders.

The institution of BEREC can be interpreted as a step towards a more centralised and cooperative structure of electronic communications regulation in Europe and also as an instrument to strengthen a peer review activity that would continuously monitor the status and the functioning of regulation in single States. As also recently recognised by Vice President Kroes: *“Too much intervention constrains flexibility, which in turn reduces the range and quality of services that can be offered to different consumers. Particularly as we make the transition from one technology to the other, both incumbent operators and others need to be able to explore new possibilities. As far as possible, we will focus on issues vital for healthy competition, allowing us potentially to lighten regulatory intervention elsewhere.”* (MEMO/12/554).

In conclusion, it seems that the intervention of European institutions in this new push for a single internal market may take two different directions. One way may be to intervene

directly on the market, essentially through prices, to lower barriers and close differences among Member States, like what has been done with the progressive elimination of roaming charges, to eventually reach symmetry across Member States and create the conditions for a cross-border telecommunications market. This kind of intervention is quite similar, at least in nature and purpose, if not in the use of the instruments, to what was experimented with the Directive on mobile termination in 2009 that we already discussed in Section 2.

A second structural route could be to adopt a lighter monitoring attitude on regulation in general and on mergers and consolidation among telecommunications companies of different Member States in specific, to let them gain dimension, so as to be able to better compete with global players, such as the native internet companies. This second option could be accompanied by a new effort to abandon any residual localism of the national regulations, creating a complete framework for a multi-country regulation at European level. Vice President Kroes recently hinted to a single authorisation system to operate in telecommunications market on the whole EU territory.

On the 11<sup>th</sup> of September 2013, the European Commission adopted an important legislative package called “Connected Continent: Building a Telecom Single Market”. This package constitutes the result of a major effort to lay down concrete measures to achieve the single market in ICT as early as possible. It contains proposals to overcome several obstacles. To solve the problems for operators wanting to operate cross-borders, it introduces the one-stop shop authorisation system for operators operating in more than one Member State; it includes the “three-criteria test” in all cases where the NRAs have to choose in which market to intervene; it requires full harmonisation of consumer protection rules. Regarding spectrum, it promotes spectrum sharing and spectrum trading; it demands for common regulatory principles for spectrum authorisation procedures and harmonisation of timing and duration of spectrum assignments for wireless broadband across countries. It guarantees net neutrality across Europe. It further stresses the need to bring the roaming prices down to domestic price levels by 2016.

The package does not seem to radically change the existing regulatory framework for electronic communications in Europe, it does not introduce heavier

interventions such as a Eurotariff for termination rates, or a Pan-European spectrum license, as sometimes proposed. The main aim of this package is to lighten the regulatory burden and eliminate unwanted market obstacles to a single digital market in Europe. Consolidation per sé is not considered as a policy objective, rather, the creation of the necessary conditions for telecommunications companies to operate in a unified European market is considered as a first step towards a new path of consolidation which will then take place as a natural consequence. The larger market will then make those consolidation possible under the EU competition law. In synthesis, the internal single market goal has not been achieved for now, but a harmonised model of regulation, based on the subsidiarity principle, is certainly in place and operational in Europe. If the single market is really the final goal of the Commission, innovation in regulation, even if probably insufficient, is certainly an issue of the next years. A more direct intervention on the market together with the fostering of a structural consolidation, thus creating some pan-European players, appear to represent two instruments that the Commission can mix to force an acceleration of the harmonisation and consolidation process in Europe. The choice of the European Commission, as seen from the recent adoption of the “Connected Continent” package, is to intervene to obtain the harmonisation of the market conditions in Europe, so that a healthy path of consolidation will eventually take place.

## ***6. Conclusion***

The condition of the European electronic communications markets is unavoidably influenced by the present economic crisis. These markets, however, have witnessed a long period of technological advances and services innovations, so they are among the economic sectors that suffered least. Nonetheless, it is a reality that network investments are slowing down, while traditional and new telecommunication operators are facing both the effects of the crisis and the need to absorb disruptive business changes, as we discussed in the previous sections.

This situation of difficulty often translates in a general request from telecommunications operators to equalize their operating conditions with those of operators coming from different platforms but offering competing services due to the process of technological convergence.

In parallel, a lively debate is raging on whether new NGN fibre networks should be subject to similar access regulation as the legacy copper networks or some deregulation would be beneficial for investments and not too harmful for competition.

Another major debate regards the mobile market, in particular, on the need to set more flexible rules for the use of the spectrum in order to minimise waste of capacity and to answer to a growing demand for data transmission.

One of the most important goals for European institutions and market players in electronic communications is the demand for a European Single Market. The European Union, especially when compared to the US, appears as a fragmented composition of distinct national markets, with significant barriers to a smooth exchange of telecommunications services between Member States. Among the most important barrier one still finds: lack of EU standards (for example on wholesale access products across Europe); differences in implementation of the European regulatory framework; difference in prices, roaming in particular until the last interventions; other frictions, such as the lack of coordination on national spectrum policies.

In these last months, a great accent has been put on the need to reach a single market for electronic communications, necessary to gain advantage of the benefits offered by the digital technologies and to be competitive at a global level. A study released by the European Commission on the cost of non-Europe estimated that the gain in terms of prospective growth from having a Digital Single Market in the European Union would be about 0.8% of PIL per year<sup>8</sup>.

The benefit accruing in terms of growth would stem from more competition, the chance to gain from economies of scale for telecommunications operators, and the chance for European citizens to access all e-communications and telecommunications services throughout the EU territory.

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<sup>8</sup> [http://europa.eu/rapid/press-release\\_IP-12-193\\_en.htm](http://europa.eu/rapid/press-release_IP-12-193_en.htm)

Also for telecommunications operators this would be a fundamental achievement, since they already point at the unequal conditions they suffer with respect to over-the-top players in offering certain services, as we explained above. In substance, one of the most important points for telecommunications operators is the chance to reach a greater dimension, to be gained by being able to offer services to a much wider, at least, pan-European market.

In several occasions, the Commission underlined the vital importance of achieving a Digital Single Market, for the future of the EU as a global player and for the welfare of European citizens. Even recently, Vice President Kroes declared that to reach the single market the necessary steps are: making communications across national borders much easier, for example through the establishment of a general authorisation system for telecommunications operators with supervision by the home Member State; reconfirming a net neutrality standard, with more effort on avoiding unfair discrimination from network providers; eliminate all artificial roaming charges that do not reflect actual changes in costs.<sup>9</sup>

The major achievements of the liberalisation of telecommunication market in Europe are evident to everybody. However, technological change and global competition are now presenting the EU with new challenges, an innovation in the regulatory approach, maintaining successful features but modernising under different respects, along the lines we have discussed in the previous sections, may be part of the response.

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<sup>9</sup> [http://europa.eu/rapid/press-release\\_SPEECH-13-622\\_en.htm](http://europa.eu/rapid/press-release_SPEECH-13-622_en.htm)

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