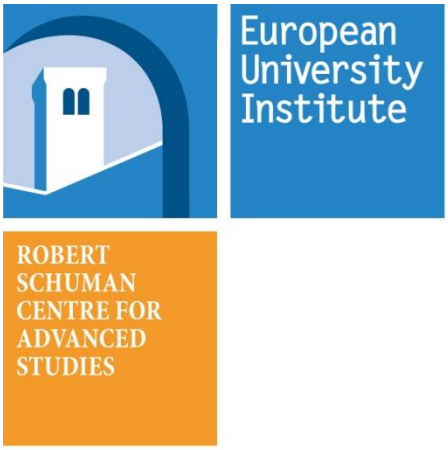

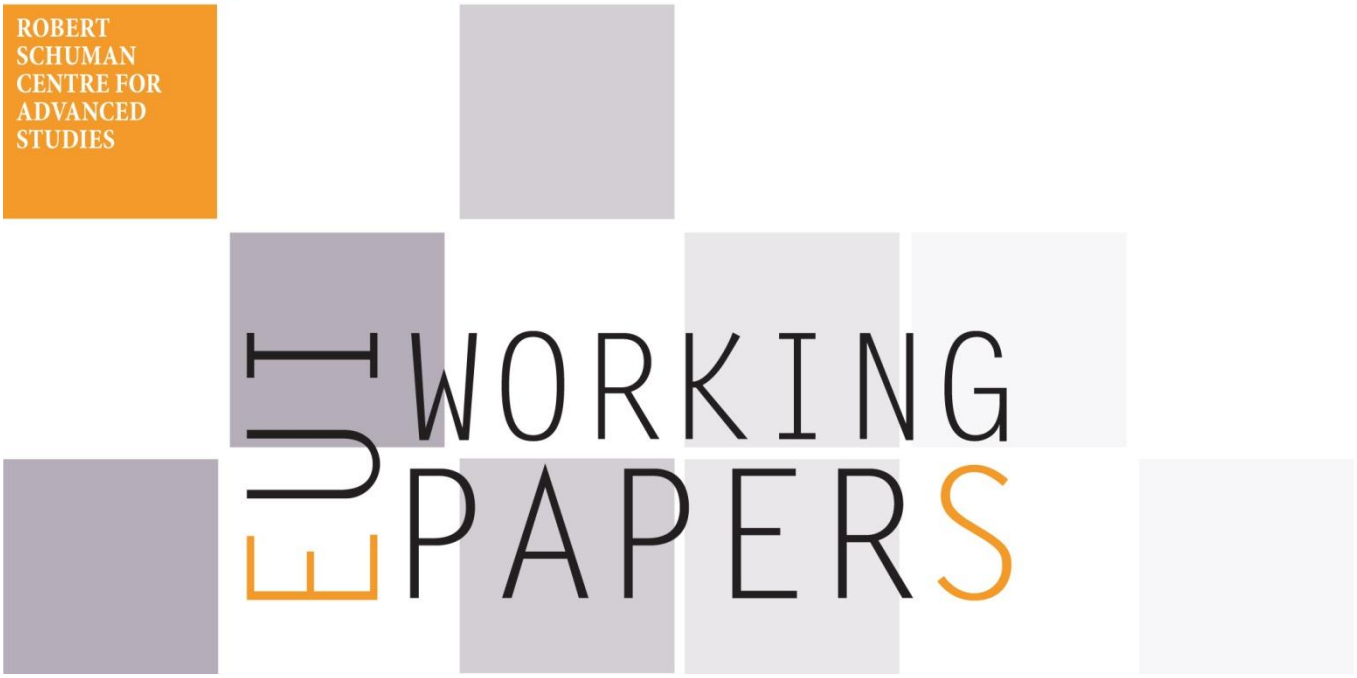

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Abstract

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 were very important topics of the policy debate in the two decades from 1990 to 2010. In these years, the EU developed a sophisticated regulatory framework aspiring to the principle of favouring the entrance of new players in the sector and characterised by a strong pro-competition flavour. More recently, however, the necessity of mobilising important investments for the creation of new Next Generation Networks, capable of delivering all the benefits of the digital revolution to European citizens, has cast 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.

Keywords

Telecommunications policy, European telecommunications policy, regulation, European regulation, Internet, Over-The-Top (OTT), New Generation Access Networks (NGAN), European single market, broadband, European Digital Agenda, Data Protection, liberalisation, harmonisation.

JEL K23, L43, L51, L96

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; and the Single European 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, a demand to liberalise 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 of 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 that of how to create the right conditions to spread the economic and social advancements promised by the digital revolution, for example the conditions needed to encourage investments in Next Generation Networks[1].

After two decades and more European market regulation, some new fundamental questions need to be answered by the European Union and by national regulators to respond to 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 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 its 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 for 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 of liberalising and privatising the State monopolies, in order to unleash the potential of competition and to improve efficiency (Armstrong and Sappington, 2006), in parallel with the objective of creating and sustaining the growth of a common internal market for electronic communications.

The start of the modern phase of European telecommunications policy can be seen 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 of creating the conditions to allow other operators

[1] According to the definition given by the International Telecommunications Union (ITU), Next Generation Networks (NGN) are packet-based networks able to provide Telecommunication Services to users and able to make use of multiple broadband and QoS-enabled transport technologies, and in which service-related functions are independent of the underlying transport-related technologies.

to gain access to 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 of opening the sector to competition led to the introduction of asymmetric regulation: ex-monopolies, or incumbent operators, were imposed with obligations that new entrants did not face.

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 other things, the publication of a reference offer and the obligation to keep separate accounts for wholesale and retail operations for all vertically integrated operators.

In parallel, the introduction of the competition directive (Directive 90/388/EC) and the amending act, called the 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 on 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, to bring to completion the liberalisation process of telecommunications services in Europe.

The European access regulation included, progressively, an obligation to offer an interconnection to incumbents' networks at cost-oriented prices and a duty to allow access to essential components of the network, especially, as key access regulatory instruments. Local Loop Unbundling (LLU) and bitstream[2] came into the picture with the EC Regulation on Local Loop Unbundling (EC/2887/2000), which came into force on 2 January 2001, while an obligation for the incumbent to offer bitstream to entrants when it is already available to its own services, is contained in Directive EC/10/98. These rules were, and still are, the milestone for the creation of sustainable competition based on new services, but also on (partially) new infrastructures, in the European telecommunications arena.

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 market liberalisation of the telecommunications sector through the implementation of an asymmetric regulation, which defined the rights of new entrants, imposed restrictions on the historical operators in order to open their network face infrastructure, and 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 harmonised telecommunications market in Europe introduced the necessity of finding 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 for reaching 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

[2] Local Loop Unbundling (LLU) is the process where the incumbent makes its local network (the copper cables that run from customers' premises to the telephone exchange) available to other companies. Bitstream access refers to the situation where an incumbent installs technology and a modem in the customer's premises and then makes the access link available to third parties, to enable them to provide broadband services to customers. With bitstream access, the incumbent provides the ADSL technology and modems, while entrants do not have control over the physical line and nor are they allowed to add other equipment.

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 by the incumbent.

The goal of maximising static efficiency, however, generally comes into conflict with the need to also reach dynamic efficiency: a high level of competition lowers the operators' profits and therefore their incentive to invest. 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 in 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" (LOI) theory (Cave and Vogelsang, 2003; Cave, 2006).

In 2002, the European telecommunications regulatory framework was completely revisited to take into account the need for a more flexible technology-neutral regulatory setting, required by the rise of the Internet and the convergence between services once offered on different technological platforms. The new regulatory package[3] fully promoted the so-called LOI approach by putting an accent on the formulation and implementation of access policy, not only to challenge the endurance 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 relevant market definition and the subsequent Significant Market Power (SMP) concept, essentially corresponding to the dominant position in competition law[4]. However, 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 sustainable kind of competition took place in the telecommunications market, and therefore only *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 to whether the theory actually works in the real world as a way to accompany and foster investments by entrants (Cambini and Jiang, 2009; Bourreau et al., 2010). Robust empirical evidence is difficult to obtain due to a 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 result that the LOI hypothesis works in the case of 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 inter-platform competition is the only main driver to spur investment in broadband networks. In a recent paper, Nardotto et al. (2012) show empirically that there are no strong positive effects of local loop unbundling entry on broadband penetration levels, which could suggest that the positive competitive effects are outweighed by the adverse effects of reduced incentives to invest. However, it turns out that, while local loop unbundling entry has not raised total broadband penetration across different local markets, it has substantially increased the quality of the service as measured by average broadband speed (Nardotto et al, 2012).

In reality, European telecommunications markets are witnessing a rather slow deployment of investment in NGN, which could be due to the current period of demand uncertainty and financial

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[3] 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).

[4] For further explanation of the relevant market and the SMP concept in telecommunications regulation, see the 2002 "Commission guidelines on market analysis and the assessment of significant market power under the Community regulatory framework for electronic communications networks and services".

crisis, but may also partially depend on the regulatory setting in force (Digital Agenda Scoreboard, 2013). In this 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, and also regulation of the access conditions to the new network, may become essential tools to guarantee open network development in the market, particularly with respect to the access conditions for outsiders to the agreement. Various 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; Cave, 2010). The copper network, in fact, constitutes an imperfect substitute for the NGN, entailing a replacement effect for incumbent and alternative operators. Revenues made on copper constitute an opportunity cost of 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 overall competition, while also considering the importance of regulation of the copper network during the transition. A recent document by the European Commission contains a Recommendation on non-discrimination and costing methodologies for the regulation of NGN. The objectives of this document, as also acknowledged by the Body of European Regulators for Electronic Communications (BEREC) in the comments to the Recommendation, are: to provide for pricing flexibility of NGN services; to ensure effective non-discrimination and sufficient competitive constraints; to guarantee predictable and stable regulated wholesale copper access prices which are also consistent with the principle of cost-orientation; and to ensure a level playing field between incumbent and alternative operators through the implementation of effective and proportionate non-discrimination obligations which facilitate downstream competition.

The Recommendation applies the principle of the Equivalence of Inputs[5] to guarantee non-discrimination between incumbent and alternative operators. Regarding the possibility of a price squeeze, the Recommendation says that the National Regulatory Authority (NRA) can decide whether to use an Equally Efficient Operator or a Reasonably Efficient Operator standard[6], to ensure that the offers made by the incumbent operator are technically replicable by alternative operators.

The transition between the copper network and NGN is at present the frontier of the new equilibrium through which the European Commission is trying 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 the fact that the transition from copper-based to fibre-based networks may change the competitive conditions in 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, has

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5 Equivalence of Inputs is a concept requiring that the incumbent provides the entrant with the same conditions related to inputs which it offers to its own retail division, also regarding, for example, timescales, terms and conditions (including price and service levels) for the retail offer.

6 The Equally Efficient Operator standard states that to be considered replicable, the retail offer made by the incumbent has to be compared with the offer made by an equally efficient entrant. The Reasonably Efficient Operator standard states that the comparison is made with an entrant which is not necessarily as efficient as the incumbent (which benefits from experience and scale), but with an entrant which is slightly less efficient.

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 counterparts, from working on a smaller scale, which also puts them in a disadvantageous position against Internet-native worldwide operators when competing with the same services. Traditional European telecommunications operators, also through the European Telecommunications Network Operators (ETNO) association, 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 size 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 a detailed judgment of the LOI strategy is still under analysis by theorists, there is no doubt that bringing in 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 before this, how to contribute to the deployment of 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 to be 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 an "essential facility"[7]. Mobile markets immediately presented an opportunity for a more symmetric structure, which did not required a regulatory intervention as intrusive as that 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. At the start of the industry, mobile operators set mobile interconnection rates through negotiation and commercial agreements, with the regulator only intervening when parties failed to agree[8] .

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 (i.e. receives) 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, a 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 to conclude the call.

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7 The "essential facility" concept is related to the characteristics of an infrastructure when it is deemed to have a specific purpose and is highly costly to replicate, therefore the use of such an infrastructure is essential to offering a certain service.

8 Interconnection charges are the payments made by operators to compensate each other for the traffic exchanged between their networks.

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) system 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 an "airtime charge" or premium for the actual termination on the recipient's handset, while the originator might still pay a lower fee which is 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 reception charges are kept quite low, without need for regulatory intervention. The reason is that the retail price reflects the call termination cost. Therefore, operators tend to keep the 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 resistance from customers to paying for calls received, the risk of lower penetration rates and, ultimately, the risk of people turning off their mobile phones. On the other hand, however, an RPNP system does not require termination rate 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 sometimes 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 self-perpetuating situation in which fixed telephony customers were financing the growth of the mobile market and operators by paying over-high tariffs.

In May 2009, the European Commission reacted to a situation that was 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 achieve a decrease in the final tariffs to consumers, considering the high level of termination charges to be a 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 this 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 were based on the costs incurred by an efficient operator.

The European Commission considered that high termination charges had two main effects, both highly undesirable: they distorted competition between fixed-line and mobile operators and services and constituted 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 of exploiting 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 against 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. When off-net calls are more expensive, customers tend to prefer a larger network, a phenomenon dubbed "tariff mediated externality" by economists (Armstrong and Wright, 2009).

In an effort to contrast the regulatory evolution pursued by the Recommendation, several mobile operators sponsored various 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. In fact, a theoretical effect, called the "waterbed effect", was discovered. The reasoning behind the effect was 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 mobile customers and the retail tariff paid by customers would unavoidably tend to rise (Genakos and Valletti, 2011).

However, in recent times, the repeated complaints from many mobile operators about a fall in profit caused by the reduction in termination rates induced by the widespread application of the 2009 Recommendation on rate reduction by NRAs tend to confirm that, in reality, the "waterbed effect" was not particularly relevant and termination rate reduction ultimately reached the final customers.

As a last point about the termination debate, it is interesting to recall that moving to a BAK regime would completely bypass the bottleneck monopoly and the 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 benefit of switching to a BAK system instead of to an "improved" CPNP system (TERA Consultants for the EC, 2009). One of the important reasons for a change in the charging method, aside from eliminating the monopoly bottleneck in termination and the related cost of regulation, is that it would set 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 network charging scheme has been a BAK system from the start, unregulated and subject to a net-neutrality obligation. BEREC has acknowledged the potential long-term importance of positive "system" effects which the introduction of BAK could bring, but it considers that the frictions in the switch would be difficult to control, so in the short-medium term each Member State can stick to the "improved" CPNP (BEREC, 2010).

Nowadays, the most important issue for the future of the mobile sector appears to be the crucial demand for spectrum availability in the face of a surge in spectrum use essentially due 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 areas not 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 in 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 was directed at creating a coordinated pan-European introduction of selected uses of the band, e.g. Directive 87/332/EEC for GSM communications and Directive 91/287/EEC for 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 programme, 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[9], 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 of helping the Commission in overcoming technical hurdles, and the Radio Spectrum Policy Group (RSPG), with the function of issuing opinions or producing reports on specific and strategic radio spectrum policy issues. A constant effort towards harmonisation has characterised European spectrum policy in the subsequent years, as proven by the numerous decisions with harmonisation as their main object[10].

In the last few years, the rapid increase in mobile electronic means of communications such as smartphones, tablets, and other connected devices such as video games consoles, has determined an impressive growth in data traffic, which doubled in 2012, with mobile data traffic alone estimated to have increased by 69% (Digital Scoreboard, 2013). Consumers tend to demand more and more ubiquitous Internet access and wireless technologies to substitute or complement fixed broadband access.

Besides ubiquitous service, consumers also expect quality of service, which again is a more demanding task with the type and variety of services being used over the Internet. This tendency triggers demand for more capacity, which is raising the spectre of a risk of spectrum crunch in Europe. It seems clear, however, 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. Concerning 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. However, this strategy cannot follow the changes needed with the rapid developments in technology and the convergence of telecommunications. This difficulty, often mentioned by operators, has a strong regulatory underpinning. Fragmentation of the rights to use the radio spectrum, due to local assignation procedures and different national regulatory frameworks is a serious limit to an efficient use of the resource.

The challenge now is not only to prepare the ground for new releases of spectrum, which will enlarge the overall availability of bands, but also to try to change the regulatory setting in the direction of the most flexible and optimised use of the 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 for auctions, the creation and the working of secondary markets and the pricing mechanisms; trying to control traffic growth, via a better network architecture; and adopting new technologies, like cognitive radio.

In 2012, the European Parliament and Council issued a document which points in several of these directions, the Radio Spectrum Policy Programme (Decision 243/2012/EU). This Decision is motivated by several important objectives: to create a common and consistent framework for spectrum management across Europe, to eventually reach a digital single market in the EU; to promote the

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9 See Footnote 1.

10 See http://europa.eu/legislation_summaries/information_society/radiofrequencies/l24218a_en.htm.

principles of efficient use and effective management of spectrum, as well as technological and service neutrality, to achieve more flexibility in the use of the spectrum; and to ensure optimal re-farming of released bands to those interested in 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 – in the Licensed Sharing Access (LSA) model – in which different users need a licence to have access to a shared band. The Commission suggests a procedure driven by the demand from new spectrum users, BSO applicants, to enable a process based on CUS or LSA. However, the Radio Spectrum Policy Group seems to point to LSA as a better sharing method insofar as it guarantees a 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, the 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 a much more efficient, innovative and harmonised use of spectrum in Member States.

3. Internet native companies and the clash with traditional operators of electronic communications markets

The '90s in electronic communications were primarily the years of the Internet. They witnessed an explosive growth in different electronic markets and the rise of so-called e-commerce. A much-cited 1999 article in *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, and the possibility of switching supplier at potentially zero cost altogether should promote competitive pricing. In addition, the efficiency of consumer searching can greatly benefit from the use of search intermediaries, i.e. search engines that find and compare all the commercial conditions on products (prices, delivery time, availability, shipping costs, etc.). Low set-up costs for websites and 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, however, proved soon enough that these suppositions did not turn out to be completely or even partially right. Even in nearly perfect markets, price dispersion still exists due to consumer preferences both on price and non-price attributes of goods and services, such as reputation (Brynjolfsson et al., 2009). These results are also confirmed in studies finding evidence of both extraordinarily strong price competition and 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 search costs to buyers, and consequently decrease competitive pressure. Therefore, the Internet certainly brought more efficiency but did not remove all frictions from the markets involved in e-commerce.

For many sectors, however, mainly media and editorial markets like newspapers, magazines, the music industry, and also for the advertising sector, the spread of the Internet imposed a radical change of business model. In the media and music industry, the chance to get digital versions of products online means directly tackling 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 advertising messages to be much better tailored 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 had 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 it is also a market place *per se*, as the enormous success of over-the-top (OTT) firms demonstrates.[11]

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 recent 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 in 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 much relied on service revenues – especially 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 a 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 to offer their services.

Telecommunications operators claim that such asymmetries place them in a disadvantaged position with respect to over-the-top companies, in particular regarding: privacy and data protection, e.g. data retention, *ex-ante* vs *ex-post* rules, rules of notice, consent; tax issues, e.g. the global dimension of over-the-top companies; and rules of competition and regulation, e.g. replicability obligations on telecommunications products, reporting obligations, open standards and interoperability obligations, bundle offering, and 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, the traditional operators' profits are decreasing and slowing down their network investment plans. This, along with the period of financial and economic crisis, threatens the achievement of one of the top goals in the European Digital Agenda: investment in new networks. Moreover, regulatory asymmetries should be removed anyway with the intent of assuring technological neutrality.

[11] Over-the-top content (OTT) refers to delivery of video and audio over the Internet without a multiple system operator being involved in the control or distribution of the content. Firms offering such services are, for example, Google, Facebook, Yahoo – the Internet's most successful companies.

The rising demand for services running on the web, also pushed 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 require a renewed effort in network investment. 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[12]. On a business level, over-the-top services have certainly brought forward an issue of disruptive innovation in electronic communications markets. At the same time, the Internet constitutes an incredible opportunity for all telecommunications companies, creating a surge in demand for services, even though 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 model to a business model based more heavily on revenues from access and data, which would also imply a new impulse to network investments. However, in Europe telecommunications operators, triggered by the overwhelming change, maintain that, at least for the moment, the decline in voice revenues is far from offset by growth in broadband access and data charges (ETNO, 2013).

For the European Union and national regulators it is essential, however, to establish a technologically neutral approach to the services offered by over-the-top and telecommunications operators. Two main points in 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 (Armstrong et al., 2009). Over-the-top companies take advantage of 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 – was released at the beginning of 2012, the General Data Protection Regulation (GDPR). This proposal, which is being discussed, introduces, among other things, 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 and the "right to be forgotten", and concludes by adding clear rules for transfers of data outside of the EU. This is an important step in the direction of a pan-European regulatory framework for the use of data, and 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 – the network providers in Europe and over-the-top companies. Net neutrality means: all traffic is treated equally, to the best effort; all content providers pay the same price for termination to the Internet Service Providers; and that the price for termination is zero. The effect of net neutrality on static and dynamic efficiency has been much debated in the economic literature of the last decade (Choi and Kim, 2010; Economides and Tåg, 2012; Cheng et al., 2011; Reggiani and Valletti, 2012). 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

[12] ITU Secretary-General, Dr Hamadoun I. Touré, 20 June 2012.

against companies who drive up the demand for services is not only unlawful, but also a symptom of misaligned incentives.

Telecommunications operators are asking policy-makers and regulators for the application of a non-restrictive approach to net neutrality, which would allow a differentiation of services on the basis 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 this as a possible solution to the loss of revenues faced by telecommunication companies (ETNO, 2013).

Lastly, telecommunications companies are asking 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 so-called *app portability* is gaining momentum in the over-the-top market. Competition in the Internet markets sees two very big companies, Apple and Google, providing the operating system on connected devices and an extremely long list of application developers who offer applications on those platforms. Apple has always aimed to keep 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 of using the same applications across different platforms will gain more and more importance in business terms, and also at a 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 also delivering extraordinary benefits in Europe 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 by trying to preserve the past. Indeed, it can try to accompany the change by assuring a level playing field. The most pressing problem appears to be the conflict between traditional telecom operators and over-the-top global companies. At the moment, probably the best solution seems to be going beyond the rhetoric of the global conflict and facing each contentious issue on its specific merits.

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 first tried to achieve harmonisation of the principles and rules of operation of electronic communications markets in the various Member States. The Open Network Provision, as previously mentioned, set the basic rules for open access to the networks of the old monopolies so that new entrants could offer services in competition with them in all the Member States. This provision was the first intervention aimed at harmonising technical interfaces, access conditions, use conditions and tariff principles among the different Member States.

In 2000, with the Electronic Commerce Directive (Directive 2000/31/EC) the European Commission pursued the definite purpose of setting up an internal market for electronic commerce among the Member States. The framework aimed at providing common rules regarding transparency, information requirements for online service providers, commercial communications, electronic contracts and limitations of the 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: to 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 aim of harmonisation was also present in 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 achieved so far toward the establishment of a single European market are insufficient. The real problem to be solved, however, seems to be the creation of a single internal 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, both fixed and mobile, cannot be reached or sustained.

As is also recognised by Commission 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.

It is important to underline that in one specific area the European Commission has decided to intervene directly to strike down barriers between Member State 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 agreements between telecommunications operators belonging to different countries. Roaming prices, therefore, were exceedingly high and 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 call roaming prices. The 2007 intervention was meant to be exceptional and temporary, so that if normal market conditions were re-established in the market for roaming calls afterwards the regulation would expire in three years. The Commission, together with the national regulatory authorities, monitored the development of 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 of bringing down the difference between national and roaming tariffs to virtually zero by 2015. The immediate reaction of operators is against the elimination of roaming, which they do not consider 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 persistent price differences is considered a crucial step to stimulating innovation and to creating a genuine single digital market.[13]

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 mentioned, the NGA Recommendation suggests the introduction of geographically differentiated remedies where the introduction of a fibre alternative would create substantial differences in the competitive conditions in different areas. It is clear that

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

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 the previous questions examined regard fundamental choices of the correct regulatory approach. If we switch from substantial issues to the institutional instrument used to implement the regulatory models, it emerges that there were two main options in Europe that could have been chosen at the outset: operating at a central level through a formal European body or devolving regulation to national regulatory authorities and thus enforcing a subsidiarity principle. The option of leaving 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 to delegate implementation of these provisions to the various 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. This principle seeks to find the right balance of responsibility, allowing interventions to be placed at the optimal level to achieve the desirable market structures in the EU.

The main aim of the subsidiarity principle applied to market regulation is to find 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 can be easily assigned to the authority better positioned to intervene. In telecommunications regulation, the principle of subsidiarity implied the creation of a general framework, and then leaving a certain room for action to national bodies in the implementation and adaptation of the 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 since the start been the harmonisation of national markets and, eventually, the creation of a Single European Market.

Somehow, this partially decentralised approach created the need to continuously balance the power between the Commission and the Member States, and between the Commission and national regulatory authorities. National Governments were also reluctant to give away full regulatory control. A spontaneous solution to the need for 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. This national regulators network gradually became more and more involved 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 of improving and unifying the implementation of the European regulatory framework, providing advice to the Commission and Member States, promoting greater harmonisation, and improving 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 peer review activity that would continuously monitor the status and the functioning of regulation in the

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 narrow differences among Member States, as 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, which was previously 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 particular, to let them gain size 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.

On 11 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 those 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; and it requires full harmonisation of consumer protection rules. Regarding spectrum, it promotes spectrum sharing and spectrum trading; it demands common regulatory principles for spectrum authorisation procedures and the harmonisation of the 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, nor does it introduce heavier interventions such as a Eurotariff for termination rates, or a Pan-European spectrum licence, 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 se* 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 a first step towards a new path of consolidation which will then take place as a natural consequence. The larger market will then make that 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 for the next few 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.

5. 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 service innovations, so they are among the economic sectors that have 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 was discussed in the previous sections. This situation of difficulty often translates into 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 over whether new NGN fibre networks should be subject to similar access regulation as the legacy copper networks or whether 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 Single European Market. The European Union, especially when compared to the US, appears a fragmented composition of distinct national markets, with significant barriers to a smooth exchange of telecommunications services between Member States. Among the most important barriers, one still finds: a lack of EU standards (for example on wholesale access products across Europe); differences in implementation of the European regulatory framework; differences in prices, roaming in particular until the recent interventions; and other frictions, such as a lack of coordination on national spectrum policies.

In recent months, much stress has been put on the need to reach a single market for electronic communications, which is necessary to take advantage of the benefits offered by 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 Single Digital Market in the European Union would be about 0.8% of GDP per year[14]. This 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.

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

On several occasions, the Commission has underlined the vital importance of achieving a Single Digital Market, for the future of the EU as a global player and for the welfare of European citizens. Recently, in fact, Vice President Kroes declared that to achieve the single market the necessary steps are: to make 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; to reconfirm a net neutrality standard, with more effort put into avoiding

[14] http://europa.eu/rapid/press-release_IP-12-193_en.htm

unfair discrimination from network providers; and to eliminate all artificial roaming charges that do not reflect actual changes in costs.[15]

The major achievements of the liberalisation of the 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 the successful features, but modernising in various respects along the lines discussed in the previous sections, may be part of the response.

[15] http://europa.eu/rapid/press-release_SPEECH-13-622_en.htm

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