

European Telecoms Regulation: Past Performance and Prospects *

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Abstract

This paper provides a review of the telecommunications policy of the European Union. We discuss the motivations for the Commission’s regulatory choices and provide some evidence on their performance. We find that the outcome of the first regulatory period varied significantly between member states, reflecting the numerous implementation choices that were left at their consideration. The recent reform of the regulation addresses some of the past shortcomings, but still poses some risks for technological neutrality.

Keywords: Regulation, Market Integration, Broadband.

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1 Introduction

The liberalization of telecommunications services is one of the most ambitious reforms implemented by the European Commission, as part of its goal of ensuring competition in the internal market. It aims at the reform of an industry which represents around 2.6% of EU-15 value added. Moreover, if the reform succeeds in improving the telecommunications infrastructure it is likely to spur productivity gains for the whole economy.

Liberalization is not an easy task. The strong technological changes that motivated the reforms in the first place, pose some challenging issues regarding the proper regulatory framework that should govern the transition to competition. The success or failure of the liberalization strategy is very important for future policy, since the telecommunications approach has been replicated, with minor differences, in the liberalization of other network industries.

In the present paper we review this liberalization strategy and provide an analysis of its performance. We argue that, in the design of the liberalization process, the Commission had to determine the scope of the necessary ex-ante intervention and to ensure market integration, while at the same time creating a framework flexible enough to accommodate the convergence of communication technologies. Section 2 reviews the first set of measures adopted by the Commission, which formed the "1998 framework" and dealt mainly with the first two requirements: the degree of ex-ante intervention and market integration. The outcome of this first framework varied significantly between member states, reflecting the numerous implementation choices that were left at their consideration.

Section 3 discusses the revision and amendment of the "1998 framework", which gave birth to the "New Electronic Communications Framework" in 2003. The major amendments were motivated by the growing convergence of communication technologies, which suggested the need for a more technology-neutral approach to regulation. The new framework was also used to tackle with new instruments the main goals already considered in 1998. First, through the introduction of criteria that would determine, as competition developed in the industry, the gradual move from ex-ante intervention towards ex-post control by means of competition policy. Secondly, the objective of market integration was also reinforced by the introduction of provisions pushing towards more harmonized rules. Nevertheless, the concern remains that

the old technology-specific regulation will linger through the definition of relevant product markets that are too narrow or geographical markets that are too wide in scope. The higher level of harmonization sought by the Commission also risks losing the benefits of regulatory experimentation, which may not be negligible at a time when new generation networks are being deployed.

2 The liberalization process up to 2003: introducing competition

The need for a set of regulations to control the liberalization of telecoms is explained by the particular characteristics defining the industry. The most relevant of these are the existence of significant scale and scope economies within and between the different segments, as well as vertical economies and network effects (Armstrong (1997)). In this context, effective competition cannot be achieved by merely removing any exclusive right in those segments in which competition is considered possible. At least in the early stages of liberalization, some ex-ante regulation is needed to open the market while ensuring that entrants are not penalized by any legacy or first-mover advantage of incumbents.

The European Union's Telecommunications Policy starts in 1984, with the necessary harmonization of technical standards across Member States and the agreement on a common position in the international telecommunications arena. Nevertheless, it is not until 1987 when the main provisions governing the liberalization process began to be discussed. Through 1987 to 1998, the Commission set the rules that ought to be transposed to national legislation (or to be directly applied by Member States) before 1998, year in which all the telecommunication markets were officially liberalized. This set of Directives and Regulations, which we name "the 1998 framework", were intended to gradually move the sector from monopoly to competition and were in place until 2003, when they were amended to cope with the convergence of technologies.

Nevertheless, increased competition was not the sole objective behind the "1998 framework". As it is common to other network industries that were liberalized during the same period, the liberalization process is characterized by the additional requirement of market integration. The European Commission chose its market

integration strategy so as to satisfy the need for some ex-ante regulation (to ensure effective entry) and the requirement of a level playing field. This strategy can be termed, after Gual (2008), "Host country rules within limits". Essentially, it amounted to identifying the minimal set of conduct and structure regulations for competition to emerge and impose it to Member States. These defined the "limits" in the integration strategy. The specific implementation of those regulations was left to Member States, hence the qualification of "Host country rules".

The approach taken by the Commission, though well targeted to address all the sources of concern, left too much scope for discretion to Member States. As a result of this, it will be shown at the end of this section that the outcome of the "1998 framework" is mixed and varies significantly between countries.

2.1 The Commission's concerns and measures to protect nascent competition

In any network industry, the transition to competition cannot be achieved just by allowing for free entry to the market. The initial market structure is often characterized by the existence of a vertically integrated multiproduct monopoly. In this setting, the incumbent enjoys a first-mover advantage over potential entrants and its pricing structure usually involves cross-subsidies across the different services. Hence, the liberalization strategy must take into account the effects of these two issues on emerging competition. First, it should minimize the effect of any first-mover advantage on the entrants ability to compete. And second, it also needs to make sure that prices charged by the incumbent truly reflect the expected profitability for the entry decision. Moreover, there is the need to address the competition problems that are likely to appear in the form of abuses of dominant position. Although the latter can be subject to ex-post regulation by competition authorities, the European Commission believes that ex-post intervention would not prevent irremediable damage to entrants.

The directives and regulations of the "1998 framework" can thus be grouped according to the type of concern they intend to address:

Ensuring efficient entry Exclusive and special rights were obviously the main barriers to entry into the industry. For competition to emerge, it was necessary to

remove these rights and to implement, instead, a system of general authorizations with minimum compliance requirements. Of course, these requirements can always be used strategically by governments, specially if they (partially) own the incumbent or if they have strong preferences for national champions. Transparent and objective rules may minimize this risk. The harmonization of these rules across Member States is thus essential to satisfy the objective of market integration.

A second concern is to ensure that entry occurs where it is efficient. For this to happen, entrants must be able to correctly assess, for each of the business segments, their expected profits in case of entry. Unfortunately, the regulated prices of the monopoly period convey little information on expected profitability under competition. Relative prices between business segments are usually distorted either by direct regulation or by the universal service regulations imposed to the incumbent. Allowing entry under such conditions may trigger excessive entry in some segments (Crandall, (2005)) while potentially efficient competitors are kept out of the market in others.

The European Commission addressed both issues by gradually abolishing exclusive rights in those segments less subject to tariff distortions¹ and encouraging tariff rebalancing in the public voice telephony segment. Member States were also encouraged to establish national schemes to share the cost of Universal Service Obligations (USO) among all the players in the market². The date for the final liberalization of the public voice telephony segment was established in the so called "Full Competition Directive"³, which set it for January 1998 (with some extensions for small and less developed networks requiring further structural adjustments). Finally, to ensure the objectiveness, harmonization and transparency of the requirements imposed to potential entrants in the provision of voice services, the Commission issued the "Liberalization Directive"⁴ limiting the scope of possible requirements and the procedure to be followed in the granting of licences.

¹Voice and data services for corporate networks and closed user groups (Commission Directive 90/388/EEC), satellite communications (Commission Directive 94/46/EC), the use of cable networks for the provision of already liberalised telecommunications services (Commission Directive 95/51/EC) and, finally, mobile and personal communications (Commission Directive 96/2/EC).

²Communication COM (96) 608 on the "Assessment Criteria for National Schemes for the Costing and Financing of Universal Service in telecommunications and Guidelines for the Member States on Operation of such Schemes"; Directive 97/33/EC and Directive 98/10/EC.

³Commission Directive 96/19/EC.

⁴Directive 97/13/EC.

Minimizing the risk of market tipping Telecommunication markets are subject to high switching costs and network effects that create an important degree of inertia in the consumers' decision on which network to join⁵. First of all, bigger networks are more valuable to consumers and this penalizes entrant providers that have to build customer bases from the scratch. Second, this difficulty is reinforced by the switching costs that would be faced by a consumer willing to change provider (a new phone number, discontinuances and delays in the availability of the service, etc.). The incumbent enjoys thus an enormous first-mover advantage and can easily price its products in such a way that prevents new entrants from reaching the critical network size to remain in the market.

The risk of tipping the market substantially decreases if interconnection between all the networks is made mandatory. This was done by the European Commission in its "Interconnection Directive"⁶, which regulated the obligation to interconnect at non-discriminatory and cost oriented prices. In particular, incumbents were required to publish reference offers and to "provide interconnection facilities and information to others under the same conditions and of the same quality as they provide for their own services". Moreover, in order to decrease switching costs, number portability - that is, the possibility to keep the phone number when changing provider - and carrier pre-selection were mandated shortly after⁷.

Preventing the abuse of the incumbent's dominant position While competition is not sufficiently developed, incumbents can abuse their dominant position in several ways. First, incumbents control an essential input for entrants, namely the subscriber's access. In the absence of ex-ante regulation, the incumbent could squeeze the entrants' margins by distorting retail prices and interconnection rates. Secondly, interconnection prices could also be used to leverage his dominant position to adjacent markets and preventing firms in those markets to offer bundles of both products. Finally, if regulated and liberalized activities coexist, profits from the regulated activities can be used to cross-subsidize prices in the competitive ones in order to drive entrants out of the market. Given the strong network effects and switching costs, a successful foreclosure of the markets to new entrants may be difficult to overturn by an ex-post intervention.

⁵For a comprehensive review of the sources and consequences of switching costs and network effects see Farrell and Klemperer (2006).

⁶Directive 97/33/EC.

⁷Directive 98/61/EC.

Price regulations on undertakings with significant market power (SMP) have thus been implemented by the Commission both at the retail and interconnection levels. Interconnection prices must be cost-oriented and accounting separation was imposed to facilitate monitoring⁸. The Commission also encouraged the creation of national regulatory authorities (NRAs), legally separated from telecommunications providers and the government, with the power to fix tariffs and monitor the entire telecommunications sector.

Besides all these provisions, a very significant step in European telecoms regulation was the introduction of local loop unbundling (LLU) in order to further increase competition in local access⁹. According to this regulation, undertakings with SMP are obliged to provide access at a regulated price to the physical copper pair that connects the network termination point at the subscriber's premises to the main distribution frame or equivalent facility. This is considered the least replicable facility and, hence, the main bottleneck for the emergence of competition.

2.2 Scope left to Member States and its effects

The approach taken by the Commission, as it has been said, consisted in imposing a minimal set of regulations while leaving to Member States the implementation details and the freedom to impose additional measures. In particular, the Commission was neutral on issues of public ownership and vertical separation of the incumbent. The Member States' individual position with regards to these two issues, along with differences in the degree of independence of the NRA and in the delays incurred in the adoption of the commission's directives, caused significant differences in the regulation of telecoms at the national level. Moreover, the regulations proposed in the "1998 framework" were sufficiently vague to leave Member States scope for discretion in implementing them. Table 1 lists some of the main regulation areas and the implementation options selected by each country as of 2000.

There is substantial variation in the options selected, as well as variation in their potential for promoting competition and constraining the incumbent's behavior. Regarding entry regulations, Member States can choose among two different methods to grant licences: Beauty contests and auctions. The former are less transparent and they may be more suited to satisfy political preferences. On the other hand,

⁸Directive 97/33/EC.

⁹Regulation No. 2887/2000.

	Entry regulations		Access to infrastructure	
	Licensing regime for mobile (IMT-2000) (a)	Cost standard for interconnection by SMP operators (b)	Pricing methodology Local Loop (b)	Regulation applied to wholesale prices for bitstream access (2003) (c)
Austria	Auction	FDC	FL-LRAIC	Commercial Neg.
Belgium		FDC	-	Mandatory reference offer
Germany	Auction	LRAIC	LRIC	Not available
Denmark	Auction	FDC	FDHC and best practice	cost-oriented
Spain	Beauty contest	Multi-standard	-	Retail minus (40%)
Greece		FDC	-	Reasonable, non-discrimination, transparency
France	Beauty contest	FDC	LRIC	NRA sets prices
Finland	Beauty contest	Company specific	Company specific	Subject to Comp. Law review
Italy	Beauty contest	FDC	FDHC	Retail minus (50%)
Ireland		FDC	-	Cost-oriented + retail pricing obligations
Luxembourg		FDC	-	Not available
Netherlands	Auction	EDC	EDC	Reasonable, non-discrimination, transparency
Portugal	Beauty contest	FDC	-	Retail minus (40%) for some offers plus mandated discounts for the rest
Sweden	Beauty contest	AIC	FDCC	LRIC proposed
United Kingdom	Auction	LRIC+FDC	FL-LRAIC	Retail minus

Notes:

FDC: Fully distributed costs; (FL-) LRAIC: (Forward -looking) long-run average incremental costs; LRIC: long-run incremental costs; FDHC: Fully distributed historic costs; EDC: Embedded direct costs; AIC: Average incremental costs

Sources:

(a) OECD Regulatory Overview; (b) DG Implementation Report 2000; (c) ERG Common position

Table 1: Scope for discretion

	Line of business restrictions			Market Power	
	Fixed/Mobile provision (1998) (d)	Fixed/cable provision (2000) (a)	Exists Cross-ownership of cable and incumbent PTO (d)	Type of regulation of end-user voice telephony tariffs of SMP operators (b)	
Austria	Legal separation	No restriction	No	Ex ante approval by the NRA under ONP conditions	
Belgium	Legal separation	Only if Comp. Law requires it	No	Price cap	
Germany	Legal separation	Only if Comp. Law requires it	Yes	Price cap/NRA approval	
Denmark	Direct operation by PTO	Divested	Yes	Price cap	
Spain	Legal separation	No restriction	No	Price cap	
Greece	Legal separation	PTO with SMP not allowed	No	Ex ante approval by the NRA under ONP conditions	
France	Direct operation by PTO	No restriction	Yes	Ex ante approval by the Ministry under ONP conditions	
Finland	Direct operation by PTO	No restriction	Yes	Freely set by operator ⁸²	
Italy	Legal separation		No	Price cap/NRA approval	
Ireland	Direct operation by PTO		No	Price cap	
Luxembourg	Direct operation by PTO		Yes	Freely set by operator	
Netherlands	Direct operation by PTO	No restriction	No	Price cap/NRA approval	
Portugal	Legal separation	No restriction	Yes	Ex ante approval by the Ministry under ONP conditions	
Sweden	Legal separation	Only if Comp. Law requires it	Yes	Price cap	
United Kingdom	Legal separation	PTO provision not allowed were cable exists	No	Price cap	

Notes:

PTO: Public Telecommunications Operator; SMP: Significant Market Power; NRA: National Regulatory Authority.

Sources:

(d) OECD Cross-ownership and Convergence; (d) OECD Broadband and Telephony Services.

Table 2: Scope for discretion, cont.

auctions identify the more efficient competitors and generate competition ex-ante, provided they are well designed.

The regulation of access to the infrastructure is another source of divergences and discretionality. Although Commission directives required that interconnection and access rates had to be based on costs, leaving a fair return on investment, they did not specify the methodologies to compute neither the costs nor the level of fair returns. A number of countries opted for an accounting approach and used fully distributed costs (FDC), a concept which is not related to marginal cost, since it takes into account all the costs of the firm and not only those incurred in case of expanding output (or services). Moreover, since it is assessed at historic prices, it may yield too high estimates if new technologies are more efficient. A second possibility, based on economic costs, is to use long-run incremental costs (LRIC). LRIC provide the right incentives for entry (Vogelsang (2003)) but are very complex to compute and may incentivize non-price forms of exclusion, such as quality degradation, if the fixed economic costs of the service are not taken into account (Laffont and Tirole (2000)). Finally, an alternative to cost-based regulation is given by the use of the efficient component-pricing rule (ECPR). A sophisticated ECPR can be close to the Ramsey-optimal price structures that a policy maker should implement in order to encourage efficient entry and network investment, but it is again very information demanding. Hence, a simple version of the ECPR is sometimes used in the form of retail-minus pricing. This approach sets the interconnection or access price at $(1-x)\%$ the retail price, where the x should account for the marginal cost of retail minus any additional cost directly attributed to the provision of the access or interconnection service.

Line of business restrictions may be required to ensure that the incumbent does not alter interconnection terms to leverage its dominant position to adjacent markets (i.e. in the mobile communications). They may also be needed to ensure he does not try to protect his dominant position in the relevant market by delaying the deployment of new networks or softening facilities-based competition (i.e. competition from cable-TV providers). Legal separation is a mild form of achieving this, the most effective way being complete divestiture or ownership restrictions. Nevertheless, this last form of separation can be inefficient if there are significant scope economies.

Finally, retail price regulation is commonly done in the form of price caps applied to a basket of services. Differences between countries in this case are confined to

the power of the incentives to reduce costs.

2.3 Results at the end of this stage

Successful competition is expected to drive prices down, expand the range of products available to consumers and improve incumbents' efficiency levels, among other benefits. A quick look at some of these performance variables back in 2003 shows that achieving these goals was not an easy task. After 16 years of directives and recommendations and 5 years after the official liberalization of the fixed telephony market, the results of the "1998 framework" were somewhat mixed. Tables 3 and 4 in the appendix provide a broad summary of the performance of each of the EU-15 countries. In what follows, we review the main conclusions that can be derived from their analysis.

The improvement of the incumbents' overall efficiency levels constitutes the main success of the framework. As data from the OECD reveals (see figure 1), the number of access paths per employee - which includes fixed lines, mobile and broadband connections - increased significantly in all countries between 2000 and 2003. Nevertheless, the performance of European countries seems to be superior to that of non-EU OECD members. Figure 1 depicts each country's efficiency improvement against its level in 2000. In general, EU countries managed to achieve larger improvements despite their already higher efficiency levels in 2000.

The "1998 framework" had less remarkable results in the broadband segment. Most countries experienced important price reductions in monthly fees, but their magnitude seems to depend on specific rules that were not determined by the framework and which differed between member states. In particular, as figure 2 shows, price reductions were larger (and the incumbents' market shares were lower) in those countries where the incumbent did not own cable assets. Moreover, despite these price cuts, average broadband penetration in the EU-15 was quite low (7.1%) by 2003, compared to those non-EU OECD countries who had launched DSL around the same period or later (Korea, 24.2%; Switzerland, 10.1%; or Norway, 8%).

The role of the "1998 framework" in the introduction of effective competition in conventional telephony was even more disappointing. Although the market had experienced a significant amount of entry by 2003, it still remained highly concentrated in the hands of the incumbent. Certainly, the economics of the telecommunications

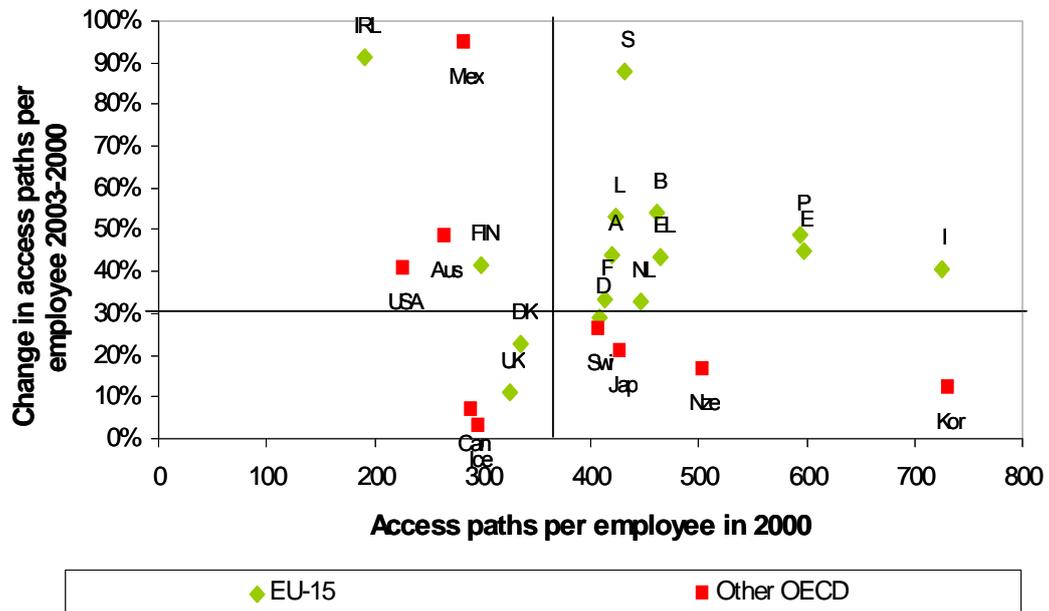


Figure 1: The "1998 framework" may have boosted incumbents' efficiency in the EU-15. Source: OECD Communications Outlook 2005.

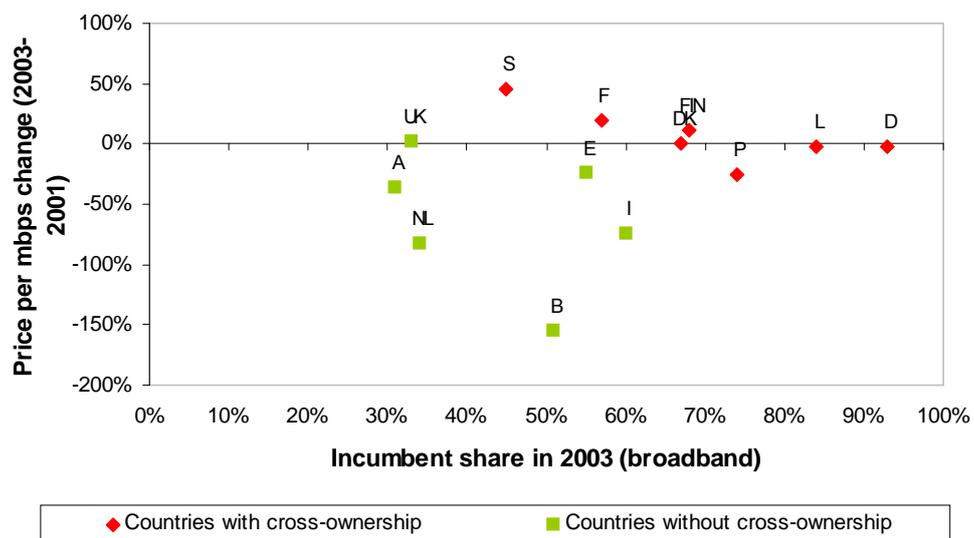


Figure 2: Cable and telephony cross-ownership hindered price cuts. Sources: OECD, European Commission and own calculations.

sector make it prone to concentration but the relatively low market shares of the incumbents in Austria, Sweden or the United Kingdom suggest that there is room for decreasing concentration in other countries.

Turning to prices, their levels were quite dispersed across countries in 2003 - possibly due to differences in cost conditions and demand characteristics - but very few countries experienced price decreases in all the segments after the end of the tariff rebalancing period. Interestingly, the countries that benefited the most from price cuts - Spain, Greece or Italy - were not the countries with lower incumbent market share or the early adopters of the Commission directives (see figures 3 and 4).

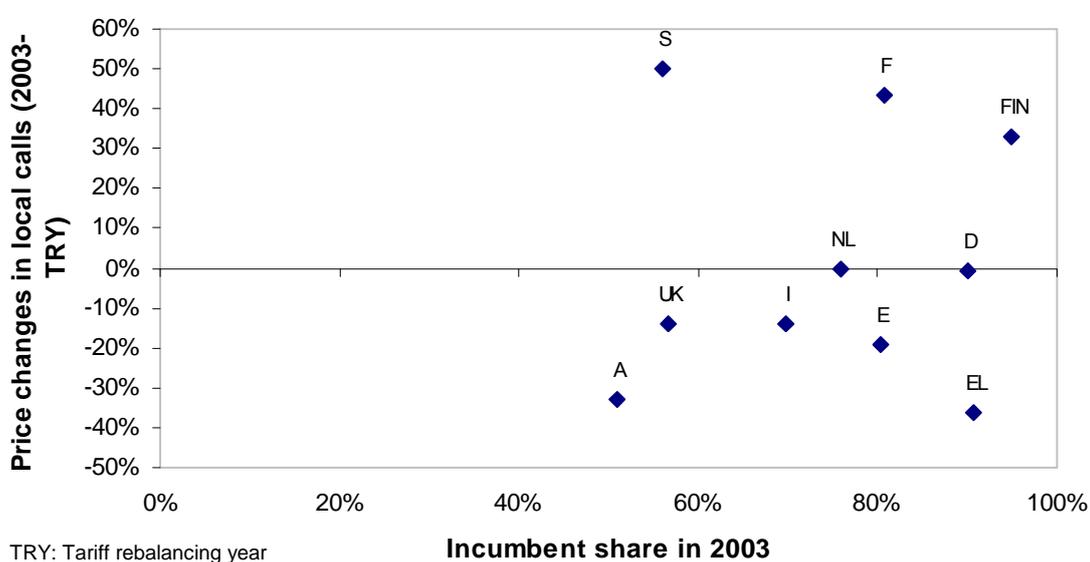


Figure 3: No apparent relationship between price cuts and incumbent market share. Source: European Commission's Implementation Reports and own calculations.

The fact that a common framework leads to these mixed and heterogeneous results across countries could be explained by the great variety of policies that were finally applied in practice. The pattern exhibited by fixed telephony prices and efficiency, for example, seems to be more the result of the price incentive schemes implemented by each national government than the result of competitive pressure arising from new entrants. Similarly, the observed price reductions in the broadband segment suggest that national preferences towards line of business restrictions determine the level of competition that arises in the market.

In addition to these policies, the literature has identified other possible explanations

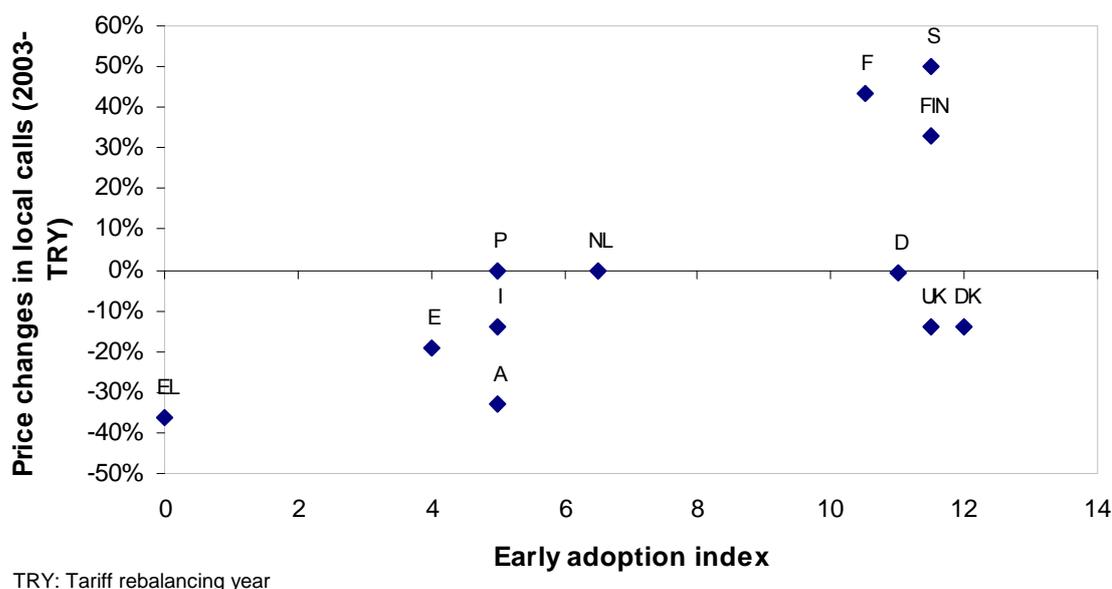


Figure 4: Early adoption does not seem to favour price cuts. Sources: European Commission's Implementation Reports and own calculations. The index summarizes the Commission's view on the degree of transposition in May 1997. For each key measure in the directives, countries add one point to the index if main provisions are in place; half point if only some of them are in place or if a derogation is granted; zero points otherwise.

of this heterogeneity in the results. The extension of privatization is among the most commonly analyzed features¹⁰ and it certainly varies across member states (see figure 5). Most studies coincide in its positive effect, specially when it is combined with the introduction of competition in the sector. For example, Li and Xu (2004) find that, on average, full privatization increases investment per capita, penetration in the fixed and mobile segments, labour and total factor productivity and the volume of network traffic. However, prices also increase. This effect is, nevertheless, reversed when competition is introduced in addition to privatization. The combination of both features also reinforces the positive effect on penetration. Partial privatization, on the contrary, has no significant effects.

The establishment of a national regulatory authority is another commonly analyzed feature and it is also generally found to yield positive results. Estache et al (2006) find that a NRA reduces prices (specially in developed countries open to competition), increases the quality of the service and improves labour productivity. Nevertheless, there is evidence that the characteristics of the NRA also have an influence on performance. On the one hand, Wallsten (2003) finds that the in-

¹⁰See Estache et al (2006) for a survey.

roduction of the NRA prior to the privatization process is associated with higher penetration (in fixed and mobile segments) and telecommunications investment. In addition, this sequencing also seems to increase the investors' willingness to pay at the privatization stage, which is interpreted as investors giving more value to environments with clearer rules. On the other hand, the degree of independence of the NRA with respect to the government also seems to matter. This finding is of particular relevance for the European case, since the creation of a NRA was mandated for all countries but its degree of independence largely varied from one to another (see figure 6). Edwards and Waverman (2006) find that a higher regulatory independency, as measured by an index of several institutional features of NRAs, yields lower interconnection rates and mitigates the positive effect of public ownership on those rates. Using a slightly different index, Gual and Trillas (2006) find a weak negative effect of regulatory independence on labour productivity, while its effect on penetration is not significant.

Line of business restrictions, the extension of privatization or the independence of NRAs constitute important pieces of regulation that were not contemplated in the "1998 framework". Nevertheless, the framework considered other rules that could also contribute to the heterogeneity of its success due to differences in their implementation or in the timing of their adoption.

Member states differed, for example, in the year of adoption of policies that favour entrants vis a vis incumbents - such as carrier pre-selection, number portability or local loop unbundling. Gual and Trillas (2006) provide some indication on the effects of such policies on penetration and productivity. These policies are all aggregated into an index, with higher values reflecting more favorable entry conditions. Pro-entrant policies are found to increase penetration but to have nonsignificant effects on labour productivity.

As could be seen in tables 1 and 2, member states also differed on the costing methodology used for interconnection regulation. Chang et al (2003) find that most countries using some form of direct cost-based interconnection had telecommunications investments above the EU average in 1997. Similarly, most of the countries not using fully-distributed costs had investments above the EU average. No significant results are found for long-run incremental cost methodologies.

Finally, differences in the pricing of access to the infrastructure needed for broadband provision could also explain some of the observed variance in broadband penetra-

tion. It is generally accepted¹¹ that facilities-based competition is more effective than service-based competition in promoting the adoption of broadband technologies (Aron and Burnstein (2003), Distaso et al (2004)). Service-based competition can promote the early adoption of the technology, but it may decrease its diffusion speed (Denni and Gruber (2006)). The level and relative prices of the different forms of access to the infrastructure - local loop, bitstream, etc - determine the optimal choice for a broadband provider between a facilities- or service-based provision of the service. Hence, the rulings of NRAs with regards to access prices can influence broadband adoption by favouring one form of service provision over the other. Besides these rules, the dominant form of access provision in a country also depends on the initial coverage of cable networks and the existence of cross-ownership restrictions. Again, these are factors that vary between member states and which were outside the scope of the framework.

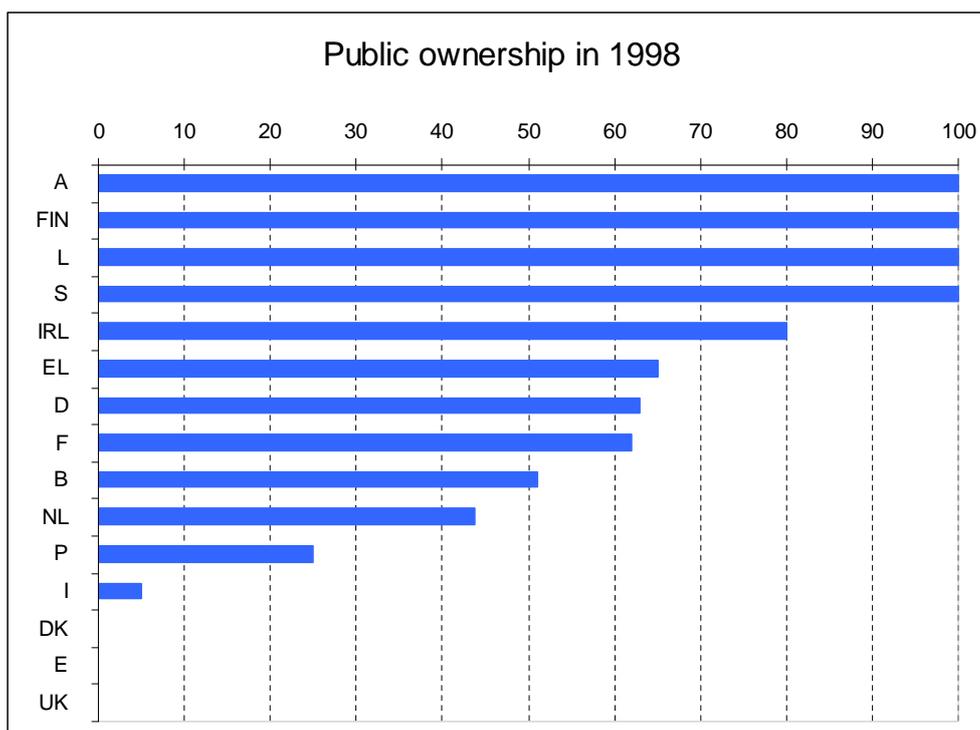


Figure 5: Public ownership was the norm when the "1998 framework" was implemented.

Source: European Commission's Implementation Reports.

¹¹See Gual and Jodar-Rosell (2008) for a brief review.

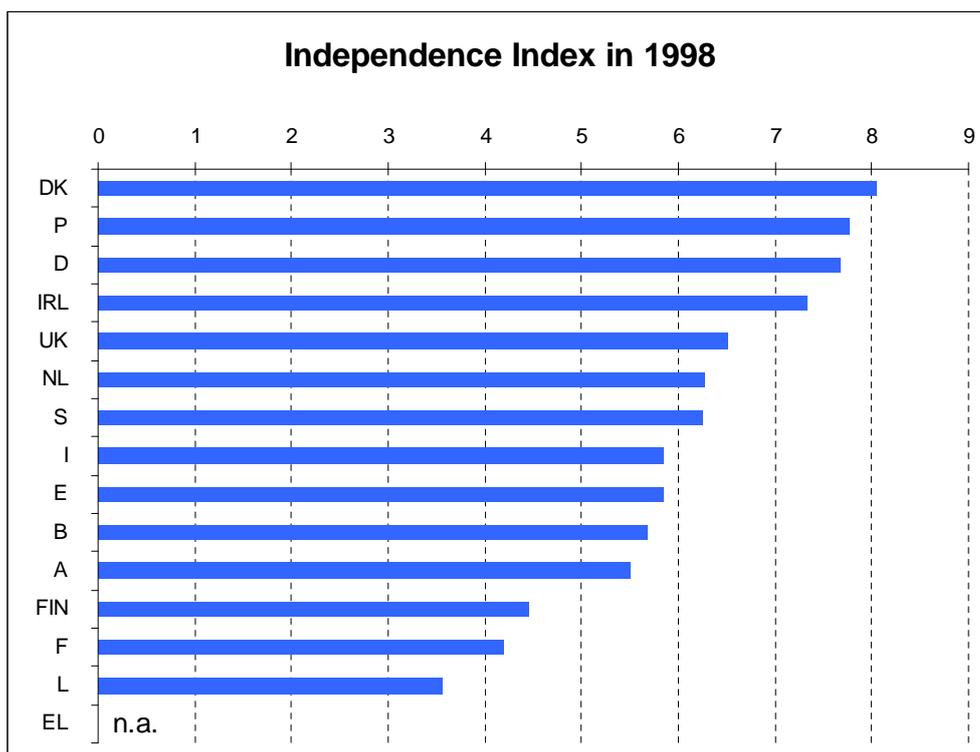


Figure 6: NRAs' independence could be improved in most member states. Source: Gual and Trillas (2006).

3 Regulation in a converging environment

When the "1998 framework" was designed, different types of signals (voice, data or television) were transmitted through different types of specialized networks. Recent technical advances, however, have made possible the transmission of any of these signals over any digital network. Traditional networks specialized in one type of content have been upgraded to become digital and thus, are now capable of transmitting voice, data or television indifferently. The result of this technological progress is a new competitive environment. Firms in the telecommunications industry face an environment with a richer set of possible strategies than was anticipated when the rules for controlling the liberalization process were designed. In this context, maintaining regulations that constrain the behavior of certain players based on assumptions that are now less likely to hold can be counterproductive. Indeed, one may even question the necessity of ex-ante regulation at all.

The convergence of technologies implies the entry of new and strong competitors in all markets. Any strong player in the traditional market of voice, data or video

transmission can now become a multiproduct provider. Hence, from three adjacent markets with very few players in each, we move to a single converged market with stronger and more numerous players. Moreover, the scope for product differentiation is also larger than before, through the possibility of offering different combination of services. It seems, thus, that the motivation behind the "1998 framework" regulations, namely the introduction of competitors with the minimal guarantees to survive, is of less importance in this new environment. On the contrary, new concerns arise. On the one hand, the increasing role of content in the demand for telecommunications services raises issues regarding exclusive vertical relationships and the possible foreclosure of application providers in, for example, the provision of IPTV (television over IP) or VoIP (voice over IP). As opposed to the case of other web content, broadband providers can restrict access to certain providers of these applications without significantly decreasing the value of the connection. Relatedly, new capacity will have to be built eventually to carry all this content, raising the problem of pricing the use of the network and its expansion. Finally, bundling and tying may become more important in the strategic toolkit of telecom providers, suggesting the need for an increased monitoring of their possible anticompetitive use.

The role for ex-ante regulation seems to be confined then to ensure the interconnection of all networks and the fairness of switching costs for the consumers. Indeed, too much ex-ante regulation is not without risk in this converged environment. First of all, the effects of ex-ante regulation in one market are easily translated to adjacent product markets. Hence, its overall effects are hard to establish, increasing the risk of regulating related markets. Secondly, asymmetric regulation may put some firms at disadvantage unless the motivations for concern are very well founded. Finally, regulation of access to networks has to be carefully designed since there is the risk of discouraging investment in more efficient networks such as next generation networks (NGNs).

3.1 The new strategy of the European Commission

Recognizing this converging process, the European Commission made a move towards a more technology-neutral regulation of telecommunication markets in 2003. The "1998 framework" was abandoned in favour of the "New Electronic Communications Framework", which extends the harmonized minimal set of regulations to

communication networks (and services provided over these networks) irrespective of the type of information they convey¹². In short, the telecommunications market now becomes the electronic communications market (ECM).

The overall approach still follows the "host country rules within limits" of the "1998 framework", with the difference that competition policy principles and ex-post regulation take an increased role and there is a higher harmonization effort on the minimal set of rules:

Gradual shift to ex-post intervention Following the principles of competition law, all NRAs are required to define the relevant markets of the ECM appropriate to their national circumstances and periodically assess the competition conditions in these markets¹³. If operators with SMP (under the principles of either single or joint dominance) are found, then ex-ante regulation may be applied to them. Otherwise, if a relevant market is found to be effectively competitive, the obligations imposed to operators in that market should be consequently amended or withdrawn. The Commission initially proposed a minimum list of 18 markets to be analyzed by NRAs. It is under consideration whether this list should be shortened to 12.

Measures to increase harmonization When operators with SMP are identified in a relevant market, the Commission established a short list of possible regulations to impose in wholesale markets¹⁴, or in the retail market¹⁵ if this is not enough to achieve the objectives defined on Article 8 of the Framework Directive (2002/21/EC)¹⁶. NRAs must select at least one of the regulations for wholesale markets and must ask for approval if a non listed measure is preferred.

Besides listing explicitly the set of measures to be implemented, the Commission took additional steps to ensure that similar regulations were imposed in countries facing similar situations. In particular, NRAs are required to submit their intended regulations to public consultation and to inform the Commission about them. Moreover, in the case of transnational markets, NRAs are required to cooperate. Nevertheless, the most significant measure adopted by the Commission is Article 7 of

¹²Directive 2002/21/EC.

¹³Directive 2002/21/EC.

¹⁴Directive 2002/19/EC.

¹⁵Directive 2002/22/EC.

¹⁶Among these objectives, it stands out that of "ensuring that users, including disabled users, derive maximum benefit in terms of choice, price, and quality".

the Framework Directive, which grants veto power to the Commission on NRAs decisions with respect to market definition and the designation of undertakings with SMP. Hence, the Commission may overturn any decision of NRA in these fields if it considers that it is contrary to Community Law or to the objectives set on the above mentioned Article 8. After the first revision of the "new framework", the Commission is considering whether to extend the veto power to the particular regulations applied by NRAs and entrust a common European regulator with the task of monitoring these remedies¹⁷.

Measures to reduce the scope left to member states Relative to the "1998 framework", the "new framework" includes some measures to reduce the scope that was left to member states with respect to line of business restrictions, structural separation and entry regulations. To begin with, legal separation of cable TV and other public electronic communications networks is required when these three conditions are met: a) the undertaking is controlled by a member state or benefits from special rights; b) is found to be dominant in some relevant market and c) operates a cable TV network established under special or exclusive rights¹⁸. Secondly, the same directive also requires member states to ensure that any vertically integrated undertaking with SMP does not (price or non-price) discriminate in favour of their own activities. Since price discrimination is already banned by the Access and Interconnection Directive¹⁹, this requirement may be a way to introduce some degree of vertical separation. Indeed, the Commission is considering whether to give regulators mandatory powers to impose this form of separation²⁰. Finally, the "new framework" also requires the provision of electronic communication network or services to be subject to a general authorization and not licensed. With the revision of the "new framework", this would also extend to mobile communications and the possibility of a secondary market for spectrum is under consideration.

¹⁷Review of the EU Regulatory Framework for electronic communications networks and services, COM(2006) 334.

¹⁸Directive 2002/77/EC.

¹⁹Directive 2002/19/EC.

²⁰Viviane Reding speech at The International Conference "Exploring the Global Dynamics of Broadband Internet", Athens, 1 June 2007.

3.2 The risks of the new framework

The appearance of the "new framework" recognizes the increased role that competition policy can play in this converged environment. Nevertheless, when put into practice the concern remains on whether it tackles the risks of ex-ante regulation in an appropriate manner. Furthermore, the higher level of harmonization sought by the Commission may provide for market integration but only at the expense of experimentation.

With respect to the first issue, the technological neutrality of the "new framework" and, hence, the symmetry in the ex-ante regulation hinges on the definition of relevant markets. A good definition is important since obligations imposed to operators with SMP run the risk of becoming equivalent to technology-specific regulation. This is even more determinant if one takes into account that one of the most significant obligations on SMP undertakings is granting access to their network. The list of relevant markets considered for ex-ante regulation by the Commission does not include any true converged market. Instead, it closely mimics the division according to technologies that was in place during the old framework (Gual (2004)). Retail provision of voice and data, for example, is separated into two different markets even though these services are increasingly offered in bundles. The same can be said about the provision of fixed and mobile communications. The Commission justifies this approach by the present demand conditions. Nevertheless, the revised framework will enter into force around 2010 and will be in place for several years. It is very likely that demand conditions will evolve in the meantime.

Certainly, the list of markets proposed by the Commission can be modified by NRAs to include broader or narrower markets. By doing this, the different evolution of demand conditions across countries can be taken into account. Similarly, NRAs can in principle define the geographic scope of a market to be smaller than the whole member state territory. This is particularly relevant for the identification of SMP operators in wholesale markets for access, since it would allow the NRAs to recognize the competitive constraints placed by facilities-based competitors in those areas in which their networks are already deployed (Cave (2007)). Indeed, the UK has just followed this path with the definition of sub-national markets for wholesale broadband access. These markets reflect different competitive conditions - identified mainly by the number of principal operators and the population that can be served

- at different local exchanges²¹.

So far, however, most NRAs have only redefined markets in order to narrow them to the specific technology predominant in their country²². In any case, should a NRA wish to redefine a proposed relevant market, his decision is subject to the veto power of the Commission by the application of Article 7. Given the preferences of the Commission in favour of the proposed relevant product markets, as well as its cautionary look at sub-national geographical markets, the existence of this veto power could create uncertainty with respect to the rules set by the NRA.

The Commission's definition of relevant markets is also very related to the concern that arises regarding its position with respect to new generation networks (NGN). In the revision of the "new framework", the Commission states:

"The use of more efficient technology to provide existing regulated services does not alter the justification for that regulation; the move to NGNs does not provide an opportunity to roll back regulation on existing services if the competitive conditions have not changed."

NGN are capable of providing existing as well as new services. By conditioning mandatory access to the ability of these new networks to provide existing services, the Commission may be distorting the investment incentives of operators with SMP in some regulated market. The deployment of a NGN can be done in several manners, using different combinations of technologies. Each of these combinations is associated with a particular building cost and a certain range of products and services that can be provided at a given quality of service. The optimal deployment is likely to imply the use of different combinations for locations differing in the type of services demanded and in the willingness to pay for them. Imposing mandatory access to the new network conditions the expected profits arising from the provision of these services and, as a consequence, may distort the combination of technologies finally deployed. The deployment of NGN could even be delayed if the revised framework, which is going to be implemented in the years to come, generates significant regulatory uncertainty in the meantime.

²¹Case UK/2007/0733 : Wholesale Broadband Access in the UK. Comments pursuant to Article 7(3) of Directive 2002/21/EC. Principal Operators are those whose coverage is above the 10% threshold set by Ofcom (BT, the cable operator and 6 LLU operators).

²²This is the case for broadcasting transmission services. See the Commission staff working document SEC(2006) 837, "On Relevant Product and Service Markets within the electronic communications sector susceptible to ex ante regulation", p. 13.

In addition to this, the effect of local loop unbundling regulations over the old, well-known copper infrastructure is still unclear. Recent studies (Gual and Jodar-Rosell (2008)) suggest that unbundling may entail a higher level of investment but the effect in terms of broadband adoption is more modest. Moreover, this effect is likely to depend on getting the relative access prices right, which is not an easy task. In any case, unbundling regulations have almost accomplished their goal of enabling new entrants to achieve a solid position, so that they may undertake further network investments. In this sense, extending mandatory access to NGN seems more difficult to justify.

A final concern about the new framework arises from the level of harmonization sought by the Commission. Harmonization implies a trade-off between market integration and the benefits of regulatory experimentation. Given the risks previously identified, one should not dismiss the potential magnitude of these benefits.

4 Conclusion

To the eyes of the European consumer, the prospects for telecommunications services look promising. Part of this optimism is due to the successes of the Commission's telecommunications policy. Ensuring efficient entry in the industry, through the enforcement of tariff rebalancing, has been the first of them. The rate rebalancing policy enabled potential entrants to assess properly expected profits, something that was not possible under the old system of regulated tariffs with its cross-subsidization between business segments. The second success has been the minimization of the risk of market tipping. This was achieved through the mandatory interconnection of networks in non-discriminatory terms and the implementation of regulations aimed at the reduction of switching costs. These measures had the effect of considerably reducing network effects, thereby minimizing the critical network size needed by the entrants to remain in the market. Finally, the third success has been the modernization of price regulation through the use of incentives. This has prevented the abuse of the incumbents' dominant position and it seems also to have boosted their efficiency levels.

However, the assessment of these successes in terms of industry performance variables calls for a more moderate evaluation and shows a wide dispersion across member states. Overall, the regulatory framework that ended in 2003 was not very

successful at decreasing the dominance of incumbents or promoting broadband penetration. Moreover, very few countries experienced price decreases in all the business segments after the end of the tariff rebalancing period. Several factors are behind these facts. First, member states have differed in their policy stance on public ownership or vertical separation of the incumbent operator, issues on which the Commission has remained silent, except very recently on the separation issue. Second, the independence of NRAs and the timing of implementation of European directives and regulations also varies considerably across member states. Finally, the regulations proposed by the Commission left member states a significant scope for discretion.

In view of the mixed results at the end of the first regulatory framework, the ultimate reasons behind the increased level of competition have to be found in the intense innovation process that has led to the convergence of communication technologies. Since the early 2000, broadband has evolved to become a vehicle which will enable real competition in the industry, through the entry of strong players from adjacent markets. In this respect, one should worry about any policy that may compromise convergence and, as a consequence, broadband development.

Indeed, competition policy is now placed at the heart of the new regulatory framework, whose scope has been broadened to include all electronic telecommunications technologies. In so doing, the Commission intends to implement an evolving framework, in line with the convergence process, and a consistent application of rules across countries. Hence, NRAs are required to periodically define relevant markets and assess their level of competition, lifting unnecessary ex-ante regulation once an acceptable level of rivalry is reached. Nevertheless, the practice so far has been the definition of relevant (product and geographic) markets in the traditional way, with few signals that the framework is moving towards a more dynamic assessment of market boundaries. Thus, the status quo has changed little and we risk ending up with players constrained by different regulations according to the technology they use.

In addition to this, there are still some regulatory features outside the scope of the new framework - such as public ownership of the incumbent and its ownership of cable assets - that hinder broadband development. It is true that mandatory unbundling of the local loop seems to matter more than these features. However, the positive effect of mandatory unbundling should not imply that we can disregard

the risks posed by the present regulatory framework with respect to new generation networks. The present unbundling rules apply to an already deployed network whose functioning and potential are quite well understood. Contrary to the simple upgrade of the existing network, the deployment of a NGN comes along with significant changes in the management of the network and the need to redefine business models and pricing structures, and to coordinate in new standards. In this respect, the identification of successful competitive strategies will be an evolutionary process that will benefit considerably from experimentation. This entails substantial risks for the operators and requires a predictable regulatory framework that does not impose the extension and harmonization of unbundling rules. The mandatory unbundling of a network which still has to be deployed and whose properties are not well understood is, in our view, one of the largest risks posed by the new regulatory framework.

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Appendix A

N° operators actually offering public voice telephony (a)	N° of operators with a combined mkt share >90%	Incumbent mkt share in local calls (b)	Local call charge, 3min. (c)	National call charge, 3min. (c)	10 min. call to near EU country (d)	Change in local call charge, 3min. TRY	Change in National charge, 3min. 2003-TRY	Change in min. near EU country 2003-TRY
Austria	27	5	51%	19.13	63.78	2.81	-32.80%	-41.67%
Belgium	21	5	81%	23.57	64.83	2.24		
Germany	26	5	90%	13.25	46.96	1.39	-0.83%	-53.85%
Denmark	30	7	n.a.	11.87	32.53	0.68	-13.94%	55.68%
Spain	27	3	80%	11.89	37.93	2.04	-19.09%	-71.88%
Greece	12	1	91%	13.58	45.30	4.35	-36.11%	-19.84%
France	14	3	81%	16.99	42.16	2.52	43.64%	-2.00%
Finland	4	3	95%	15.68	22.66	1.84	33.05%	22.70%
Italy	42	4	70%	12.73	26.97	2.27	-13.77%	-62.16%
Ireland	8	1	95%	15.17	50.60	1.54		
Luxembourg	9	1	n.a.	9.95	33.07	1.54		
Netherlands	76	2	76%	13.98	35.97	0.92	0.00%	102.44%
Portugal	11	2	n.a.	20.38	44.04	3.78	0.00%	-22.36%
Sweden	53	9	56%	12.32	29.75	0.59	50.20%	44.74%
U. Kingdom	113	9	57%	23.65	78.93	5.68	-14.03%	43.46%

Notes:

(a) National operators only. Figures for Denmark and the Netherlands are not strictly comparable with the others since they refer to the operators that have been allocated geographical numbers and/or access codes.

Germany: Figure for local calls. Local operators: 45 (local calls), 46 (LD/Int); National operators in LD/Int: 46.

Greece: Figure for local calls. 13 national operators for LD/Int.

Spain: Figure for local calls. Local operators: 13 (local calls), 13 (LD/Int); National operators in LD/Int: 25.

France: Figure for local calls. Local operators: 4 (local calls), 4 (LD/Int); National operators in LD/Int: 18.

Ireland: Figure for local calls. 12 national operators for LD/Int.

Finland: Figure for local calls. Local operators: 43 (local calls); National operators in LD/Int: 11.

(b) Mkt shares based on retail revenues. Data for local calls include calls to the internet

Finland: Combined market share of TeliaSonera, Elisa and Finnet.

(c) USD PPP cents, VAT included

(d) USD PPP, including VAT

TRY: Year in which tariff rebalancing was completed.

Table 3: Results at the end of the "1998 framework" (I)

	Commercial launch DSL	Incumbent mkt share broadband (2003)	Broadband subscribers per 100 inhab.	Price per mbps (e)	Price per mbps % change 2003- 2001	Acces paths per employee (f)	Change access per employee. 2003-1997	in lines	in 2003-2000
Austria	Nov 1999	31%	7.6	0.08	-37.02%	605	120.29%		43.99%
Belgium	Oct 1999	51%	11.7	0.02	-154.52%	710	171.22%		54.20%
Germany	Aug 1999	93%	5.6	0.06	-2.69%	527	113.26%		29.09%
Denmark	July 1999	67%	13	0.14	0.07%	412	50.43%		22.57%
Spain	1999	55%	5.4	0.18	-24.33%	867	205.61%		44.97%
Greece	Jun 2003	0%	0.1	0.22		666	137.61%		43.26%
France	Nov 1999	57%	5.9	0.12	19.99%	551	143.59%		33.39%
Finland	May 2000	68%	9.5	0.08	11.02%	424	47.30%		41.55%
Italy	Dec 1999	60%	4.1	0.12	-74.72%	1,020	152.73%		40.58%
Ireland	May 2002	45%	0.8	0.22		366	112.98%		91.45%
Luxembourg	2001	84%	3.5	0.17	-2.11%	650	61.87%		53.23%
Netherlands	Jun 2000	34%	11.8	0.06	-82.22%	592	62.99%		32.87%
Portugal	Dec 2000	74%	4.8	0.14	-25.30%	883	234.21%		48.57%
Sweden	Oct 2000	45%	10.7	0.08	45.25%	810	194.08%		87.88%
U. Kingdom	Jul 2000	33%	5.4	0.11	1.94%	362	52.23%		11.14%

Notes:

(e) Average across incumbents' offers. USD PPP

(f) Includes mobile and broadband access paths (excluding cable) from 2000 onwards.

Sources: OECD and European Commission's Implementation Reports.

Table 4: Results at the end of the "1998 framework" (II).

5 Appendix B

List of country abbreviations

A - Austria

B - Belgium

D - Germany

DK - Denmark

E - Spain

EL - Greece

F - France

FIN - Finland

I - Italy

IRL - Ireland

L - Luxembourg

NL - Netherlands

P - Portugal

S - Sweden

UK - United Kingdom

Aus - Australia

Can - Canada

Ice - Iceland

Jap - Japan

Kor - Republic of Korea

Mex - Mexico

Nze - New Zealand

Swi - Switzerland

USA - United States