Reforming Europe's Telecoms Regulation to Enable the Digital Single Market (*)

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Abstract: In a few short years, Europe has gone from leader to laggard in advanced digital networks. Many markets in Asia and North America now enjoy fiber access penetration up to 20 times higher and LTE penetration up to 35 times higher than in the EU. As a result, European consumers and businesses experience slower connections, leading to less value and slower economic growth. This report examines the regulatory reasons why Europe is falling behind, and it offers a strategy and roadmap for reversing the current negative trends. The three main inhibitors of investments identified by the report are, (a) the inability of telecom operators to make a fair return, (b) the mandated inefficiencies in the mobile sector, (c) the lack of a harmonized pan-European approach. To counteract this scenario, The Boston Consulting Group (BCG) has developed a strategy to redress the situation and suggests the following five measures to unlock EU telecoms' growth potential: (1) substantially deregulating fixed-line wholesale access, (2) creating a level playing field for network operators and OTT digital service providers, (3) modernizing spectrum policy across Europe to create a sustainable infrastructure competition that incentivizes network investments, (4) permitting healthy consolidation in mobile, (5) harmonizing rules and procedures to unlock synergies between countries.

Key words: regulation, next generation networks, digital services, spectrum auction.

(*) Findings from the 2013 Boston Consulting Group report for ETNO, the European Telecommunications Network Operators' Association.

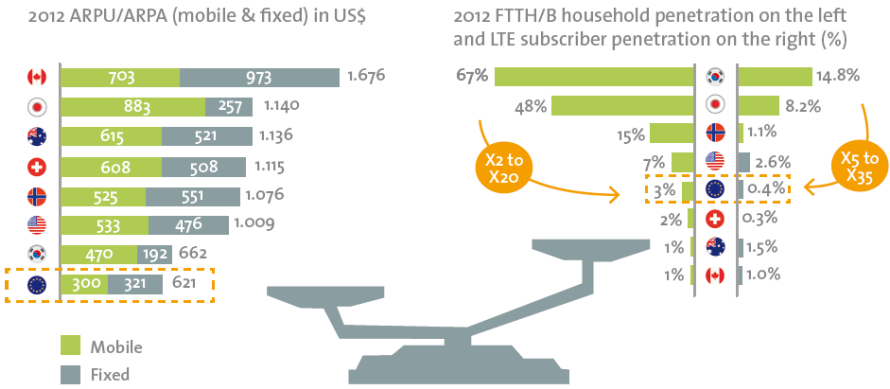
■ Europe: from telecoms leader to laggard

Europe used to be a leader in advanced digital networks, but within just a few years it started lagging behind. While consumers in the nations of the EU generally have some of the lowest access costs for both fixed-line and mobile communications services, they also trail users in many other countries in their ability to access ultra-fast mobile and fixed Internet connectivity. This hurts consumers, who experience slower connections and can have trouble accessing advanced online services. It's bad for businesses and government institutions, which need fast, dependable digital service to connect with customers, constituents, employees, and suppliers, and access increasingly essential cloud-based software and solutions. It undermines growth as the digital economy becomes an even bigger driver of GDP and jobs.

The importance of the Internet to European consumers was demonstrated in a 2012 study by BCG, which sought to measure the value consumers receive from the digital economy. The results in Europe were substantial – an estimated €3,700 annually per connected consumer in France, €3,000 in Germany, and €2,600 in the UK, for example.

BCG also estimated that the Internet economy will contribute some €880 billion, or nearly six percent, to the GDP of the EU-27 in 2016 (Boston Consulting Group, 2012).

Figure 1 - Low costs for consumers, lowadvanced network penetration too



Source: Informa fixed and mobile-broadband subscription forecasts, 2009-2017; IEMR Q3-2012; BCG analysis

Failure to invest in next-generation telecommunications technology puts Europe at a competitive disadvantage compared to the rest of the world. Many markets in Asia and North America reap the benefits of fiber access penetration that is up to 20 times higher and penetration of LTE that is as much as 35 times greater.

European investment in telecommunications infrastructure has declined by approximately 2 percent a year over the last five years, meaning that some €3.5 billion less was invested in 2012 than in 2008. In contrast, over the same period, infrastructure investment in comparable international markets has increased by about 2 percent a year. Technological advancement drives an exponential increase in speed of connectivity across both fixed and mobile networks. Only through continuous investment can the benefits be unlocked.

gate market capitalization while so-called over-the-top (OTT) digital service providers, device manufacturers (OEMs), and cable companies gained more than €200 billion. This process was accompanied by a substantial value migration from European to foreign players.

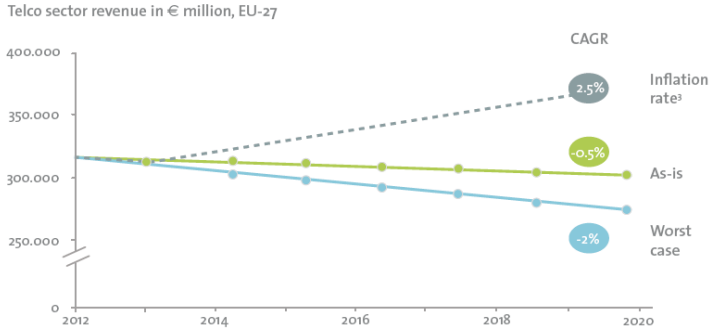
In addition, return on capital for the leading telco incumbents in four major markets – France, Germany, Spain, and the UK – averaged 9 percent from 2007 through 2011, while the average return on capital for leading access seekers (companies that rent infrastructure access from incumbents at regulated wholesale prices) ranged from 13 percent to 21 percent over the same period [1].

We expect revenues of the European telecommunications sector to continue to contract over the next decade, by as much as 2 percent per year until 2020, representing a cumulative decline of €70 to €190 billion. This will further diminish investments in next-generation networks, which means that the EU Digital Agenda targets for broadband coverage and mobile penetration will likely be missed by a wide margin. All told, by 2020 we estimate that the shortfall in investment needed to meet these targets will aggregate between €110 and €170 billion.

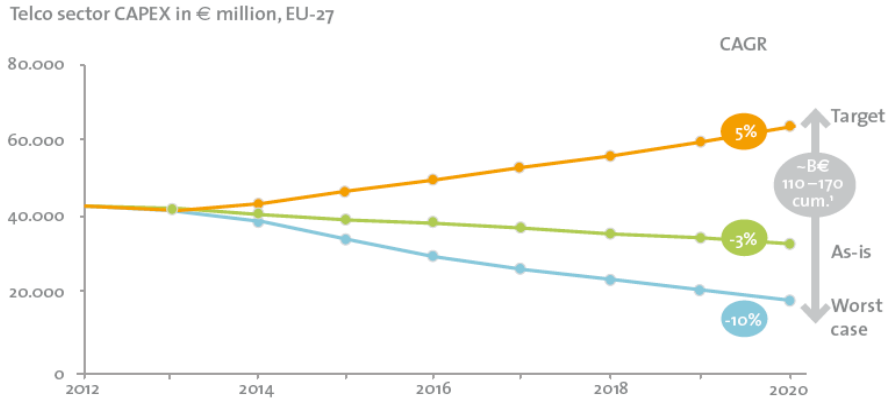
[1] Incumbents include: British Telecom, Deutsche Telecom, France Telecom and Telefonica. Access seekers include BSkyB, Iliad, Jazztel, TalkTalk and United Internet.

Figure 2 - Declining TELCO revenues lead to falling investment

2a - Further decline of TELCO revenues expected…



2b - … Leading to investment gap of ~ €110-170 billion (*) to DAE (**) targets



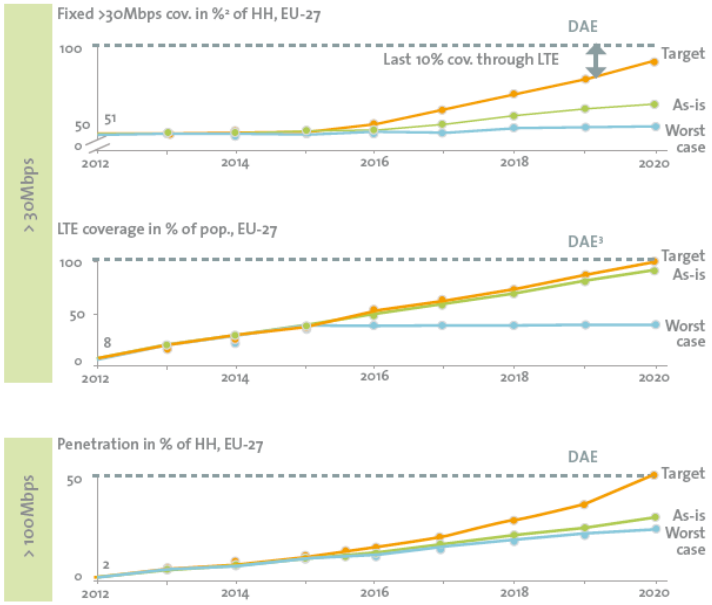
(*) This assumes maintaining infrastructure competition in fixed going forward; if NGA rolled-out in areas without cable competition only, investment gap would be reduced by ~ €100 billion.

(**) Digital Agenda for Europe.

Source: Reuters Consensus Estimate, 2013; Ovum service Provider Revenue Forecast, 2012; European Commission, 2013; BCG market model

Fast connectivity to the Internet is the foundation of a modern digital economy and a key enabler of innovation. Without it, Europe will fall behind on the world stage. By our estimates, up to €750 billion in cumulated GDP growth and as many as 5.5 million jobs will be at risk by 2020.

Figure 3 – EU digital agenda targets at risk, undercutting GDP growth and jobs



Source: EC Scoreboard, 2013; Analysys Mason, 2012; IEMR Q3-2012; BCG marrket model

Telecoms regulation in Europe, especially as it applies to advanced next-generation access networks (NGAs), needs streamlining and restructuring if Europe is to remain competitive in the global digital marketplace, not to mention meet crucial goals of the EU Digital Agenda.

This report exclusively examines the regulatory reasons why Europe is falling behind. It offers a strategy and roadmap for reversing the current negative trends and putting the EU and its member states on a path to technological advancement and economic growth. We state as a prerequisite, however, that delivering the necessary reforms and revitalizing the competitiveness of Europe's digital markets will require all stakeholders, from government and industry alike, to act jointly for their common benefit.

■ What inhibits investments?

While there are several drivers of lower investments, such as the European economic and financial crisis, we believe that regulation – the focus of the 2013 BCG-ETNO report – is a central one.

Regulatory distortion of competition is discouraging investment in advanced telecommunication networks in three areas that were identified as follows.

First, the inability to make a fair return

Network owners are hindered in capturing the fair returns needed to fund investments in two main ways.

One, is too much and inconsistent regulation of competitive markets. This results from the lack of local assessment of relevant competing infrastructures. Market definitions are not technology-agnostic as they don't take into account competition for copper-line telcos from cable operators and LTE networks.

But the excessive regulation is also a result of a preferential treatment of infrastructure renters over infrastructure builders. The latter's pricing flexibility is constrained by the detailed cost-based *ex ante* regulation of wholesale prices. While, at the same time, the so-called, ladder of investment does not work as data from multiple studies and empirical evidence show (CRANDALL *et al*., 2012; BOURREAU *et al*., 2010; GRAJEK & RÖLLER, 2009; WALLSTEN & HAUSLADEN, 2009; FRIEDERISZICK *et al*., 2008).

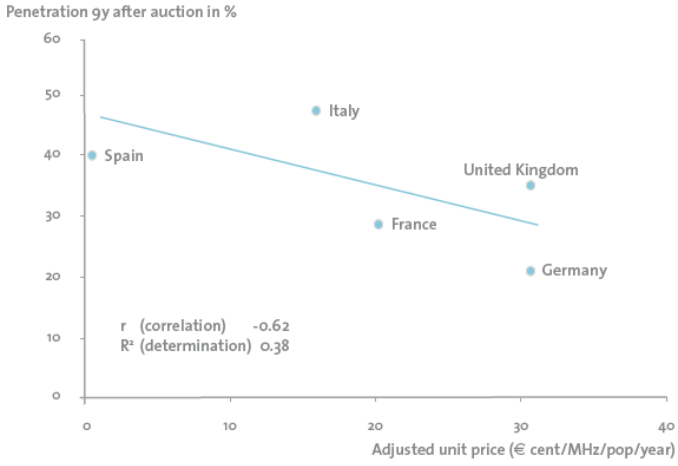
The second way in which network owners are hindered from capturing fair returns is the uneven playing field in the digital-services ecosystem. This situation contributes to a substantial value migration from European telecommunications operators to OTT players and device manufacturers from outside Europe. The main areas in which we identified asymmetric regulation issues are:

- privacy and data protection where providers of equivalent services are not treated equally in terms of regulatory burden;
- switching and data portability which are regulated for the telcos, but not for the OTTs;
- taxes, where – as new entrants – OTTs often have more flexibility than telcos to maximize tax savings;
- identification and safety-related measures where some OTTs alternatives to telco services are not subject to the strict e-communications services rules.

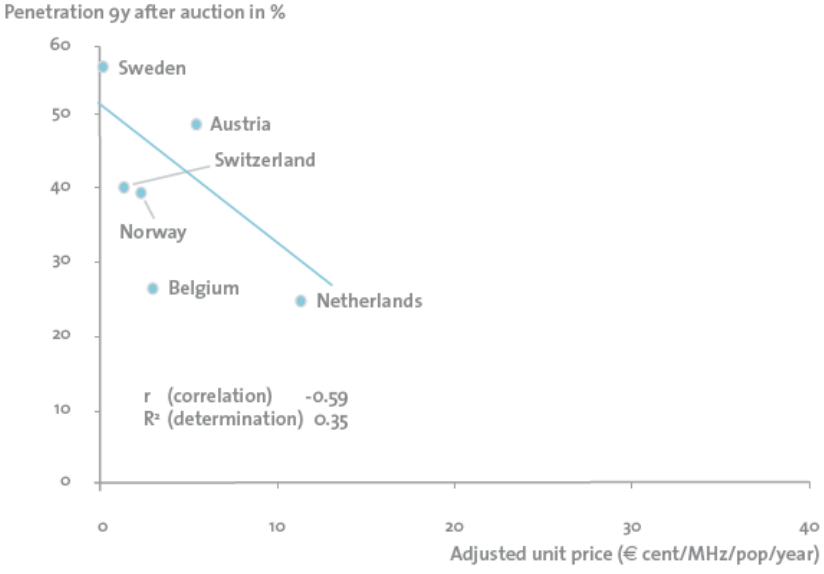
Mandated inefficiencies in mobile are the second inhibitor of investments

Figure 4 – Empirical evidence indicates that higher auctionprices lead to lower penetration

4a – Large advanced markets sample



4b – Small advanced markets sample



Note: TDD frequencies not included since little value for 3G.

Source: NRAs Analysys Mason, 2012; BCG analysis

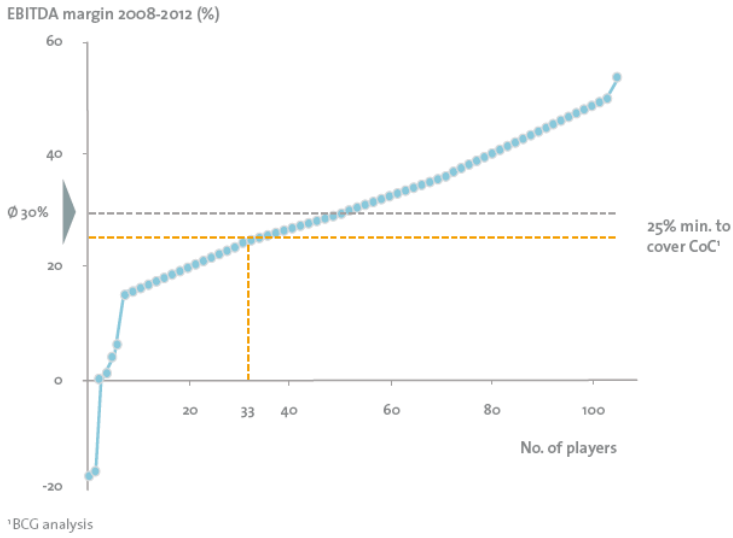
In our study, we found that current approaches mandate inefficiency in the mobile sector. The problem includes first of all the assignment, and cost, of mobile spectrum, which lead to delays in LTE rollout. For example, Germany and the Netherlands achieved the highest 3G auction prices for a large and small market, respectively, and both had the lowest 3G penetration rate among comparable countries (see figure 4).

But the root cause of inefficiencies in mobile also includes barriers to consolidation in a highly fragmented industry, in which up to one-third of European mobile operators are unable to cover their cost of capital (Figure 5).

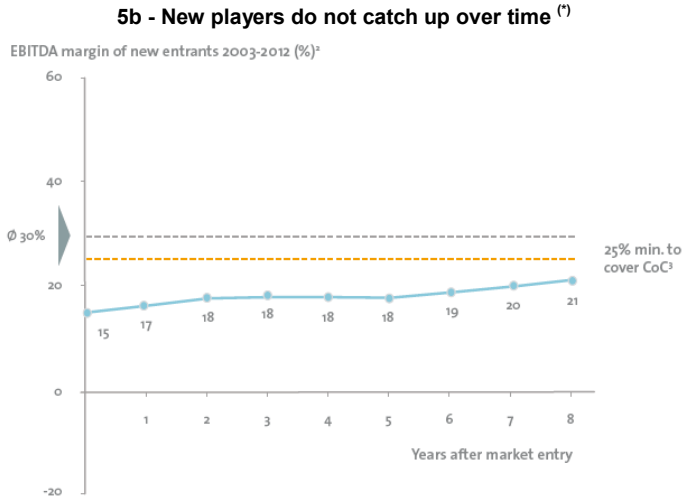
The current approach to applying competition law in the mobile sector is based on the theory that more competitors lead to lower prices. When a significant percentage of companies are operating on an unsustainable basis, however, as is currently the case in mobile, too many competitors can have adverse consequences.

Figure 5 - Too many unsustainable players in mobile market

5a - Up to one third of mobile players unsustainable (*)



(*) BCG analysis



(*) Analysis based onnon-weighted sample of 21 new entrants across EU having entered the market from 2003 to 2012 and respective EBITDA margins 2003-2012; year 9 not depicted, as sample of operators fulfilling the criteria too small.

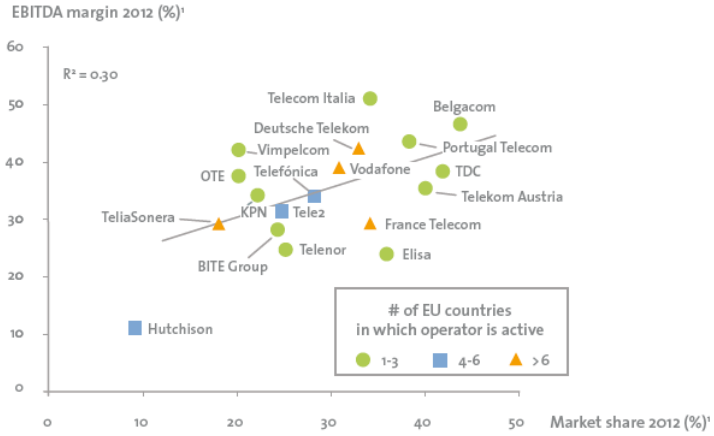
The third inhibitor of investments is the lack of a harmonized pan-European approach.

Complying with inconsistent rules and procedures across Europe hinders pan-European operators' ability to reap synergies between countries, which is evident in the fact that geographic scope is not a factor in the profit margins of pan-European telcos (Figure 6).

Sector-specific rules for consumer protection and technical processes (number portability and lawful interception, for example) differ substantially between member states. Diverging general regulations and procedures (VAT submission, customer data protection) add to disjointed processes and an unnecessarily complex IT landscape. These and other differences create costly variations in current IT processes and systems with which operators must comply, directly undermining the business case to integrate IT applications among various countries—the main driver of cross-country synergies for telcos.

None of these problems are new. But taken together, the impact of the distortions they create in the market is becoming increasingly severe. They are constraining consumer benefits and undercutting Europe's competiveness and growth.

Figure 6 – Pan-European operators no margin drivers (*)



(*) EBITDA margin and market share per player calculated based on total of markets player is active in.

Source: IEMR 3D-2012; Thomson One Banker, 2013; BCG market model

■ Eliminating distortions in competitions, the role of regulatory changes

The logic underlying Europe's current approach to telecoms regulations needs to be rethought. The consumer should remain front and center, of course, but, in addition to affordable access to existing infrastructure and services, consumers also benefit from a robust telecommunications and digital services ecosystem populated by strong companies competing to win customers in part by investing in advanced technologies and new services.

Consumer protection is essential, but Europe also needs a regulatory emphasis on modernization, efficiency, and healthy competition. Meeting this challenge requires a threefold regulatory paradigm shift.

First, the move from sector-specific regulation, enacted at the member state level, to a fully harmonized – and substantially reduced – pan-European regulatory approach, relying mostly on established competition law.

Second, the move from primarily assessing the impact of industry moves such as mergers based on the near-term effect on prices to a both short-

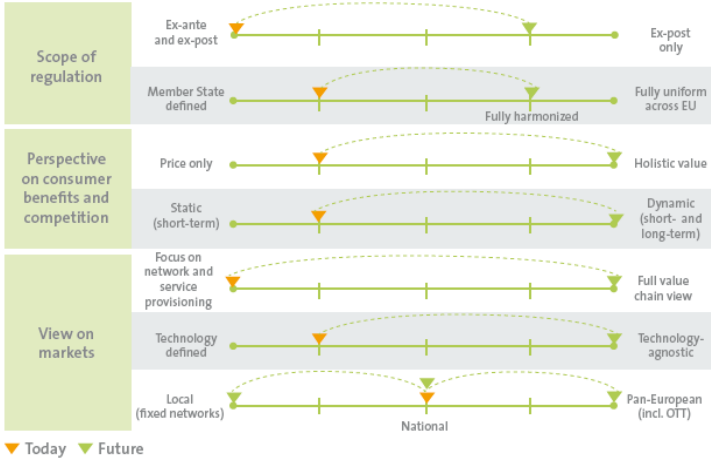
and long-term holistic view of all the ramifications for consumers, including the benefits of more investments.

Third, the move from a view of the market that is based on narrow and rigid definitions of networks, services, technologies, and national borders to a paradigm that embraces a full view of the value chain in a technology-agnostic manner and with a differentiated geographic lens (local versus national versus pan-European) based on the service provided.

Such a shift at the policy level can lead quite quickly to practical changes that reinvigorate investment in European telecoms' network infrastructure and bring the Digital Agenda goals within reach. The importance of an increased focus on investments has been underlined by a recent report by DIW, The German Institute for Economic Research, which argues for €75 billion annually in additional infrastructure investments in Germany alone to boost growth. DIW urges policymakers to create more incentives for private investments in telecommunications in particular (Deutsches Institut für Wirtschaftsforschung, 2013). In the next section, we will detail five proposals for reforming telecoms regulation along the lines of the new paradigm, with each measure designed to address one of the areas of current competitive distortion.

We have estimated the financial impact of each recommended initiative and the amount of cash flow each potentially frees up, thereby increasing the ability of network builders to invest in next-generation networks.

Figure 7 – Eliminating distortions in competition requires fundamental changes in regulation



■ Our proposal: five measures for getting back on track

The current trends must be turned around if Europe is to remain competitive in the global digital marketplace, not to mention meet the goals of the EU Digital Agenda.

The 2013 BCG-ETNO report proposed five measures for tackling the regulatory root causes of declining telecommunications investment and unlocking the potential value of the digital single market. The measures are

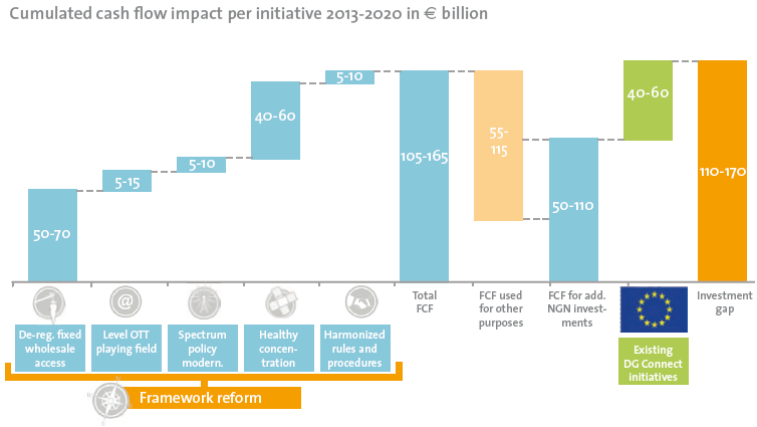
- Substantially deregulating fixed-line wholesale access.
- Creating a level playing field for network operators and OTT digital service providers.
- Modernizing spectrum policy across Europe to create a sustainable infrastructure competition that incentivizes network investments.
- Permitting healthy consolidation in mobile.
- Harmonizing rules and procedures to unlock synergies between countries.

The five proposals not only allow for fairer and more efficient competition, they also increase expected cash flows available for investment in next-generation networks.

We estimate that the proposed measures would increase the free cash flow (FCF) available to network builders by a cumulative total of €105 to €165 billion by 2020. Not all of this would be used for network investments, of course, and we have assumed that 50 to 70 percent would be put to other purposes such as funding price reductions or reducing debt. The remaining amount, some €50 to €110 billion, would be available for investment in next-generation network infrastructure.

The individual components of this calculation are detailed below. Together with the rollout cost savings that DG Connect initiatives, such as its pending "less digging—more broadband" regulation, are expected to deliver, this program will significantly close Europe's next-generation network investment gap and pave the way for EU citizens to get the world-leading communications networks they have been promised.

Figure 8 – Meeting European digital agenda targets by closing the investment gap



Note: FCF – Free cash flow

Source: BCG market model

■ Our conclusion: there's no time like now

We recognize the complexity of the European telecommunications sector and the competing interests represented by the various stakeholders. But, as demonstrated also by this report, the issue at stake is the position of Europe in the global digital infrastructures and services development race. In this context, we believe that the longer investment-hindering distortions remain in place, the farther Europe will fall behind in the international markets landscape.

The good news is that the EU Commission's Directorates-General for communication networks and for competition, along with the Parliament and the Council, have the tools to empower the changes needed. Decision makers, together with all the relevant actors, need to rise to the challenge and grasp the €750 billion GDP growth and 5.5 million new jobs opportunity that a real Digital Single Market can unlock. We would argue that over the long term few endeavors could benefit consumers and the EU economy more.

Appendix

(1) Substantially deregulating fixed-line wholesale access

We have quantified the impact of the proposal for change of the fixed-network wholesale regulation along four major areas of impact.

First, the value shift from network renters to network builders. We estimate that our recommendations would lead to ULL rates that stabilize in real terms, that is, they increase at the rate of inflation, or a projected 2.5 percent per year until 2020 [2]. This would translate into a value retention of some €5 billion in cumulative FCF for network owners until 2020.

Second, the stabilization of legacy retail prices. We expect the stabilization of wholesale prices through inflation-adjusted unbundling rates to also stabilize retail prices for legacy copper products (less than 30 Mbps). This would yield €10 to €15 billion in cumulative FCF until 2020. We deducted the impact of the value shift from network renters to owners in order to avoid double counting.

Third, concurrent stabilization of > 30 Mbps FTTx retail prices. Stabilized legacy retail prices can also support > 30 Mbps FTTx retail prices because customers are willing to pay only a certain premium for a higher speed. This would yield €25 to €35 billion cumulative FCF through 2020.

Fourth, increased > 30 Mbps FTTx rollout. We estimate that the effects of the substantial deregulation we propose, the resulting stabilization of legacy wholesale fees, and the incentivization of NGA rollout will result in network builders rolling out > 30 Mbps FTTx to more households. This could translate into an additional €10 to €15 billion of cumulative FCF by 2020.

(2) Creating a level playing field for network operators and OTT digital service providers

Establishing a level playing field for network operators and digital services providers requires close collaboration among multiple EC directorates such as DG Justice and DG Connect, given that the issues concerned range from privacy and data protection to tax policy. Several sector-specific regulations have to be lifted in the process. Increased network capacity and better quality of service that enable new and improving digital services come at a cost. The ability to set different prices, based on usage and user experience, for both OTT providers and consumers, is required if telcos are to have the necessary incentives to make advanced network investments. Any new regulations need to preserve the ability of operators and OTT players to develop innovative network management solutions so they can offer differentiated, value-adding services, while maintaining a non-discriminatory approach. We estimate that the digital services segment, which is growing strongly, will generate annual worldwide revenues of about €700 billion by 2015 [3], of which 20 to 30 percent are associated with Europe.

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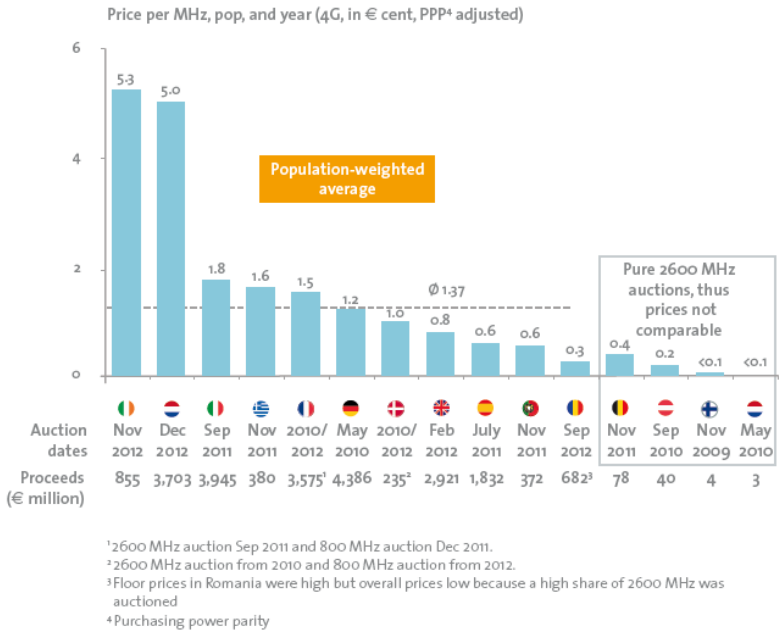
[2] Average inflation rate EU-27 over last 5 years; European Commission, 2013.

[3] Gartner, Ovum, IDC, TIA'S, Magna, Euromonitor, BCG analysis.

Leveling the playing field in the manner we propose would lead to increased revenues and cash flows for European telecommunications companies in two ways. First, increased value creation of European telcos' own digital services. By our estimates, these additional revenues would yield a cumulative FCF of some €4 to €14 billion. Second, leveling the playing field would generate the growth of innovative network management services. According to our calculations, such solutions could capture up to a 15 percent share of the digital market by 2020 and that network operators will receive approximately a 0.5 percent revenue share. This translates into an additional FCF of about €1 billion.

Figure 9 – High 4G spectrum prices in recent auctions will likely further delay 4G rollout



[1] 2600 MHz auction Sep 2011 and 800 MHz auction Dec 2011.
[2] 2600 MHz auction from 2010 and 800 MHz auction from 2012.
[3] Floor prices in Romania were high but overall prices low because a high share of 2600 MHz was auctioned
[4] Purchasing power parity

Source: NRAs; Press resaerch, BCG Analysis

(3) Modernizing spectrum policy across Europe to create sustainable infrastructure competition that incentivizes network investments

Defining spectrum authorization rules on a pan-European basis can help thwart high auction prices at the expense of quicker network expansion. Europe-wide rules should also mandate equal treatment of all players, irrespective of their incumbent or new-entrant status. To ensure the consistent implementation of these rules, new competences and enforcement mechanisms at an EU level will need to be put in place. A harmonized two- to three-year time frame for upcoming auctions would benefit consumers and network builders by enabling participants to develop EU-wide network strategies. Residents of countries with older, slower networks would benefit earlier from the added capacity and new technologies that additional spectrum for

LTE enables. In this area, additional resources for investment, generated mainly through a modernized and harmonized spectrum policy, would have multiple impacts:

- First, by reducing the actual overpricing that occurred between 2007 and 2013 (such cases resulted in spectrum prices 3.5 times as high as the European average). Such a reduction would mean a cumulative €1.5 billion in FCF could be saved through 2020.

- Second, assuring nondiscriminatory terms in spectrum auctions could yield an additional cumulative €4 to €8 billion in FCF through 2020. Nondiscrimination is also critical to maintaining a healthy concentration of competition driven by market forces (see the next subsection).

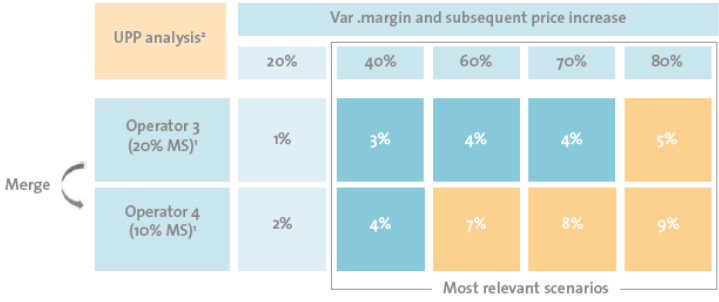
(4) Permitting healthy consolidation in mobile

The mobile sector in Europe is characterized by a high degree of fragmentation - there are more than 100 mobile network operators, with as many as one-third unable to cover their cost of capital. More mergers could be approved that benefit the consumer if a more dynamic and holistic approach was applied to evaluating the impact of these deals, including a quantitative model that complements the analysis of the short-term pricing ramifications by taking the value of additional investments into account. This would help address the current inverse relationship between competitive intensity (the number of competitors) and investment incentives and innovation.

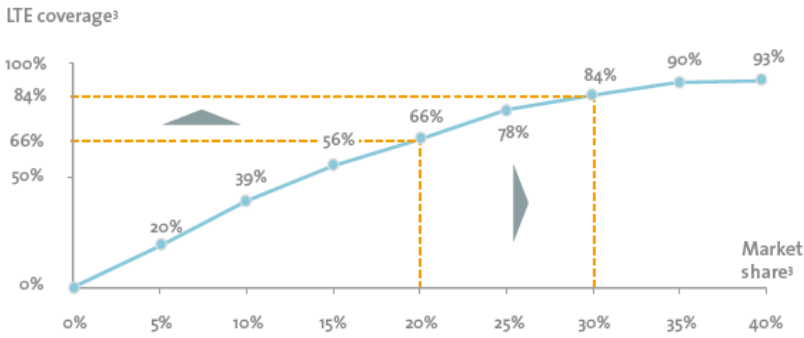
The goal should be an appropriate balance between near-term price impact and the ability of the merged entity to make new investments in pan-European services and innovation and to increase the rollout and coverage of new technologies such as LTE, which also benefit consumers. If remedies are required, they should focus on network innovation investment and quality commitments.

Figure 10 – Potential price increases resulting from mergers offset by technology investments

10a – Mergers might result in short-term price increases…



10b - … Which can be off-set by technology investments



[1] Average market structure for a typical 4-player market within Europe: operator 1 40%, operator 2 30%, operator 3 20%, operator 4 10% market share

[2] Upward Pricing Pressure analysis (UPP) models pot. price increases from a merger due to reduction in competitive intensity

[4] Based on Spanish LRICmodel, 2012; Eurostat; 2012; BCG market model

Source: IEMR Q3-2012; LRIC model Spain, 2012; Eurostat, 2012; BCG analysis

We estimate that such an approach would result in an increase of concentration in the average market share of mobile network operators across the EU from about 25 percent currently to 30 percent by 2020. Even with such an increase, European mobile markets would continue to enjoy robust competition as well as deliver improved customer value.

The financial impact of such consolidation would be twofold. First, economies of scale: Applying the synergy potential stated above, and assuming a gradual ramp-up of synergies over three years starting one year after the merger to account for implementation costs, yields a cumulative €30 to €45 billion of additional FCF through 2020. Second, economies of density and quality, which could lead to €3 to €5 billion in additional network investments. Another form of increased concentration is network sharing, which is a viable complement to, but not a substitute for, in-country mergers. We estimate that active sharing agreements can free up additional FCF of €7 to €10 billion through 2020.

(5) Harmonizing rules and procedures to unlock synergies between countries

A far-reaching and extensive harmonization of rules and procedures is required to enable players with operations in multiple EU countries to capture the full potential of synergies between countries as well as to decrease the number of hurdles for companies seeking to provide pan-European services.

The extent of harmonization required to pave the way for the economical introduction of cross-border IT and network management platforms is far-reaching and goes beyond national sector-specific regulation. Harmonized rules and procedures for consumer protection across the EU-27 (e.g., contract termination) and technical processes (e.g., VAT submission) would allow telecom operators with pan-European

operations to realize additional synergies by standardizing IT processes between countries and implementing cross-border IT.

These synergies take time to develop: They are expected to be reaped only over a period of 10 or more years, since the realization is costly and depends on lengthy replacement cycles of the existing network and IT infrastructure (billing and CRM systems, for instance). Our estimate is that synergies could bring €5 to €10 billion of FCF through 2020.

It should be noted that while an increase in synergies between countries enabled by harmonized rules will increase FCF available for investment, it will not drive consolidation of the fragmented industry in and of itself through international mergers. Typical acquisition premiums far outweigh the attainable cross-country synergies.

References

The Boston Consuting Group (2012): "The Internet Economy in the G-20". http://www.bcg.com/documents/file100409.pdf (Accessed January 31, 2014).

BOURREAU M., P. DOGAN & M. MANANT (2010): "A critical review of the 'ladder of investment' approach", *Telecommunications Policy* 34(11), pp. 683-696.

CRANDALL R. W., J. A. EISENACH, A. T. INGRAHAM (2012): "The Long-Run Effects of Copper Unbundling and the Implications for Fiber", *Telecommunications Policy*, forthcoming. http://ssrn.com/abstract=2018929 (Accessed January 31, 2014)

Deutsches Institut für Wirtschafsforchung - DIW (2013): "Wochenbericht 26. Investitionen für mehr Wachstum – Eine Zukunftsagenda für Deutschland" http://www.diw.de/documents/publikationen/73/diw_01.c.423458.de/13-26.pdf (Accessed January 31, 2014)

GRAJEK M., L. H. RÖLLER (2009): "Regulation and Investment in Network Industries: Evidence from European Telecoms", ESMT Working Paper, ESMT No. 09-004.

FRIEDERISZICK H., M. GRAJEK, L. H. RÖLLER (2008): "Analyzing the Relationship between Regulation and Investment in the Telecom Sector", ESMT White Paper, ESMT No. WP-108-01.

WALLSTEN S. J., S. HAUSLADEN (2009): "Net Neutrality, Unbundling, and their Effects on International Investment in Next-Generation Networks", *Review of Network Economics,* Vol. 8, Issue 1, pp. 90-112.