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

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Abstract

For many years, electronic communications has been one of the most important areas of policy intervention for the EU. Liberalization and privatization of the telecommunications industry were very important topics of policy debate in the two decades from 1990 to 2010. In these years, the EU developed a sophisticated regulatory framework that aspired to the principle of favoring the entrance of new players in the sector, and characterized by a strong pro-competition flavor. However, more recently the necessity of mobilizing 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 article discusses the solutions adopted during the liberalization process, and summarizes some of the key future challenges to the existing regulatory framework.

1. Introduction

In this article, we provide an overview of the interventions and main issues faced by European telecommunications policy after liberalization of the markets. In particular, we analyze 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 consolidation of the present regulatory framework. In particular, a demand to liberalize 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. We also look at the situation as it is today: we are now faced with a new set of issues that will affect the future of 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; for example, the conditions needed to encourage investments in next-generation networks (NGN).

The article is organized as follows. Section 1 lists old and new problems in the evolution of the fixed-lines markets after liberalization. Section 2 examines the mobile industry, its rapid evolution, and the present necessity for more band and better spectrum management. Section 3 analyzes the role of the Internet, and of its native companies in relation to, and in conflict with, traditional services and operators in electronic communications. Section 4 deals with the long-term demand for the creation of a single European market, also in relation to the evolution of sector regulation and the need for supranational coordination. A brief conclusion follows.

2. Fixed lines: from service competition to infrastructure competition to NGNs

The starting point of the European telecommunications policy was the concomitance of the necessity of liberalizing and privatizing 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 (Ungerer, 2013).

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1 According to the definition given by the International Telecommunications Union, NGNs are packet-based networks capable of providing telecommunications services to users, incorporating multiple broadband and Quality of Service (QoS)-enabled transport technologies, and in which service-related functions are independent of the underlying transport-related technologies.

2 For an analysis of the liberalization rationales and processes in Europe at the time, see also the Green Paper on the Liberalization of Telecommunications Infrastructure and Cable Television Networks (COM (94) 440 final).
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 liberalize 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 liberalization of all telecommunications markets, which culminated in the 1990s 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 liberalization of voice telephony and infrastructures, with the aim of creating the conditions by which to allow other operators 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 necessary. 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, new entrant 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 the 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 granting 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 liberalized. In fact, the main feature of the Full Competition Directive was to require member states to liberalize voice telephony in order to bring to completion the liberalization process of telecommunications services in Europe.

The European access regulation progressively included 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 bitstream4 came into the picture with the EC Regulation on Local Loop Unbundling (EC/2887/2000). The latter came into force on January 2, 2001 while an obligation for the incumbent to offer bitstream to entrants when it was already available to its own services was contained in Directive EC/10/98.

These rules have since been a milestone for the creation of sustainable competition based on new services, but also (partially) on 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 liberalize entry into all their telecommunications markets. The main objective of this set of interventions was to conclude the early stage of market liberalization of the telecommunications sector through the implementation of an asymmetric regulation. This defined the rights of new entrants, imposed restrictions on historical operators to open their network-face infrastructure, and defined Universal Service Obligations 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 liberalized, competitive, and harmonized 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 liberalization of the markets, it was necessary to create conditions for reaching a workable level of competition by 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, which was owned by the incumbent operator, and it was fundamental to concentrate ex-ante regulations on achieving service competition downstream, thereby impeding abusive practices by the incumbent.

However, the goal of maximizing static efficiency generally comes into conflict with the need to 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 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 theorized under the name of “Ladder of Investment” (LOI) theory (Cave, 2006; Cave and Vogelsang, 2003).

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 package5 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 consequent Significant Market Power (SMP) concept, which essentially corresponded to the dominant position in competition law.4 However, more

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3 LLU is the process by which 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 in which an incumbent installs technology and modems in the customer’s premises, and then makes the access link available to third parties to enable them to provide broadband services to customers. Via bitstream access, the incumbent provides ADSL technology and modems while entrants have no control over the physical line and are not allowed to add other equipment.


5 For further explanation on the relevant market and SMP concept in telecommunications regulation, see the (2002/C 165/03) 2002 “Commission guidelines on market analysis and the assessment of significant market power under the Community regulatory framework for electronic communications networks and services.”
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 took place in the telecommunications market; 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 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, 2012) or proxies (Waverman et al., 2007) has been used. A recent study using micro-data found 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 fiber networks (Bacache et al., 2014). Furthermore Bouckaert et al. (2010) found that inter-platform competition is the only main driver to spur investment in broadband networks. In a recent paper, Nardotto et al. (2012) empirically showed that there are no strong positive effects of LLU entry on broadband penetration. However, the level of incentives could suggest that the positive competitive effects of this access method are outweighed by the adverse effects of reduced incentives to invest. However, it turns out that, while LLU 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 investments in NGN, which could be due to the current period of demand uncertainty and financial 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 though they may create new competitive bottlenecks, depending on the co-investment agreement conditions (Cambini and Silvestri, 2012; Cambini and Silvestri, 2013).

In antitrust scrutiny of such agreements, as well as regulations on the access conditions to the new network, may become essential tools by which to guarantee open network development in the market, in particular 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 (BEREC, 2012; Nitsche and Wiethaus, 2011).

Another crucial variable in this process is constituted by the access conditions to the legacy copper network, which may or may not favor investment in the transition to the NGN (Bourreau et al., 2012a, 2012b; Cave, 2010; Inderst and Peitz, 2012). In fact, the copper network constitutes an imperfect substitute for the NGN, entail ing a replacement effect for incumbent and alternative operators. Revenues made on copper constitute an opportunity cost of the copper network constitutes an imperfect substitute for the NGN, entailing a replacement-effect for incumbent and alternative operators. The most controversial aspect of the recommendation is that it fixes a price interval for the monthly fee of LLU — between 8 and 10 euros — with the intent to stabilize this price in the long term. However, such a choice seems to accept the permanent co-existence of the copper and the NGN networks as unavoidable, which appears particularly problematic in the long term.

At present, the transition between the copper network and NGN is the frontier of the new equilibrium through which the EC is trying to revive LOI theory in an environment in which investment in new future-proof networks is the key challenge to regulators (Cave, 2010). The NGA Recommendation (2010/572/EU), acknowledges the need to take into account the fact that the transition from copper-based to fiber-based networks may change the competitive conditions in the different geographical 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. For example, the US has 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, with two leading operators covering almost all of the market, both in the mobile market and in the fixed market. However, in Europe there are numerous telecommunications operators offering more diversified services and choices, but they also appear less keen, or less 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 are allowed to increase their size and overcome the current state of that.

6 Equivalence of inputs is a concept that entails the incumbent providing the entrant with the same conditions related to inputs that it offers to its own retail division; this also refers to, for example, timescales, and terms and conditions (including price and service levels) for the retail offer.

7 The Equally Efficient Operator standard states that in order to be considered replicable, the retail offer made by the incumbent has to be comparable with the offer made by an equally efficient entrant, even using the incumbent cost structure. The Reasonably Efficient Operator standard states that the comparison is made with an entrant that is not necessarily similar to the incumbent (which benefits from experience and scale), and excludes a mechanical comparability of their efficiency.
fragmentation, which is a handicap to the growth and competitive-
tiveness of the European telecommunications market. However, past cross-country mergers among traditional telecom operators appear not to have approached different national markets in any significant way.

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 net-
works, but before this a question arises regarding how to design a regulation that contributes to, or facilitates, the deployment of the NGN networks in member states.

3. Mobile lines: problems of the new competitive environment and the future of spectrum management

Initially, the mobile markets were not considered to be subject to the same competitive issues, such as competitive bottlenecks, that occur in areas such as the fixed telephony market. Instead, mobile markets were characterized by the presence of one legacy network, to be considered as an “essential facility.” 8 Mobile markets immediately presented an opportunity for a more symmetric regulatory structure that did not require as intrusive an intervention as those needed to create competition in the fixed telephony markets after decades of monopoly.

Nonetheless, a serious regulatory problem with important im-
lications 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 intercon-
nection rates through negotiation and commercial agreements, with the regulator only intervening when parties failed to agree. 9

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 (that is, 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 reflected in the final charges to the users. In the process of termination, the request to speak to a certain customer places the operator who terminates the call in a sort of monopolistic position, since they are the only network that can satisfy the request to conclude the call. Therefore, a competitive bottleneck is generated. The high charges resulting from this system are considered by regulators and econ-
omists as 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 the 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 that 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 termination charges are kept quite low, and without the need for regulatory intervention. The reason for this is that the retail price reflects the call-termination cost. 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 calls received, the risk of lower pene-
tration rates, and ultimately the risk of people turning off their mobile phones. On the other hand, an RPNP system does not require termination-rate regulation, and tends to generate more minutes of conversation 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 harmonized framework, and to better monitor the level of interconnection charges. As a result, many European countries introduced price controls for mobile intercon-
nection charges, most commonly on mobile termination, and sometimes also on mobile origination. Nonetheless, the level of interconnection charges in Europe remained very high, and un-
doubtedly well above industrial costs in most member states throughout the decade. Furthermore, in fact, the high level of fixed-
to-mobile call volumes, and the inclusion of fixed-to-mobile calls in flat-rate call packages (TERA Consultants, 2009), in effect, the end, the final objective was to achieve a decrease in the final tariffs to consumers, with the high termination charges considered to be a fruit of market distortion, which should be corrected. BEREC, the institutional body coordinating NRAs, supported the EC’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 termi-
nation rates.

The Recommendation set out strict principles for national regu-
ulatory authorities to follow when setting fixed or mobile termi-
nation 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 model was recommended as the methodology NRAs should use to ensure termination rates were based on the costs incurred by an efficient operator.

The EC considered high termination charges to have two main effects, both of which are highly undesirable: they distorted competition between fixed-line and mobile operators and services, and they 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 prob-
lem for competition in the mobile industry: it would favor the largest operators, allowing them to set their prices discriminatively 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 which tended 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 phenomenon called the “waterbed effect” was discovered; the reasoning behind the effect was that, given the competitive bottleneck generated from having exclusive access to the user being called, each potential mobile customer comes with a “termination rent” that leads mobile operators to compete for these customers by offering them attractive deals. If regulation were to cut these termination rents, 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). Understanding and quantifying these “waterbed effects” has important implications in a two-sided market with respect to evaluating the final welfare consequences of a certain policy. It turns out that the magnitude of such effects depends on the level of competition in the market — where more competition leads to a stronger effect — and the level of saturation — where a more saturated market leads to a stronger effect (Genakos and Valletti, 2011).

In recent times, the repeated complaints from many mobile operators about the fall in profit caused by the reduction in termination rates induced by the widespread application of the 2009 Recommendation on rates’ reduction by NRAs seems to suggest that the magnitude of the “waterbed effect” was not strong enough to offset the direct positive effect on final consumers in terms of reducing termination rates. In synthesis, it seems that the termination rates’ reduction induced by the regulatory intervention effectively removed some competitive bottlenecks from the market, therefore resulting in a relative fall in the final price, the termination rates’ reduction ultimately reached the final customers and the final prices, even though regulators have to acknowledge the existence of possible indirect effects, and carefully account for these in their welfare-policy choices.

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 associated distortions of conventional CPNP regimes, yet enable operators and customers to choose between CPP and RPP (Littlechild, 2006). Several studies at the European level have tried to assess the benefits of switching to a BAK system, instead of an “improved” CPNP system (TERA Consultants, 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, which is 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 friction in the switch would be difficult to control; therefore, in the short–medium term, each member state can stick to the “improved” CPNP (BEREC, 2016).

Today, 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 that can be used in commercial services, like information and communications services, as well as in supplying traditional public services, like education, health and public safety. The spectrum can also help to bridge the digital divide for the areas not reached by broadband connections, since mobile penetration and connectivity can be a powerful driver of broadband diffusion. In some European member states, for example in Romania, mobile penetration is much higher than fixed telephony penetration. For all these reasons, optimized use of the spectrum can generate great societal benefits, and an increase in European competitiveness in the global arena.

However, the means by which to gain the greatest benefits from the spectrum are not straightforward, as there are several potential modes by which to assign and manage the rights of use — geographically, as well as time- 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; for example, Directive 87/332/EEC for the Global System for Mobile telecommunications standard GSM and 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 harmonization is constituted by the Green Paper on Spectrum Policy (596/1998/COM). This Green Paper aimed to initiate a public debate on how to approach the creation of a European-level spectrum policy program, which started to be recognized as a crucial goal for the competitiveness and 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, 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 institutionalized spectrum policy in Europe, establishing the Radio Spectrum Committee, which had the task of helping the Commission to overcome technical hurdles; and the Radio Spectrum Policy Group (RSPG), which had the function of issuing opinions or producing reports on specific and strategic radio-spectrum policy issues. A constant effort towards harmonization has characterized European spectrum policy in the subsequent years, as proven by the numerous decisions that have had harmonization as their main object (EC, 2002).

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

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

However, it seems clear 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. However, this strategy cannot follow the changes needed with the rapid developments in technology, and the

10 See note 2.
convergence of telecommunications. This difficulty, which is frequently 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 delays in the release of 4G technology in Europe provide further evidence of why radio spectrum needs to be assigned with greater co-ordination across the EU (EC, 2013a).

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 optimized 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, such as cognitive radio.

In 2012, the European Parliament and Council issued the Radio Spectrum Policy Programme (Decision 243/2012/EU), which points in several of these directions. This Decision is motivated by several important objectives: to create a common and consistent framework for spectrum management across Europe, to eventually reach a single digital market in the EU; to promote the 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 entitled “Promoting the shared use of radio spectrum resources in the internal market” (COM 478/2012, 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/Authorised Sharing Access (LSA/ASA) model — in which different users need a license 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/ASA. However, the Radio Spectrum Policy Group seems to point at LSA/ASA as a better sharing method, insofar as it guarantees a higher quality of service and more coordination between incumbents and new users.

LSA/ASA 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 to offer a predictable quality of service with well-defined usage rights and obligations; and it can foster a progressively increased harmonization of frequencies for mobile Internet access and use (Parcu et al., 2011).

In sum, the traditional bottlenecks that induced high termination rates and high costs for customers, and inappropriate cross-subsidies between fixed and mobile networks, appear to have essentially been 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 harmonized use of spectrum in member states.

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

For many sectors, mainly media and editorial markets such as newspapers, magazines, the music industry, as well as 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 meant that the traditional business model based on the physical selling of the good was directly tackled. 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 to play a key role thanks to the availability of huge amounts of new and high-quality data on Internet users’ preferences and characteristics. This allowed advertising messages to be much better tailored, compared to those conveyed using traditional media, and therefore increased the attractiveness of online advertising, at least for the majority of the Internet-oriented population.

Business on the Internet started developing in a powerful and disruptive manner, thereby changing the way many businesses had worked for decades, and diffusing new ways of searching for goods and selling them to customers. Nowadays, it is clear that the Internet is not only a novel, general-purpose technology that may have a specific effect on how business is conducted in certain sectors, but is also a marketplace per se, as demonstrated by the enormous success of over-the-top (OTT) firms.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 traditional telecommunications networks. In recent years, the rapid spread of smartphones, tablets and other connected devices has dramatically increased the use of OTT services by customers. This phenomenon has caused a decline in revenue from voice and text messaging for telecommunication companies, while OTT companies have simultaneously witnessed a large increase in business revenues and profits. OTT companies also benefit from operating on a worldwide scale, thanks to the ubiquitous nature of world-wide-web technology.

In Europe, telecommunications operators have traditionally relied much more on service revenues — especially mobile operators, partly due 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 OTT operators with greater freedom to offer their services.

Telecommunications operators claim that such asymmetries place them in a disadvantaged position with respect to OTT companies, in particular regarding: privacy and data protection, such as data retention, ex-ante vs. ex-post rules, rules of notice, and consent; tax issues, such as the global dimension of OTT companies; rules of competition and regulation, including the replicability of obligations on telecommunications products, reporting obligations, open standards and interoperability obligations, bundle offering and minimum quality of service. According to telecommunications operators, all of these asymmetries play a determinant role in causing the loss of revenues witnessed. 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, has threatened the achievement of one of the top goals in the European Digital Agenda: investment in new networks. In addition, regulatory asymmetries should be removed regardless, with the intent of assuring technological neutrality.

The rising demand for services running on the web, which is also pushed by the applications offered by OTT operators, is

11 OTT content refers to the 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, Yahoo, and Skype – some of the Internet’s most successful companies.
there have been cases of discrimination against OTT 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, thereby affecting a significant number of subscribers in Europe (BEREC, 2012). Differentiation based on objective characteristics of the service could in principle be acceptable; however, discriminating behaviors 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, OTT companies, and content providers. They envisage this as a possible solution to the loss of revenues faced by telecommunications companies. However, this approach may underestimate the deep differences in business models that are at the root of the different profitability of traditional and OTT companies.

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 OTT global operators.

A parallel set of issues regarding the importance of so-called app portability is gaining momentum in the OTT market. Competition in the Internet markets has seen two very big companies, Apple and Google, provide operating systems on connected devices, and an extremely long list of application developers offering applications on these platforms. Apple has always aimed to keep control over its own ecosystem; whereas Google, for example, social networks and cloud computing — was released at the beginning of 2012: the General Data Protection Regulation (GDPR). This proposal is currently being discussed. It aims to introduce, among other things, a general obligation for companies who want to access, use or store personal data (including biographical information, social information, and sensitive information) belonging to European citizens to ask for their consent. It also covers the rights related to data portability, as well as the “right to be forgotten,” and concludes with the addition of clear rules for data transfers outside of the EU. This is an important step in the direction of a pan-European regulatory framework for the use of data, which aims to equalize conditions between OTT players and telecommunications companies in Europe, since it applies also to non-European companies that handle personal data belonging to European citizens. However, it is essential that the new EU Data Protection Regulation strikes the right balance between data protection and the creation of economic and social opportunities, while maintaining the benefits provided by this novel technology and related data. Also, the implementation details, in particular in the event of a breach, will have to be defined and agreed upon by all EU members in order for the GDPR to be enforceable and authentically pan-European.

The issue of net neutrality is also central to the debate between telecommunications operators — the network providers in Europe, and OTT companies. Net neutrality means that all traffic is treated equally, as far as possible; all content providers pay the same price for termination to the Internet service providers; and the price for termination is zero. The effect of net neutrality on static and dynamic efficiency has been much debated in the economic literature during the last decade (Choi and Kim, 2010; Economides and Täg, 2012; Cheng et al., 2011; Reggiani and Valletti, 2012). In the past,
states. This provision was the first intervention aimed at harmonizing 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 EC pursued the specific purpose of setting up an internal market for electronic commerce among the member states. The framework aimed to provide common rules regarding: transparency, information requirements for online service providers, commercial communications, electronic contracts and limitations to the liability of intermediary service providers. Nonetheless, these first interventions towards harmonization 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 to push Europe toward a harmonized and unified framework (Directive 2002/21/EC and related 12). The aim of the harmonization was also present in the area of spectrum policy, as expressed by the Radio Spectrum Decision (Decision 2002/676/EC). One of the main purposes of this was to establish a legal framework to ensure that the conditions for the availability and effective use of the radio spectrum were also harmonized among member states.

Harmonization of regulatory conditions and laws in the different member states has been an important step towards the objective of the single market, and has been achieved on many levels. Nowadays, however, there is a common recognition that the results achieved so far toward the establishment of a single European market in telecommunications are insufficient. Indeed, the concept of a single market consists of several features: harmonization of operating conditions in terms of rules and regulation; common wholesale offers; common retail offers – implying an abatement of price differences motivated solely by the presence of country boundaries, rather than strictly by costs, in line with the mechanism used for roaming; creation of telecommunications operators operating on a European dimension; elimination of market fragmentations across national boundaries. The real problem to be solved seems to be the creation of a single internal market that effectively unifies national markets in terms of network availability and access (wholesale products), 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.

According to some Commission officials, a real common telecommunications market in Europe would probably need a regulatory intervention that is 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 EC has decided to intervene directly to strike down barriers between member-state markets; that is, international mobile services and mobile roaming prices. Roaming is related to 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. Therefore, roaming prices were exceedingly high and totally unconnected to industrial costs due to a lack of competition for roaming customers. The EC 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 afterward, 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 at both wholesale and retail levels 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 has been against the suppression of roaming, which they do not consider a necessary step in the creation of a single digital market. However, there is a strong will at the 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 single digital market (European Parliament, 2015; EC, 2012).

In the fixed-network market, the path to reaching a single European market seems less straightforward, given the different speeds of transition from copper network to fiber network in the various geographical areas. As previously mentioned, the NGA Recommendation suggests the introduction of geographically differentiated remedies, where the introduction of a fiber 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 of the previous questions examined relate to 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: to operate at a central level through a formal European body, or to devolve regulation to national regulatory authorities, and thus enforce a subsidiarity principle. The option of leaving each member state to create its own independent regulatory framework would have contrasted with the single market raison d’être of the EU, and was never seriously considered. The European body could have been a stand-alone institution, or a pan-European organization – a sum of the various national regulatory bodies. However, the institutional model chosen by the EU for the liberalization and harmonization of the telecommunications market was to direct the market change through instruments such as Directives, Regulations and Communications at the European level, while delegating the implementation of these provisions to the various member states, thus allowing for a certain freedom of choice in implementation 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 one hand, on cross-border markets in which EU-level regulators should have prime authority, and, on the other hand, on 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 that

12 See note 1.
is best positioned to intervene. In telecommunications regulation, the principle of subsidiarity implied the creation of a general framework, while leaving a certain amount of 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 from the start been the harmonization of national markets, and eventually the creation of a single European market.

Somewhat, this partially decentralized approach created the need to continuously balance the power between the Commission and the member states, and between the Commission and the 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, which was formed in 1998 by a group of national telecommunications regulatory bodies to discuss and share experiences regarding the first phases of the liberalization 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 in 2002, at the time of the establishment of the New Regulatory Framework.

The process of strengthening regulatory coordination took a decisive subsequent step with the establishment of 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 harmonization, and improving collaboration and discussion among national regulatory authorities, the Commission and the stakeholders. Today, BEREC is emerging as a sort of intermediary between the Commission and the national authorities. It is creating an independent regulatory culture in Europe, which is also supportive and representative of single members in front of the Commission when there are relevant differences to be taken into account between one member state and the others. National authorities and the Commission have to pay careful consideration to any opinions, recommendations, guidelines, advice or regulatory best-practice adopted by BEREC.

The institution of BEREC can be interpreted as a step towards a more centralized and cooperative structure of electronic communications regulation in Europe, and also as an instrument that can serve to strengthen a peer-review activity that would continuously monitor the status and functioning of European regulation in the individual states.

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 in 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 force 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 an experiment within the Directive on mobile termination in 2009, as discussed in Section 2.

A second structural route could be to adopt a lighter monitoring attitude towards regulation in general, and on mergers and consolidation among telecommunications companies of different member states in particular, to let them increase in size so as to be better able to 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 national regulations, thereby creating a complete framework for multi-country regulation at the European level.

On September 11, 2013, the EC 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 by which to achieve a single market in electronic communications as quickly as possible. It contains proposals for overcoming several obstacles: for example, in terms of issues related to operators wanting to operate across borders (that is, in more than one member state), it seeks to introduce a one-stop-shop authorization system. This includes the “three-criteria test” in all cases where NRAs have to choose in which market to intervene, and requires a full harmonization of consumer-protection rules. Regarding spectrum, it promotes spectrum sharing and spectrum trading. It demands common regulatory principles for spectrum-authorization procedures, and harmonization of the timing and duration of spectrum assignments for wireless broadband across countries. It guarantees net neutrality across Europe, and further stresses the need to bring roaming prices down to domestic price levels by 2016.

However, 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 Europe-Wide test for termination rates, a Pan-European spectrum license, or a single European regulator, as has occasionally been proposed. The main aim of the package is to lighten the regulatory burden and eliminate unwanted market obstacles towards a single digital market in Europe. Consolidation per se is not considered to be 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 this consolidation possible under the EU competition law. In synthesis, the internal single market goal has not been achieved so far, but a harmonized 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 while being probably insufficient on its own, is certainly an issue for the years to come. A more direct intervention in the market, together with the fostering of a structural consolidation that creates some pan-European players, appears to represent two instruments that the Commission can combine to force an acceleration of the harmonization and consolidation process in Europe. The choice of the EC, as seen from the recent adoption of the “Connected Continent” package, is to intervene to further obtain harmonization of the market conditions in Europe, so that a healthy path of consolidation eventually takes place.

6. Conclusion

The condition of the European electronic communications markets is unavoidably influenced by the present economic crisis. However, these markets have witnessed a long period of technological advances and service innovations, and are therefore among the economic sectors that have suffered least. Nonetheless, it is a reality that network investments are slowing down, while traditional and new telecommunications operators are facing both the effects of the crisis and the need to absorb disruptive business changes.

In parallel, a lively debate is raging over whether new NGN fiber networks should be subject to access regulation similar to that applied to the legacy copper networks, or whether some deregulation would be beneficial for investments and not too harmful for competition.
Another major debate relates to the mobile market, in particular the need to set more flexible rules regarding use of the spectrum in order to minimize capacity waste and answer a growing demand for data transmission.

Finally, one of the most important goals for European institutions and market players in electronic communications is the demand for a single European market. The EU, especially when compared to the US, appears to incorporate a fragmented composition of distinct national markets, with significant barriers to a smooth exchange of telecommunications services between member states.

In recent months, much stress has been put on the need to reach a single market for electronic communications, which is necessary in order to take advantage of the benefits offered by digital technologies, and to be competitive on a global level. A study released by the EC on the cost of non-Europe — i.e. the lack of a truly Internal Market for e-Communications — estimated that the gain in terms of prospective growth from having a single digital market in the EU would be about 0.8 percent of GDP per year (European Parliament, 2015; EC, 2012). 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 this would also be a fundamental achievement, since they are already pointing at the unequal conditions they suffer with respect to OTT 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, which is achievable if they are able to offer services to a much wider, at least pan-European, market.

On several occasions, the EC 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 in order to achieve the single market the necessary steps include: making communications across national borders much easier, for example through the establishment of a general authorization system for telecommunications operators with supervision by the home member state; reconfirming a net-neutrality standard, with more effort put into avoiding unfair discrimination from network providers; and eliminating all artificial roaming charges that do not reflect actual changes in costs (EC, 2013b).

The major achievements of the liberalization of the telecommunications market in Europe are evident to everybody, and in this paper we discussed how some of the old challenges have been overcome in past decades. However, technological change and global competition are now presenting the EU with new challenges. Innovation in terms of the regulatory approach, which would involve maintaining the successful features while modernizing various aspects, along some of the lines discussed in this paper, may be part of the response.

References


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