# Competitive Dynamics Between MNOs in the Mobile Telecommunications Single Market: Lessons from the U.S. Experience

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***Abstract:*** Within the framework of the Digital Single Market, the European Commission is paving the way for a Single Market in the European mobile telecommunications services by, among others, studying how to reduce regulation heterogeneity in the 27 fragmented national markets. This article aims to complement this initiative by analysing the U.S. experience and drawing lessons that the potential unified European mobile market can benefit from regarding the small operators in the market. Three major points are identified in order to create an internal market for mobile telecommunications with high competitive dynamics: to prevent market consolidation by a limited number of large operators, to block practices that raise barriers to competition by the dominant operators such as exclusive handset arrangements, and finally, to adopt harmonised and favourable measures to include second-mover operators in the competition.

***Key words:*** Single Market, competitive dynamics, harmonisation, main mobile groups, telecommunication services.

In its 2010 campaign for A Digital Agenda for Europe, the European Commission identified an investigation on the cost of non-Europe as one of the key actions in an effort to push for a single market for telecommunications services in the continent [1]. The Agenda frequently compares the market situation in Europe with its counterpart in the U.S., for example in online services, cross-border transaction, and in R&D in ICT.

[1] European Commission (EC, 2010). Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions: A Digital Agenda for Europe, 19 May, Brussels.

Given the context, the authors have assessed the U.S. mobile market as a case study for the EU Single Market for mobile telecommunications service. Can Europe learn from the U.S. experience?

This article aims to provide a complementary analysis to the Commission's proposed initiatives in the mobile telecommunications Single Market. This paper specifically highlights the critical role of small mobile network operators (MNOs) in providing competitive dynamics to the mobile market and thus the interest to support these players to maintain these dynamics. Analysis of the U.S. mobile market demonstrates that high-level industry consolidation has a negative impact on small operators and that European regulation should take action to prevent this from happening to the EU mobile Single Market. Practices harmful to competition exercised by dominant mobile operators should also be pre-empted to promote a healthy market environment. Furthermore, given the particular characteristics of the European national telecommunications markets, certain asymmetric measures supporting a level-playing field for small operators could be considered at the European level for a harmonised implementation at Member State level.

The following section presents the experience of the U.S. telecomunications regulation. In the 3rd section, we analyse the current European mobile market and how it should benefit from the U.S. lesson for future development. The last section discusses the results of both experiences and concludes.

## ■ An analysis of the U.S. mobile market

### The current market structure in the U.S.: four leading national operators and a host of small and regional operators

At first glance, the U.S. mobile market appears today as one large single market with one regulator, the Federal Communications Commission (FCC), four strong nationwide operators (AT&T, Verizon, Sprint Nextel, and T-mobile U.S.) who hold the majority of the market. Futhermore, mobile communications in the U.S. are better money-for-value than in other advanced economies (see e.g. FCC, 2010, p. 20 or CTIA, 2010, p. 19). According to the FCC, American users on average pay more per month than

their Western European counterparts, but American monthly minutes of use is proportionally higher, thus resulting in a much lower effective price per minute: $0.05 *vs*. $0.16 in Western Europe (€0.03 *vs*. €0.11) [2].

A closer look at the U.S. mobile market tells a different story, however. The market is characterised by 50 states with their own regulator or oversight body (for example, the Public Utilities Commissions, or PUCs), and besides the Big Four, a thriving environment of around 140 small and regional mobile network operators (MNOs) (CTIA, 2010).

**Table 1 – Population coverage by number of operators (*)**

| *Total number of MNOs available* | *Estimated % of total population covered* | | |
|---|---|---|---|
| | *U.S.* | *EU27* | *EU15* |
| 1 or more | 99.6% | 100% | 100% |
| 2 or more | 98.6% | 99.8% | 100% |
| 3 or more | 95.8% | 71.2% | 71.2% |
| 4 or more | 90.9% | 26.3% | 18.1% |
| 5 or more | 73.8% | 5.2% | 1.1% |
| 6 or more | 24.7% | - | - |
| 7 or more | 7.0% | - | - |

(*) The number of MNOS in each of the 27 EU Member States is given by Figure 17, page 23, in part 2 of the EU 15th report (Mobile Network Operators, July 2009. Total EU: 101). For the EU coverage estimates, it is assumed that each operator in a country covers 100% of the population, and each Member State is a geographical entity within the EU's territory, which is considered as one State. This means the figures above for EU27 and EU15 can be overestimated and EU consumers have even more limited choices than their equivalents in the U.S..

*Source: FCC's 14th report, EC 15th report, Eurostat, figures of 2009 markets.*

While promoting competition is a fundamental goal of FCC policymaking (FCC, 2010), state commissions work at the state level to serve local consumer interest. Even when state commissions are pre-empted from regulating entry or rates of mobile operators under Section 332(3) of the Communications Act of 1934 as amended, they have the right to review any merger and acquisition of important size, and they thus have the possibility to obtain local concessions by relevant companies. They can also be responsible for designating operators eligible for the Universal Service support [3]. The High Cost Program for example, aims to support

[2] The price given by the FCC Report is as of end 2008, and the CTIA review gives the price difference as of end 2009, the price difference can be said to be structural.

[3] Section 214(e)(2) of the Communications Act of 1934.

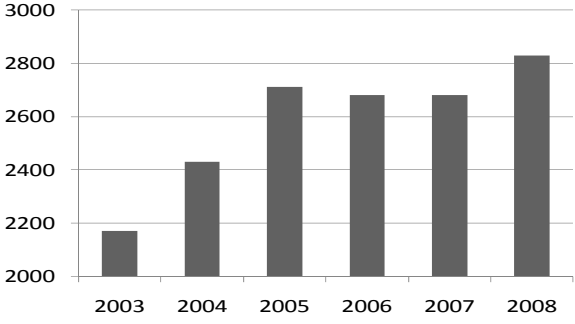
disadvantaged actors in the mobile market. It follows that they can effectively apply asymmetric measures (set out by the FCC) to support small operators at the state level. According to the National Association of Regulatory Utility Commissioners, there are 51 such bodies within the U.S. (one for each state plus one for the District of Columbia), each one regulates the local utility market, including telecommunications [4].

The competitive environment of the U.S. mobile market is thus alive with a wide range of operators. 73.8% of U.S. consumers have a choice of at least 5 MNOs *versus* only 1.1% in EU15 in 2009 (Table 1).

## Assessment of the current state of competition in the mobile market by the Government Accountability Office

In the U.S., the FCC's performance in promoting competition as the national telecoms regulator is closely monitored by the Government Accountability Office, the investigative arm of Congress. In July 2010, the GAO sent a report to Congressional Requesters detailing its findings on the current state of competition in the U.S. mobile market and recommendations on how to address the issues that were raised.

**Figure 1 – How the U.S. market's HHI evolved between 2003-2008**




*Source: FCC's 14th Report*

The report found that the market is highly and increasingly consolidated and that small and regional operators are struggling to compete.

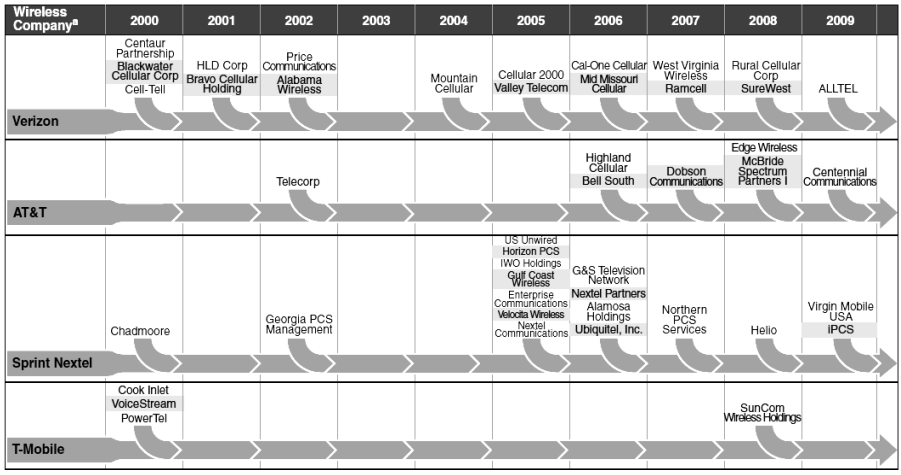
[4] http://www.naruc.org/about.cfm

As an indicator, the Herfindahl-Hirschman Index (HHI), a commonly used measure of market concentration, rose by more than 30% between 2003 and 2008 (Figure 1).

The increased industry consolidation can be explained by the decrease in number of operators in the market, most notably following many merger and acquisition (M&A) deals by the top operators. Among the most remarkable are AT&T's $86-billion (€58bn) acquisition of Bellsouth in 2006 [5], Verizon's purchase of Alltel, the 5th biggest operator, in 2009, and the merger between Sprint and Nextel in 2005 to create Sprint Nextel (Figure 2).

More worryingly, consolidation has not stopped at this point. As of May 2011, AT&T has also proposed to acquire T-Mobile U.S., the fourth biggest operator in the market. If the deal is approved by the FCC and the Department of Justice, the market structure would reduce to three national operators, with the leading two holding 73% of the market share. Given that Sprint Nextel has been a loss-making entity since 2007 [6], its survival post the AT&T and T-mobile merger would be open to question.

**Figure 2 – M&As in the mobile market by the U.S. Big Four between 2000 and 2009**




*Source: reproduced from GAO 2010*

[5] Source: Bloomberg. http://www.bloomberg.com/apps/news?pid=newsarchive&sid=aV4SfzOi93HE

[6] Sprint Nextel's Annual Report filed to the Securities And Exchange Commission in 2010 (Selected Financial Data, page 23. http://phx.corporate-ir.net/External.File?item=UGFyZW50SUQ9ODQwMjZ8Q2hpbGRJRD0tMXxUeXBlPTM=&t=1)

The practice of M&A is further accompanied by spectrum licence acquisition. AT&T, for example, has acquired licences through spectrum auctions, secondary market transactions where operators resell their licences, and licence transfers resulting from divestiture required by the FCC when Verizon acquired Alltel. As of April 2011, in major cities throughout the U.S., AT&T and Verizon owns 90% of the licences for the 700 MHz spectrum [7], prime spectrum for LTE deployment that would unquestionably put them at the forefront of the 4G race.

Inevitably, the current U.S. mobile market is consolidated with absolute dominance by the top four operators, famously known as the U.S. Big Four. Analysis of the market in 2010 shows that altogether, the Big Four hold 90% of subscriber market share and 92% in terms of revenues, or 273.3 million connections and $166.6 billion (€113bn) respectively. The next three biggest operators trail behind with only 19.7 million connections or 6.5% subscriber market share.

**Table 2 - Subscriber and revenue market share of top U.S. operators**

| *Operators* | *% subscribers by operator* | *% revenues by operator* | *% subscribers by group* | *% revenue by group* |
|---|---|---|---|---|
| AT&T | 31.3% | 32.3% | 89.5% | 92.1% |
| Verizon | 30.8% | 35.1% | | |
| Sprint Nextel | 16.3% | 15.8% | | |
| T-mobile | 11.0% | 8.9% | | |
| Metro PCS | 2.7% | 2.2% | 6.5% | 6.0% |
| U.S. Cellular | 2.0% | 2.3% | | |
| Leap Wireless | 1.8% | 1.4% | | |
| Others | 4.1% | 1.9% | 4.1% | 1.9% |

*Source: Tera Consultants' Analysis of The Mobile World 2010 market data*

This trend of industry consolidation puts the competition and the very existence of small operators at stake. Indeed, the GAO reports that it has been increasingly difficult for small and regional operators to compete, while their capital expenditure as a percentage of revenues have been in most cases more aggressive than that of the large operators. Some of the barriers to competition identified in the report include harmful practices exercised by the nationwide operators such as exclusive mobile phone arrangements, high early termination fees or the use of "proxy" companies to acquire spectrum licences that are later transferred to a dominant MNO through secondary market transactions. Regarding the early termination fees, the

[7] Report from CNET. http://news.cnet.com/8301-30686_3-20058494-266.html

GAO estimates that 42% of mobile users who wanted to switch operators did not do so because of early termination fees. However, nationwide operators' agreements with manufacturers on handset exclusivity, even if argued by some to contribute to innovation and product development, effectively lead to a disadvantage for smaller operators who cannot afford to have similar deals.

In its conclusion, the GAO indicates that the FCC could do more to monitor and promote competition in the U.S. telecoms market, most notably by collecting more data for its assessment of the state of competition.

Given the FCC's mandate in promoting competition as reaffirmed in the GAO's report, how did the U.S. mobile market get to such a situation during the last decade?

It is interesting to observe that, at the end of the nineties, the regulation introduced by the *Telecommunications Act* of 1996 attempted to provide a basis for a major surge forward in competition. It liberalised all telecom markets and specified detailed conditions to promote entry opportunities at several different possible levels. The Act also indicated that a dual enforcement of the antitrust laws exist for both the Department of Justice (DoJ) and the FCC. The FCC in particular was instructed to develop specific implementation standards and the state commissions were to facilitate implementation of the new competition policy at the state level.

But the master plan of the new *Telecommunications Act* grossly misconceived the incentives of the dominant players. Several mobile operators predictably reaffirmed their primary goal of strengthening their monopoly power over customer connections. They went on an M&A spree and gradually consolidated the market to a handful of national mobile operators. Adopting a passive posture, the FCC had found the M&As in the public interest. From a more dynamic conception of the market, the mergers would not expand or open competition in new markets, they are obvious attempts to protect markets, extend market power and create or raise barriers to entry.

The deregulated free market is leading to significantly fewer players who can control the competition, what TREBING (1997) refers to as "tight oligopoly". This market structure leads to inefficiency in the sense that too little is produced with too much and excess capacity that can serve as a barrier to entry. Furthermore, dominant actors in this market engage in "explicit or implicit self-regulation" to maintain market share and profits

(MELODY, 2003). In addition, as ETRO has observed: "market leaders may behave in an anti-competitive way, accommodating or predatory, in markets where the number of firms is exogenous (meaning that outsiders cannot overcome barriers to entry even when there are profitable opportunities in the market), while they always behave in an aggressive way when entry into the market is endogenous (meaning that it depends on the profit opportunities in the market)" (ETRO, 2006, 2007). The mobile industry clearly belongs to the second category (see e.g. LAFFONT, REY & TIROLE, 1998 a and b).

**The FCC measures seek to sustain the small operators and thus sustain the competitive dynamics in the U.S. mobile market**

In recent years, however, the U.S. authorities have adopted a different approach to develop a new market structure characterised as an oligopoly with fringe competition.

As for the many small and regional operators, both the FCC and GAO place an important emphasis of preserving them in order to preserve the competition (See e.g. FCC, 2010 or GAO, 2010). Not only is the role of small players in sustaining competition widely acknowledged by the existing body of economic knowledge, in the telecommunications context, they also serve as imitators and thus diffusers of innovation to the local economy (MAITLAND, 2005). Furthermore, as KORSCHING *et al*. (2003) demonstrated, since the fate of the small operators depends on the fate of the area, they actively promote the local economy and workforce training. The case is a lot less true for nation-wide operators, whose ownership is "absent" from the local community, their operation thus disconnects with the local needs.

Accordingly, the FCC has put in place many asymmetric measures aiming at supporting these small operators, in particular, the division of spectrum licences at several geographical levels, and the Orders on voice and data roaming in 2010 and 2011 respectively that oblige large operators to share their network with smaller operators in areas where the small players do not hold spectrum licences.

Roaming charges used to be very important until 2010 when the FCC passed an Order to eliminate voice and SMS home roaming exclusion [8]. This decision means that nationwide operators such as AT&T and Verizon, who fiercely opposed the initiative, are now obliged to share their national network on a "commercially reasonable" basis with smaller operators in areas where the requesting operators do not hold spectrum licence. In 2011, the FCC continues this trend with a similar approval on data roaming, again much to the chagrin of AT&T and Verizon [9].

The actual results of some of these measures are disputed. Their implementation should be studied in further detail, as the GAO report has suggested, in order to achieve the results that the FCC actually aims for. However, to interpret the FCC's policies in good faith, these measures have been introduced to create a more level playing field for small operators.

To justify the use of these measures, two main arguments have been – at least implicitly – developed to point out the difficulties faced by small operators as late entrants (see e.g. AMSTRONG, 1998; DE BIJL & PEITZ, 2002). On one hand, there is the cost recovery for mobile operators, including investment costs. Due to an initially unexpected growth of the mobile market, early entrants have recovered their early investments rapidly, whereas late entrants still have to recover part of their investment costs. This argument implies that since early entrants were already allowed to recover costs, termination rates between early and late entrants have to differ because of cost recovery. On the other hand, the actual cost of an efficient operator certainly decreases in its market share. It is widely acknowledged that a mobile operator's costs per call minute strongly decrease in the number of subscribers and in call volume (see e.g. ERG, 2008, p. 90). Hence, for different numbers of subscribers and different call volumes, the efficient use of resources leads to different cost levels. But, what is important is that operating at a low scale does not imply that the operator is inefficient. It may simply mean that market conditions at a particular point in time do not allow the firm to operate at a larger scale. The scale economy argument complements the cost recovery argument because there is a high correlation between date of entry and scale of the operator. Hence, late entrants face at least two disadvantages compared to early entrants: they have not yet recovered their costs (this is relevant for dynamically consistent regulation according to which operators must be confident to be able to recover their

8 http://hraunfoss.fcc.gov/edocs_public/attachmatch/FCC-10-59A1.pdf

9 http://transition.fcc.gov/Daily_Releases/Daily_Business/2011/db0408/FCC-11-52A1.pdf

initial investment costs) and they operate at a lower scale which leads to higher costs (which is relevant to determine the relevant cost level of an operator).

Yet, first entrants enjoy certain other advatanges that put later entrants even further behind in the competition. First entrant advantages stem from early adoption by users, allowing a firm to capture a large market share early on. Thus, by the time competitors can enter the market, the first-mover will have already established advantages in brand-loyalty or awareness as well as cost advantages in distribution and/or infrastructure systems (BENZONI & GEOFFRON, 2007). Other studies also support this view. For example, DEWENTER (2007) states that first mover cost advantages typically result from structural advantages, such as economies of scale and learning curves, higher degrees of advertising appeal or better access to input markets. Therefore, as PEITZ (2005) stated, the late entrant's initial position with respect to coverage, installed consumer base, quality of service and reputation is different to the incumbent's position. This creates asymmetric market environments.

Subsequently, the solution to eliminate the potential negative effects of asymmetric market on competition can be to apply asymmetric measures in order to try and address the imbalances in the mobile market.

## ■ The mobile Single Market in the European context

### The current EU market structure: towards leading continent-wide operators

During the last decade, Europe has witnessed the rise of four mobile groups: Vodafone, Telefonica/O2, T-mobile, and Orange. According to the EC 15th report, in which the four operators are called "the main mobile groups", together the four operators hold 78% of the EU27 market, which leaves the other operators far behind in the European market.

The mobile market in Europe is characterised by 27 national markets, each with typically 3 or 4 MNOs. Altogether there are 101 national operators, including 49 subsidiaries or operators with cooperation agreements with the main groups (EC, 2010). The four groups are therefore dominant at the

European level as well as some national markets. Their position in the European market is strong and comparable to the U.S. Big Four.

**Table 3 – Local market share: European main mobile groups *vs.* U.S. Big Four**

| | *Market share % EU subscriptions* | *Subscriptions millions* |
|---|---|---|
| Vodafone | 28% | 170.6 |
| Telefonica | 19% | 115.7 |
| T-mobile EU | 17% | 103.6 |
| Orange | 14% | 85.3 |
| Total top 4 | 78% | 286.3 |
| Total EU | 100% | 609.1 |

| | *Market share % U.S. subscriptions* | *Subscriptions millions* |
|---|---|---|
| Verizon | 32% | 91.1 |
| AT&T | 30% | 85.1 |
| Sprint Nextel | 17% | 48.0 |
| T-mobile U.S. | 12% | 33.7 |
| Total top 4 | 90% | 176.2 |
| Total U.S. | 100% | 285.6 |

*Source: EC 15th report, GAO 2010, CTIA, 2009 market figures*

Subscription market share of the leading four operators is lower in the EU market than for their U.S. equivalents, 78% *vs*. 90%. Europe's main mobile groups, however, control a greater number of subscriptions than the U.S. Big Four, arguably because the EU market size is twice that of the U.S. (609 *vs*. 286 million subscriptions). Vodafone for example, has more than twice as many subscriptions in the EU 27 countries as Verizon in the U.S. market. What is more, the European-based Vodafone Group and DeutscheTelekom, who respectively own Vodafone and T-mobile operations in Europe and elsewhere, are also present in the U.S. market. The Vodafone Group currently holds a 45% stake in Verizon, and DeutscheTelekom with its U.S. branch as T-mobile U.S. is number four in the market [10]. In these aspects, the European main mobile groups can be said to be of larger size and more influential in the global mobile market than their U.S. counterparts.

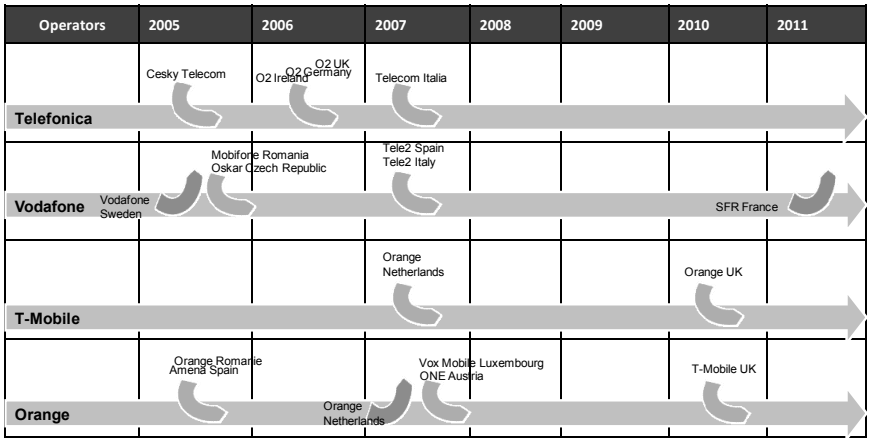
To reach such sizes and influence, the European main mobile groups, similar to their U.S. colleagues, have also muscled up their market power by merging with or acquiring other operators (Figure 3). Most notably are the acquisition of O2 by Telefonica in 2005 and the merger between Orange and T-mobile in the UK market in 2010. For £17.7 billion (€26bn), Telefonica successfully acquired the 6th largest mobile group at the time in Europe. It took up O2's market shares in the UK, Germany, and Ireland while Deutsche

[10] It should be noted that, however, Deutsche Telekom is struggling in the U.S. market (it has been losing customers every quarter since Q1 2010 except for Q3 2010) and would like to sell its U.S. branch to AT&T, as mentioned earlier.

Telekom had also attempted but failed to seal the deal with O2 [11]. In 2010, the UK market structure was completely shaken up by the Orange and T-mobile merger: the third and fourth operators in the market combined to create Everything Everywhere with 30 million customers and became the leading player in the UK.

Interestingly, DeutscheTelekom's T-mobile and France Telecom's Orange have also recently teamed up at the European level through a procurement joint venture [12]. Under pressure from the competition, the third and fourth European operators are working together to pool resources and rein in cost. The tendency of continued industry consolidation in Europe might be less aggressive but is quite similar to the U.S. situation. Indeed, Stéphane Richard, the Chief Executive of France Telecom confirmed in a recent interview [13] that the European telecoms market is likely to consolidate in the next few years.

**Figure 2 – Mergers, acquisitions and divestures by Europe's main mobile groups**




*Source: Tera Consultants*

It should be noted that Europe's main mobile groups have also been shedding their operations in certain markets, too. Most of the time, the divested assets belong to operators of only third or fourth position in the

11 For more details, see the BBC's analysis of the deal at: http://news.bbc.co.uk/2/hi/business/4392036.stm

12 See Orange's Media Release 2010

13 "France Télécom hunts for ways to raise revenue", at: http://online.wsj.com/article/SB10001424052748704729304576286781968298892.html

market. For instance, DeutscheTelekom exited the Italian market in 2000 and France Telecom followed suit in 2003 by selling their stakes in Wind, the third entrant to the market; in 2005, Vodafone sold its operator in Sweden, also a late entrant, to Telenor, and in 2007, Orange Netherlands was divested being the fourth operator in the competitive Dutch market. The mobile groups divest these stakes to others who are ready to be in the second-mover position and thus may make fewer profit margins. It can be observed that these groups only seek to maintain or expand market power and that they are driven by financial not industrial motives.

Alongside consolidation and the subsequent increasing market share, a number of the main mobile groups have been fined by the European Commission or national regulators for unfair practices and abuse of Significant Market Power. In 2004 and 2005, for example, Brussels issued formal charges against Vodafone, O2 and T-mobile for their abuse of dominant market position by demanding "unfair and excessive roaming rates". According to the EC's Impact Assessment in 2006, the EU revenue from roaming services is estimated at €8.5 billion while the price is five times the actual cost. The investigation lasted until 2007 when a new law was passed to cap the roaming rates and addressed the issue (Regulation (EC) no. 717/2007). Since then, however, the leading European operators represented by their entities in the UK, Vodafone, Telefonica O2, T-Mobile and Orange, embarked on a fierce battle to overturn the Roaming Regulation. They finally lost their case in June 2010 when the European Court of Justice in Luxembourg upheld the EC's decision (CURIA 2010). The fact that it is exactly these four operators who tried to overturn such a regulation is a worrying sign for competition in the mobile market in Europe. They fought to retain their interest even if consumers would have to continue to pay over-priced services.

**The other European mobile market: a variety of small operators advancing the competition**

Small operators in Europe have been playing an active role in championing the competitive dynamics in the EU mobile market. As second movers, they are competing on price and services to fulfil the needs of local consumers. Their local subscriber market share ranges from 7% of Three in Denmark to 18% of Bouygues in France. Despite their second mover position, the community of small operators in Europe has been very active in addressing consumers' needs and keeping up the competition.

For example, Three offers generous 3G price plans to data-hungry customers in some European markets such as Austria, Denmark and the UK. In the UK, it is the only operator which truly provides unlimited data service without the hidden cap provided in small print of Terms and Conditions unlike the other operators. Some second-mover operators in Europe offer value-for-money services, such as Meteor in Ireland or E-plus in Germany, others offer innovation like CenterNet and Mobyland's first commercial LTE network in Poland, some operators offer both, as in the case of France's Bouygues Telecom [14].

Nevertheless, the small operators in Europe do not enjoy asymmetric measures in the same way as their counterparts in the U.S. do. At the moment, due to market heterogeneity, some second movers are implicitly or explicitly protected by the national regulator, as in the UK or Spain, others are not. Ofcom, the UK telecoms regulator, recently proposed limits on 4G spectrum holding by each bidder to "ensure […] at least four national mobile service wholesalers", which can be seen as an effort to include Three in the 4G competition (OFCOM, 2011).

**Where should the mobile Single Market initiative go from here?**

The European Commission should capitalise on the FCC's experience: in order to avoid the concentrated oligopolistic structure with small operators struggling to survive, they should start nurturing the competitive dynamics by including the small operators in Europe in the Single Market proposal. The oligopolistic outcome and the struggle of small operators can be pre-empted by considering the following points in the initiatives towards a single market in mobile telecommunications in Europe.

Firstly, the EC should adopt a regulatory approach so as to prevent the main European mobile groups from too much market consolidation. The U.S. experience shows that the deregulatory approach, while being well-intentioned in promoting competition in the mobile market, has led the industry to consolidate to such a level that market power lies with only a very limited number of operators. These dominant operators, drivers of the

[14] Sources: Tera Consultants' analysis of Operators' websites, visited in March 2011. For example, in France, a two-hour price plan with unlimited texts, 500MB of service and unlimited calls to 3 chosen numbers, Orange and SFR each charge €39 and €45/month for a 24-month contract, whereas Bouygues' price is €33.9/month. Bouygues was also the first to offer Quadruple Play package in 2009.

consolidating process, continue cementing their position through acquisitions of smaller ones and effectively reducing the competitive dynamics of the market.

Furthermore, European regulation should prevent practices among the main mobile groups that raise barriers to competition such as exclusive handset arrangements or high switching costs. There have already been competition laws laid out by the European Union that prohibit anti-competitive behaviours [15]. However, the laws could be adapted in light of new regulations to reinforce the European mobile Single Market.

Last but not least, asymmetric measures could be considered to preserve the small operators so that they can compete effectively, for example, spectrum licence auction should be designed in such a way so that small operators are not excluded in the race to deploy new technologies that require more spectrums. The lesson from the FCC's implementation of asymmetric measures shows that any measures proposed by the Commission should take into account certain loopholes that can be exploited by dominant MNOs. Given the objective of the EC's Digital Agenda to have a harmonised approach in all Member States towards a Single Market for telecommunications service, a European framework of asymmetric measures could be laid out for the national regulators to follow and adjust according the national market.

Besides the theoretical review at the end of part 2 of why it appears critical and justified to preserve the small operators, or later entrants, particularities of the European markets need to be considered beyond the lessons from the U.S. telecommunications market. The following analysis explains why this is the case and strengthens the rationale for harmonised asymmetric measures differentiated by market as suggested above.

One issue specific to the European context that justifies the measures supporting small operators in mobile telecommunication sector is that the European national mobile markets have varying characteristics that differentiate one market from another. It should be taken into account that the U.S. market is different to the 27 European national markets with different languages, cultures, and consumer habits. It thus makes sense to have small and regional operators catering for special needs of certain

15 The Treaty on the Functioning of the European Union indicated that agreements between two or more firms which restrict competition are prohibited (Article 101 of the Treaty), and firms in a dominant position may not abuse that position (Article 102 of the Treaty).

groups of consumers. What is more, these differences also prevent operators who wish to operate across the 27 nations from exploiting economies of scale in advertising or in services to varied consumer habits and expectations.

Clearly, the characteristics of the demand have to be considered carefully to design the conditions of an optimal regulation. The argument is the same as in the competition policy enforcement to define a relevant market.

In addition, as expressed by leading scholars (OGU.S., 1994; ULEN, 1998), if satisfying heterogeneous preferences is taken seriously, national legislation must be also accepted. To sum up, harmonising the way in which it must be assessed whether uniform regulation is misleading may turn out to become a major impediment for member states to pursue a consumer protection policy as preferred by their respective populations.

Apart from their ability to satisfy specific preferences, locally-adjusted regulatory measures of mobile market bring other advantages. Differences between national regulations may generate all the benefits of a learning process. Differences in rules allow for different experiences and may improve an understanding of the effects of alternative legal solutions to similar problems. This advantage relates both to the formulation of the substantive rules and their enforcement. The theoretical background of this argument can be traced back to the reasoning of Nobel Prize laureate HAYEK (1979) about the fundamental limitations of human knowledge. It cannot be assumed that regulators know the best legal rules in advance. The knowledge about the most appropriate remedies for solving new or even well-known problems of market failure (such as information asymmetries in consumer markets) is still limited. The performance quality of regulations and systems of enforcement in a given jurisdiction is revealed by comparing it with that in other jurisdictions. The Hayekian concept of ‘competition as a discovery procedure' entails parallel experimentation with new problem solutions and the imitation of the successful solutions by others through learning. This Hayekian concept is closely linked to the idea of ‘yardstick competition', implying that information about the quality of the performance of governments and enforcement agencies is revealed by comparing it with the performance of others. Politicians may thus be given incentives to copy superior solutions adopted in other jurisdictions. From this point of view, the U.S. experience could be really useful. Under the latter scheme, consumers may fully profit from trial-and-error processes and will simply choose the laws that are best adapted to their preferences. The benefits of what we could call a "gradualist approach" of regulation, based on experience and

recognition of the advantages of dynamic competition, mainly stimulated by challengers' pressure, have to be considered.

The future of the regulation must be premised on dynamic markets and flexibility in the selection of the most appropriate procedures and substantive criteria to resolve regulatory issues. The unexamined acceptance of a static natural monopoly market structure, or indeed any market structure, must give way to an ongoing examination of market structure as a key element in regulation. Most utility markets, at least for the foreseeable future, will be characterized by a tight oligopoly with fringe competition and constantly shifting market boundaries. Competition policy can be best implemented by focusing directly on existing and potential barriers to entry and the concentration of monopoly power. No matter what the market structure happens to be at any moment in time, barriers to entry should be continuously examined and minimized, and all avenues to increased concentrations of monopoly power should be blocked except those obtained as a result of growth by superior market performance in providing services to customers. This approach to implementing competition policy will permit competition to develop wherever market conditions justify it. The industries will be in a much more flexible position to adapt to change. Moreover an explicit policy on entry to this effect should reduce the protectionist pressure on regulators and strengthen their capability to resist what remains of it (see e.g. DEMSETZ or STIGLER).

## ■ Conclusion

The on-going discussion of the Single Market for mobile telecommunications services, while promoting the harmonisation of EU national regulations, needs to take into account the different natures of the "fragmented markets" in order to construct suitable and sustainable policies. The existing 27 bodies of regulation of mobile markets should certainly be harmonised at the European level, however including consideration at the national level to preserve the second movers in such a way that second-mover operators enjoy the same treatment everywhere in Europe. The U.S. experience points to the danger of letting the dominant large operators have their way and minimising competitive dynamics through industry consolidation. The European Commission could certainly prevent the same scenario in the EU by acting accordingly.

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