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**COMMISSION STAFF WORKING DOCUMENT**

*accompanying the*

**COMMISSION RECOMMENDATION**

**on the Regulatory Treatment of Fixed and Mobile Termination Rates in the EU**

***Implications for Industry, Competition and Consumers***

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## 1. EXECUTIVE SUMMARY

This staff working paper assesses the implications of the draft Recommendation for investment and competition in both the fixed and mobile industries as well as the resulting implications for consumers. The implications are evaluated both in a static and dynamic context. The static assessment looks at the short-term impact on industry by comparing a situation where the Recommendation is implemented by regulators (“recommended scenario”) to a situation where the current regulatory practices are expected to continue (“baseline scenario”). This latter expectation is based on a statement by the European Regulator's Group (ERG) in June 2008 that regulators are committed to achieving further reductions in their glide paths of approx. 40% at EU level over the forthcoming three-year period.

To begin with, it is important to recognise that, from the perspective of the EU telecoms industry as a whole, termination is a zero-sum game. That means that if one were to look at the effect on wholesale revenues alone (without looking at the effects at consumer level), the overall impact for the telecoms industry would be zero. This is easy to understand as termination represents both revenue and an expense for operators and consequently any termination revenue losses do not disappear but will be just transferred to another operator/network in terms of lower expenditures. At the same time, the distribution of those financial transfers across different industry segments has significant implications for competition and for consumers. Assessing in a purely static way (but including the effects at consumer level) the implications of the proposed approach over the period 2009–2012 indicates a potential reduction in cash flows/profits for the mobile industry of €4 billion compared to the baseline scenario. At the same time the fixed sector would gain approx. €2 billion and consumer surplus would also increase by approx. €2 billion.

When the staff working paper was presented to the Commission's Impact Assessment Board, the Commission services had looked into the potential profit implications for the industry already from 2007 on, as that year constituted a more reliable basis then. Still taking into account the past two years, i.e. looking at the period 2007–2012, the growth in profits for the fixed sector was estimated at €10 billion higher under the recommended approach compared to the baseline scenario. At the same time, consumers were estimated to be considerably better off with a consumer surplus of €6 billion, with a potential profit reduction for the mobile industry of approx. €6 billion. In any event, the assessment for the longer period was based on the expectation that regulators would implement sharper reductions in termination rates over the period 2007–2008 than what actually materialised.

A static model thus indicates, over the period 2009–2012, a potential reduction in cash flows/profits for the mobile industry of €4 billion compared to the baseline scenario, with corresponding benefits of €4 billion for the fixed sector and as consumer surplus. However, when looked at from a dynamic perspective (even though this is more difficult to quantify), the figures for the period 2009–2012 would inevitably still overestimate any negative effect on industry profits. The reason is that this static model only looks at short-term effects. It does not evaluate the possibility for new revenues to be generated with other services nor does it capture all of the dynamic efficiency effects which the proposed approach is expected to bring. Aligning termination rates to efficient costs and ending the fixed–mobile subsidisation will bring about a strong competitive dynamic. This in turn can be expected to generate end-user benefits through lower prices and greater service innovation. This should trigger demand and support revenue and investment opportunities right across the EU telecoms sector. Consequently, the overall impact on both industry profits and social welfare from a mid-term

perspective, while more difficult to predict, will be much more positive than the €4 billion calculated by the static model.

## 2. PROBLEM IDENTIFICATION

### 2.1. Background: Why are termination rates regulated in the EU?

This working paper examines the implications of issuing a Commission Recommendation which, based on the current regulatory framework, aims to set out a consistent methodology for the regulatory treatment of fixed and mobile termination rates in the EU. It aims to provide greater legal certainty in this important area and ensure maximum benefits to consumers in terms of affordable prices and efficient development of innovative services.

The need for this action is outlined in detail in the Recommendation on the regulatory treatment of fixed and mobile termination rates in the EU (the Recommendation) and the accompanying Explanatory Note and is further recapped below. In the EU today, the operator of a customer receiving a phone call (the called network) charges termination rates to the operator of a customer making the call (the calling network), with these charges ultimately being paid by the consumer. As the termination charge is set by the called network, which is chosen by the called subscriber, the calling party in general does not have the ability to affect or influence the level of those termination charges. Thus, the exchange of termination traffic in Europe is currently based on the Calling Party Pays (CPP) principle. As call termination to a geographic number can be supplied only by the network provider to whose network the called party is connected, there is neither a demand- nor a supply-side substitute for call termination on an individual network. Therefore, each network constitutes a separate market and each company is considered to be a monopolist on its own network.

As a consequence, unregulated fixed or mobile operators would have an incentive to set their termination charge at the monopoly level. The CPP convention allows the terminating operator to raise its prices typically without a constraint from either party to the call. The calling party pays a bundled fee, including the termination rate, to its network operator at the retail level and will therefore not generally see a direct price signal for the wholesale termination service. As the receiving party makes no payment for the termination service by convention (CPP), it generally has little or no incentive to constrain the pricing behaviour of its terminating operator. To the extent that the increased wholesale termination charge results in increased retail prices and reduces the number of calls that an end-user receives, they are made worse off. However, this may not be directly perceptible to the end-user such that it cannot necessarily attribute this fall-off in calls to a higher termination rate. Thus, terminating operators have the ability to raise the price of reaching their subscribers substantially above cost.

While certain factors could potentially constrain the exercise of such market power, such as countervailing buyer power (CBP)<sup>1</sup>, national regulators have found such potential constraints to be generally weak and insufficient to offset the market power of the relevant terminating

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<sup>1</sup> The presence of CBP and its impact on market power in termination markets has been widely debated in national courts. The Recommendation on Relevant Markets gives some clarification in this respect. (Commission Recommendation 2007/879/EC of 17 December 2007 on relevant product and service markets within the electronic communications sector susceptible to *ex ante* regulation in accordance with Directive 2002/21/EC of the European Parliament and of the Council on a common regulatory framework for electronic communications networks and services, OJ L 344, 28.12.2007, p. 65).

operators. Thus, significant market power (SMP) has been found and regulation applied to every termination market examined under the Community regulatory framework to date.

### 3. WHY DO WE NEED A RECOMMENDATION?

#### 3.1. What are the key problems and their drivers?

A key observation during the assessment of more than 850 regulatory proposals notified by national regulators to the Commission under Article 7 of the EU Framework Directive<sup>2</sup> concerns inconsistencies in the application of remedies to voice call termination markets<sup>3</sup>. In particular, in its responses under the Community consultation mechanism to the more than 140 notifications concerning fixed and mobile termination, the Commission has stated on numerous occasions that termination rates should be based on the costs of an efficient operator. Furthermore, the Commission has noted that regulating termination rates on this basis implies they should normally be symmetric, unless there are objective cost differences outside the control of the operators concerned.

Despite the fact that the Commission has clearly outlined its position on numerous occasions and some form of cost orientation is foreseen in most Member States, a number of divergences still arise in the interpretation of this cost-orientation obligation. In particular, these divergences arise in the methodologies which national regulators apply when determining the level of these regulated wholesale call termination rates. In the context of mobile call termination in particular, the European Regulators Group (ERG) has noted a significant variety in the cost models applied by the national regulators when determining the level of these rates. This is clear from Table 1 which was included in the recent ERG Common Position on symmetry of fixed call termination rates and symmetry of mobile call termination rates (ERG Common Position on symmetry) illustrating the broad variety of methodologies used by countries responding to the questionnaire<sup>4</sup>.

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<sup>2</sup> Directive 2002/21/EC of the European Parliament and the Council of 7 March 2002 on a common regulatory framework for electronic communications networks and services (the Framework Directive) OJ L 108, 24.4.2002, p. 33.

<sup>3</sup> See the Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions on market reviews under the EU Regulatory Framework (2<sup>nd</sup> report), COM (2007)401 final of 11.7.2007.

<sup>4</sup> ERG Common Position on symmetry of fixed call termination rates and symmetry of mobile call termination rates (ERG Common Position on symmetry), (ERG (07) 83 final 080312), available from [http://www.erg.eu.int/doc/publications/erg\\_07\\_83\\_mtr\\_ftr\\_cp\\_12\\_03\\_08.pdf](http://www.erg.eu.int/doc/publications/erg_07_83_mtr_ftr_cp_12_03_08.pdf). 28 countries responded to the ERG questionnaire, including four non-EU Member States – Croatia, Iceland, Norway and Switzerland. Two national regulators, Hungary and Poland, indicated that they used two main costing tools.

Table 1: Different costing tools used by national regulators for setting mobile termination rates

	Top-down accounting data	Bottom-up model	Hybrid model (Bottom-up calibrated with data provided by MNOs)	International benchmark
Main tool	11	2	7	8
Complementary tool	2	0	1	5
In development	0	1	3	0

Source: ERG Common Position on symmetry

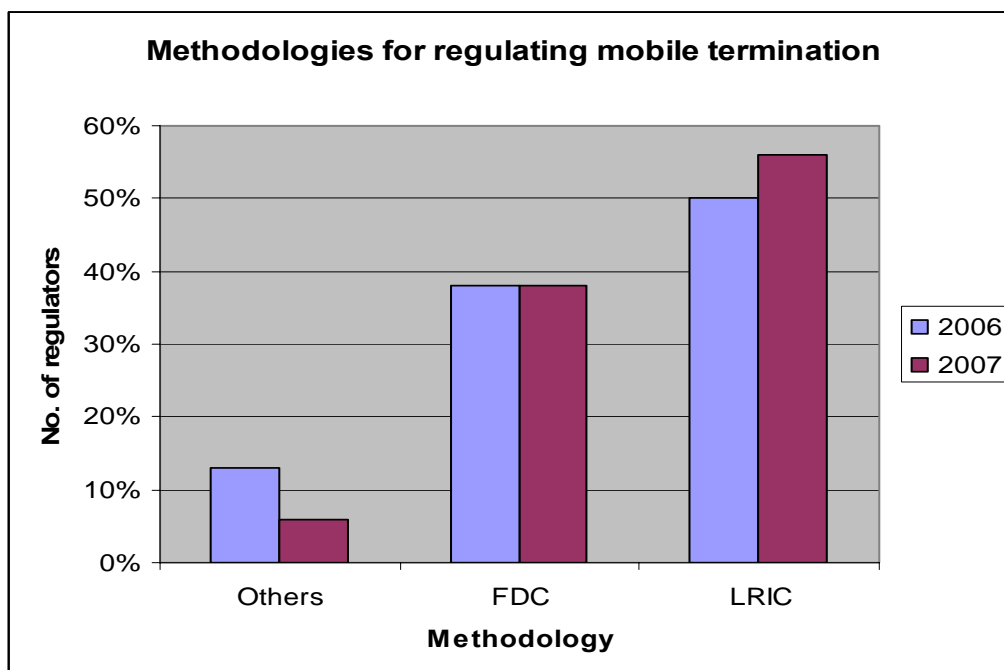
Furthermore, even where the same costing tools are chosen, the ERG noted differing practices in implementing those models. For example, national regulators adopted differing interpretations of an “efficient” operator ranging from a hypothetical efficient operator defined in the model to the average of the costs of all the mobile network operators, or the actual costs of each operator.

Differences in the regulatory accounting systems applied in regulating termination rates across the Member States are also evident from an earlier ERG report. For example, in 2007, 56% of the countries surveyed were using long-run incremental cost (LRIC) models while 38% were still using fully-distributed cost (FDC) models for regulating mobile termination rates (MTRs)<sup>5</sup>.

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<sup>5</sup> 26 countries were surveyed, including three non-EU countries – Norway, Switzerland and Turkey.

Chart 1: Methodologies employed by national regulators when regulating mobile termination



Source: ERG Report – Regulatory Accounting in Practice (ERG (07) 22)<sup>6</sup>

Against this background, it should also be noted that termination rates are nevertheless on a downward trend as a result of regulatory intervention in the EU. In 2007, the average MTR dropped for the first time below 10 eurocents/minute, to 9.67 eurocents — a decrease of 12% compared to October 2006<sup>7</sup>. Nevertheless, there continues to be a wide spread between average termination rates, particularly as regards MTRs, applied both within and across the Member States. The spread of MTRs across the EU may be observed from Chart 2 below.

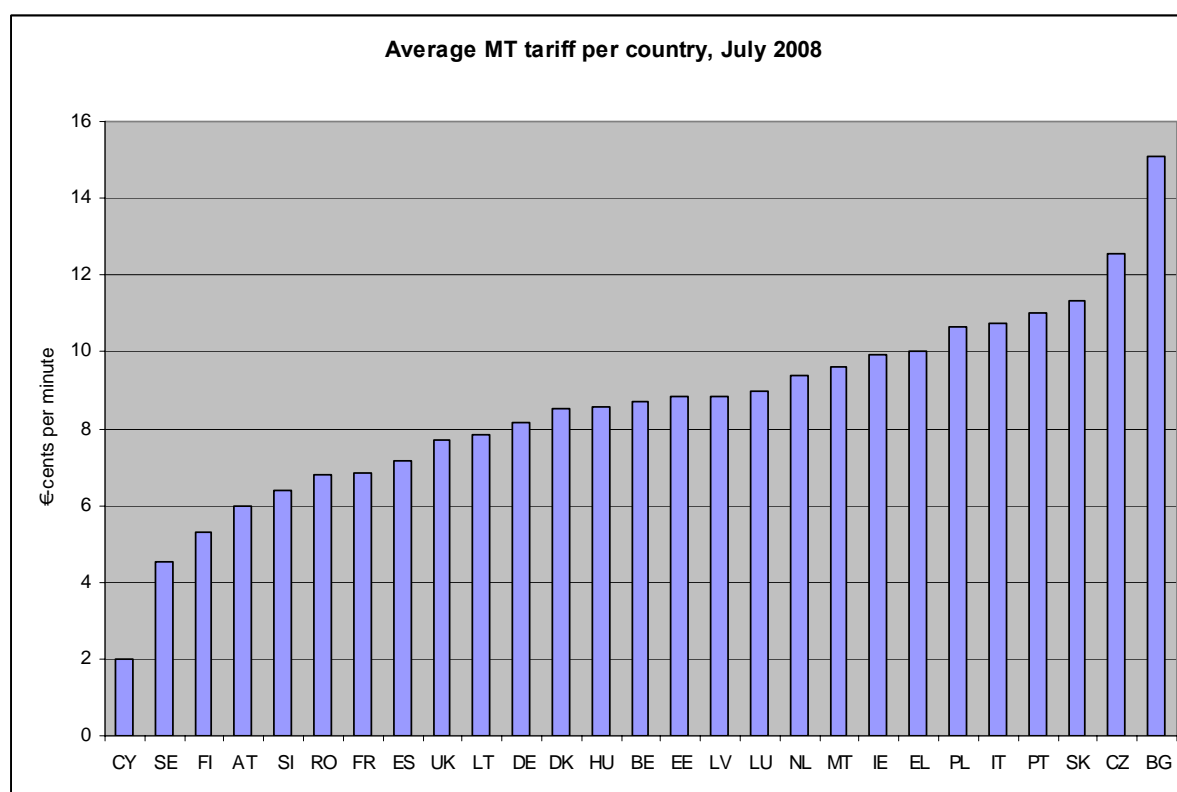
<sup>6</sup> Since the time of writing, the ERG Report — Regulatory Accounting in Practice (ERG (08) 47 final RA in Practice 081016) — was published. The percentage of countries using the LRIC methodology further increased in 2008 to 67% (however this estimate is based on responses from only 15 countries).

<sup>7</sup> See the 13<sup>th</sup> Progress Report on the Single European Electronic Communications Market 2007 (the 13<sup>th</sup> Progress Report), COM(2008)153. According to the Commission’s recently published 14<sup>th</sup> Progress Report on the Single European Electronic Communications Market 2008, COM(2009)140Final, (the 14<sup>th</sup> Progress Report), termination charges have continued to decrease and at October 2008 the average EU mobile termination charge was (at 8.55 cents) 11.58% lower than one year before. The Progress Reports are available from:

[http://ec.europa.eu/information\\_society/policy/ecomm/library/communications\\_reports/index\\_en.htm](http://ec.europa.eu/information_society/policy/ecomm/library/communications_reports/index_en.htm).



Chart 2: Average MTRs as reported by the ERG



Source: ERG MTR Update Snapshot (ERG (08) 41)

The considerable variation in the methodologies employed when regulating termination rates across the Member States contributes to the observed differences in termination tariffs. The ERG has similarly observed in the context of mobile call termination that, while differences in MTRs can be partly explained by national specificities, they also rely on differences in practices followed by the national regulators<sup>8</sup>.

Additionally, National Regulatory Authorities (NRAs) have, in a number of cases, authorised higher termination rates for smaller fixed or mobile operators on the grounds that these operators are new entrants into the market (sometimes even 10 years following entry) and have not benefited from economies of scale and/or are subject to differing cost conditions. This results in asymmetric termination rates applied within Member States. In that respect, the ERG has recognised in its Common Position on symmetry the general principle that termination rates should normally be symmetric and these asymmetries are gradually diminishing<sup>9</sup>. Notwithstanding this gradual reduction, asymmetries still persist.

Furthermore, although termination rates are gradually decreasing, the absolute level of MTRs remains much higher on average than for fixed termination rates (FTRs), thus resulting in higher prices for fixed networks and their subscribers when calling mobile networks and

<sup>8</sup> See ERG Common Position on symmetry, p. 73.

<sup>9</sup> According to the ERG Common Position on symmetry, average asymmetry of MTRs (within individual countries) decreased from 1.4 eurocents/minute in January 2004 to 0.9 eurocents/minute in January 2007.

services. According to the 13<sup>th</sup> Progress Report, at the end of 2007 average MTRs were still almost nine times higher than average FTRs in the EU<sup>10</sup>.

The above indicates persistent differences in the regulatory treatment of terminating operators both within and across national boundaries. While it may be expected that some of these differences can be attributed to national specificities, such as population density and/or geography, the magnitude of the variations currently observable across Member States<sup>11</sup> cannot be solely attributed to such factors. Indeed no strong relationship can be observed between existing national differences in termination rates and some of the national specific factors noted above<sup>12</sup>. Thus, methodological differences would appear to play a major role in these continuing cross-country variations. Given that similar competition problems are identified in these call termination markets, the distinct approach taken in different Member States seems difficult to justify.

### **3.2. Economic and competitive implications of the identified problems**

The lack of harmonisation in the regulation of termination rates across the EU has a number of economic and competitive implications both within and across national boundaries.

*First*, inconsistencies in the methodologies and practices applied when regulating termination rates across the Member States contribute to a lack of transparency and legal uncertainty for the regulated operators. Furthermore, it can increase the regulatory burden of existing operators active on a number of different termination markets across the EU. As a result, operators have to package their services in different ways in order to satisfy diverging regulatory requirements in different Member States.

In addition, disparate termination rates imply that national regulators which bring MTRs down in their country penalize their mobile industry if in a neighbouring country the regulator has decided to allow higher rates. If, for example, operator Y is active in a country with higher termination rates (country A) but also competes in a neighbouring country which has lower termination rates (country B), this can distort competition between countries A and B. This is because operator Y can use the gains from higher termination rates in country A to subsidise its operations in country B and thus obtain a competitive advantage. This can affect operators' incentives to enter certain national markets and thus distort cross-border competition and investment.

As a consequence, the present system of inconsistent regulation has an inbuilt tendency for regulators to continue to apply higher MTRs in the long-term to avoid lowering their industry cash flows significantly below those of other EU countries. Some of the NRAs and Member States highlighted this implicit tendency. This poses an obstacle to the competitiveness of the European telecoms sector and to the attainment of consumer benefits from cross-border competition and services.

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<sup>10</sup> The recently published 14<sup>th</sup> Progress Report also notes that, despite a downward trend in mobile termination charges in 2008, they remain on average more than 10 times higher than the fixed interconnection charges (single transit).

<sup>11</sup> According to ERG (08) 41 final MTR Snapshot 081020, which provides an overview of MTRs across the EU as of 1 July 2008, significant differences persisted with termination rates ranging from 2 eurocents/minute on average in Cyprus to less than 6 eurocents/minute in Sweden and Finland, between 7 and 8 eurocents/minute in the UK, almost 11 eurocents/minute in Italy and 15 eurocents/minute in Bulgaria.

<sup>12</sup> For example, despite being a relatively low density country, Finland had lower average MTRs in July 2008 (5.3 eurocents/minute) than Germany (8.2 eurocents/minute) which had a relatively high density.

*Second*, where regulated termination rates are set above an efficient level of cost, productive and allocative inefficiencies may be generated.

Allowing costs to be recovered from the regulated wholesale termination rate which are not based on the costs of an efficient operator can send incorrect cost signals to operators and risks promoting inefficiency and inappropriate investment incentives. A transfer from lower-cost to higher-cost operators (e.g. from fixed to mobile networks) is generated and can act as a disincentive to operators to produce at their most efficient cost level, given that their inefficiency would in any case be covered by their competitors.

Furthermore, it may be expected that higher wholesale prices would ultimately result in higher retail prices for originating calls for certain customer groups which would generate allocative-efficiency concerns. Higher prices at the retail level tend to depress call origination due to the price elasticity of demand. High and diverging MTRs thus have the potential to dampen consumer demand and usage of mobile phone services. Empirical evidence indicates that where termination rates are higher, average revenue per minute (ARPM) also tends to be higher<sup>13</sup>. However, where ARPM is high, consumption tends to be lower than in countries with lower termination rates and lower ARPM<sup>14</sup>.

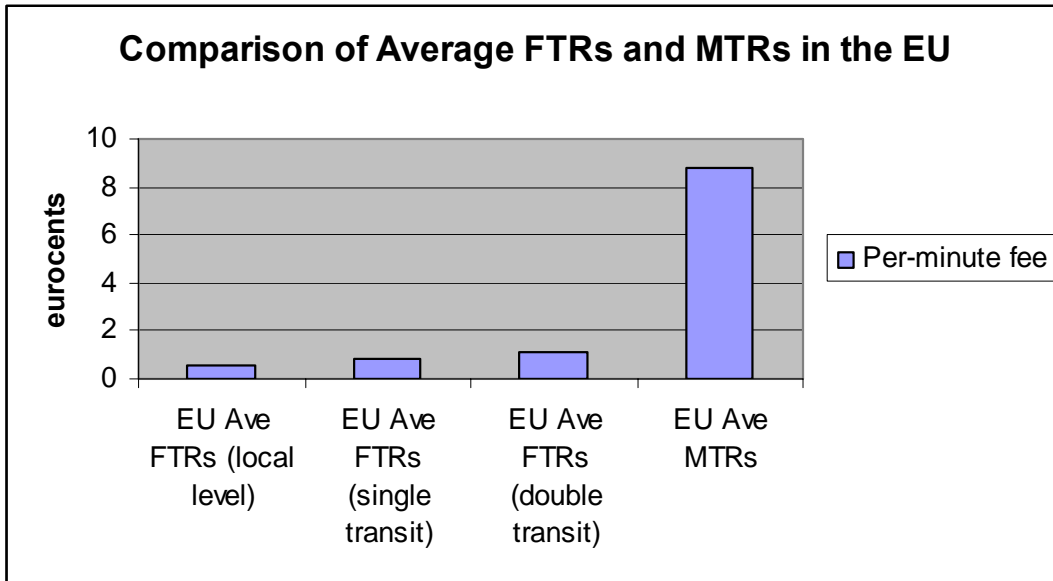
*Third*, a considerable gap in the methodologies and resulting levels of termination rates applied across fixed and mobile markets in the EU frequently results in considerably higher prices for fixed networks and their consumers than for mobile networks. As noted above, MTRs were on average almost nine times higher than FTRs in the EU at the end of 2007, as can be seen from Chart 3.

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<sup>13</sup> See, for example, Chart 10 below which illustrates the relationship between ARPM and MTRs, based on Merrill Lynch data.

<sup>14</sup> For example, according to J. Scott Marcus, Dieter Elixmann, Kenneth R. Carter, 29 January 2008, "The future of IP interconnection: technical, economic and public policy aspects, Study for the European Commission", WIK-Consult, Germany's service-based revenues are four times higher than those of the USA and nearly twice as high as those of France. However, US usage is ten times higher than that of Germany, while French usage is three times higher than that of Germany. Furthermore, average revenue per user (ARPU) in the USA is 2.5 times higher than that in Germany, while French ARPU is nearly twice that of Germany. This document is available from: [http://ec.europa.eu/information\\_society/policy/ecom/doc/library/ext\\_studies/future\\_ip\\_intercon/ip\\_interecon\\_study\\_final.pdf](http://ec.europa.eu/information_society/policy/ecom/doc/library/ext_studies/future_ip_intercon/ip_interecon_study_final.pdf).

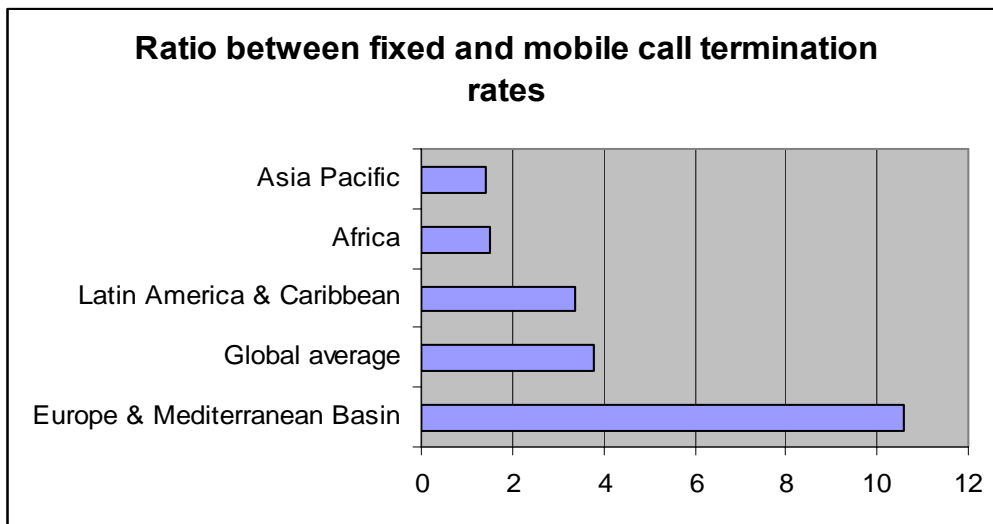
Chart 3: Comparison of Average FTRs and MTRs in the EU



Source: Commission's 13<sup>th</sup> Progress Report and ERG MTR Snapshot Update

This disparity between fixed and mobile termination rates has traditionally been much more pronounced in the EU than has been the case in a number of other jurisdictions. The following 2006–2007 data gathered by the International Telecommunications Union<sup>15</sup> demonstrates how the gap between fixed and mobile termination rates in the EU compares less favourably with that observed internationally.

Chart 4: Relationship between fixed and mobile termination rates in different regions



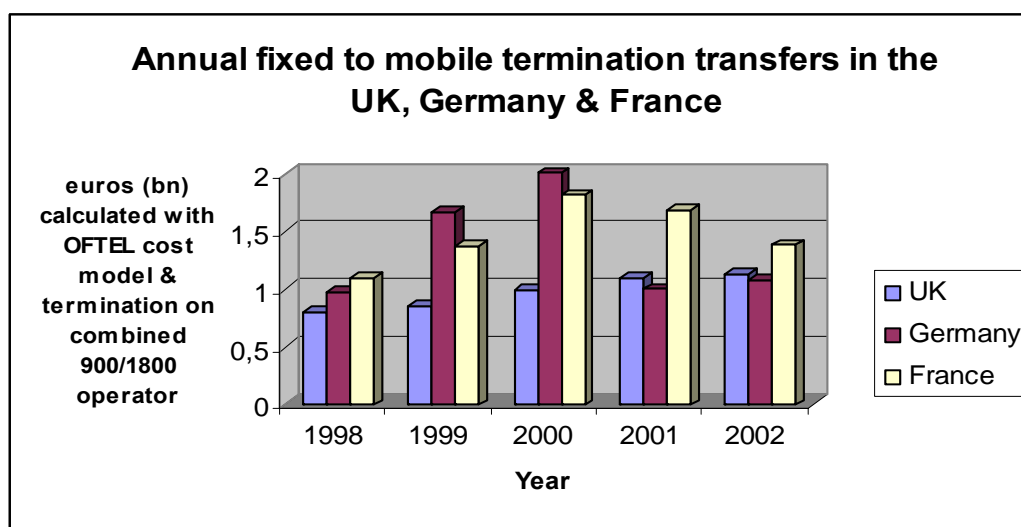
Source: ITU-T, based on survey of regional tariff groups 2006-2007

Other industry observers have also compiled estimates of the extent of the transfer from fixed to mobile networks and consumers in some European countries. WIK-Consult (2008), for example, estimated this cross-subsidisation at €10 billion in Germany for 1998–2006, while

<sup>15</sup> Available from: <http://www.itu.int/osg/spu/presentations/2007/kelly-pricing-billing-interconnection-for-NGN-1-march-07.pdf>.

CERNA–Warwick–WIK (2003) estimated it at around €19 billion in the UK, Germany and France for the period 1998–2002<sup>16</sup>.

Chart 5: Estimated annual fixed-to-mobile termination transfers in the UK, Germany and France



Source: CERNA–Warwick–WIK

The large gap between fixed and mobile termination rates engenders large transfers from fixed to mobile consumers, rendering fixed-line subscribers the biggest contributors to mobile revenues when phoning mobile numbers. This transfer is said to be contributing to inefficiently low usage of fixed networks in some Member States<sup>17</sup> and could ultimately prove to be a barrier to important innovations and investments in the fixed sector such as fibre roll-out and the delivery of Next Generation Networks (NGNs) which will allow higher bandwidths and more efficient provision of multiple services. Convergent offers from fixed operators may also be impeded because of the disparity between fixed and mobile termination rates which limits the inclusion of mobile calls within fixed bundles. Large transfers from fixed to mobile networks comprise a potentially significant source of economic distortion which *inter alia* leads to an inefficient redistribution of expenditure amongst various customer groups. This also leads to a distortion of competition and investments with potentially serious implications for important network and service innovations in the fixed sector<sup>18</sup>. Thus, in the current environment, consumers may be unknowingly deprived of potentially significant

<sup>16</sup> Oliver Bomsel, Martin Cave, Gilles Le Blanc, Karl-Heinz Neumann, July 9 2003, “How mobile termination charges shape the dynamics of the telecom sector”, CERNA-Warwick-WIK, available from: <http://www.cerna.ensmp.fr/Documents/OB-GLB-F2M-FinalReport.pdf>.

<sup>17</sup> WIK-Consult (2008) notes that these transfers (from fixed to mobile consumers) may lead to a faster decline of fixed-network subscriptions and of fixed-network usage than would otherwise be the case and could be a significant factor in the rapid decline of fixed subscriptions in some Member States. CERNA-Warwick-WIK (2003) also notes that fixed networks face a reduction in access lines and in call volumes due to increasing competition from mobile networks.

<sup>18</sup> CERNA-Warwick-WIK (2003). In the 2003 inquiry report from the UK Competition Commission entitled “Vodafone, O2, Orange and T-Mobile: Reports on references under section 13 of the Telecommunications Act 1984 on the charges made by Vodafone, O2, Orange and T-Mobile for terminating calls from fixed and mobile networks”, it was also noted that the higher prices of calls from fixed to mobile phones and the lower price of on-net mobile calls encourage greater use of the higher-cost (mobile) technology at the expense of the lower-cost (fixed) alternative, available from: [http://www.competition-commission.org.uk/rep\\_pub/reports/2003/475mobilephones.htm#full](http://www.competition-commission.org.uk/rep_pub/reports/2003/475mobilephones.htm#full).

product investments and innovations which may otherwise be supported under a more consistent regulatory landscape.

*Fourth*, later entrants (which due to their lower subscriber base typically send a significant number of calls to other networks) also frequently claim that above-cost termination rates charged by incumbent operators (which have a larger subscriber base and thus are often net receivers of call termination traffic) magnify the financial disadvantages arising from their smaller scale and associated traffic imbalances *vis-à-vis* the incumbent operators. It is important to recognise that termination markets are a situation of *two-way access* where both interconnecting operators are presumed to benefit from the arrangement but are also in competition with each other for subscribers. Where regulated off-net termination rates are set above an efficient level of cost, this can have negative competitive implications in the presence of asymmetric traffic flows between operators, in particular for the ability of smaller operators to match the on-net offers of their larger competitors.

In addition to distorting competition within national boundaries, off-net termination charges which are higher in one country (country A) than in a neighbouring country (country B) can distort entry decisions for smaller entrants and impede cross-border trade and investment across the European Union.

Asymmetric termination rates have frequently been granted within countries as a form of entry-assistance in favour of later entrants. Asymmetric wholesale pricing may however serve to reinforce any asymmetric pricing observed at the retail level where the off-net retail prices of the incumbents rise to compensate for the increased cost of off-net wholesale termination to new entrants. Furthermore, as noted above, allowing termination rates above an efficient level of cost, even temporarily, can generate a number of inefficiencies and lead to competitive distortions and higher retail prices for end users.

### 3.3. Cost of an efficient operator

*Box 1: Sample Commission comments on costing methodologies in termination markets*

The Recommendation consolidates and formalises established costing principles as already articulated through the Commission's previous comments in the context of the Article 7 procedure under the Framework Directive.

For example, the Commission has continuously indicated that termination rates should be brought down to the level which reflects the **costs of an efficient operator**<sup>19</sup>.

In inviting an NRA to impose a cost-calculation obligation, the Commission also invited it to assess whether a **forward-looking LRIC model** would not be the most appropriate model<sup>20</sup> and has in previous cases also highlighted the principle of **forward-looking economic efficiency** and the importance of **LRIC models** using the **current costs** of an efficient operator employing efficient technology and not historical costs, which risk overestimating the appropriate costs considerably<sup>21</sup>.

The Commission has on numerous occasions stated that termination rates should normally be **symmetric** and that asymmetry should be adequately justified by objective cost differences and limited to a transitory period<sup>22</sup>. Furthermore, the Commission has consistently called upon the national regulators to work together towards a **coherent cost accounting method** to wholesale termination rates<sup>23</sup>.

A forward-looking LRIC methodology provides an analytical framework for estimating the service cost that would prevail in a competitive market.

Although national regulators are increasingly using 'LRIC' models for setting MTRs, significant differences in the implementation of those models exist, in particular in the relevant costs which are taken into account. In practice, the majority of NRAs have implemented LRIC models which are akin to a LRIC+ or a fully allocated cost (FAC) approach, resulting in an allocation of the whole of a mobile operator's costs to different services.

However, taking account of the specific characteristics of termination markets, and in particular their two-way access nature, mark-ups above the incremental cost can facilitate competitive distortions between fixed and mobile networks and between operators with asymmetric market shares (e.g. within mobile markets). The further termination rates move away from incremental or efficient cost, the greater the transfers and the associated competitive distortions become. Thus, LRIC is the most appropriate approach to reflect the efficient cost of wholesale termination services and to address these competitive distortions. The Recommendation therefore aims to consolidate and ensure consistency in the implementation of the LRIC model.

<sup>19</sup> See, for example, cases UK/2006/0498, FR/2007/0669, FI/2008/0778, IT/2008/0779 and PL/2008/0794.

<sup>20</sup> Case PL/2006/0379.

<sup>21</sup> Cases UK/2006/0498, EL/2008/0786, IT/2008/0802.

<sup>22</sup> Cases BE/2006/0433, ES/2007/0598, PT/2007/0707, DK/2008/0785.

<sup>23</sup> Cases IE/2008/0746, FI/2008/0778, EL/2008/0786, PL/2008/0794, IT/2008/0802.

In defining the relevant increment as the wholesale voice call termination service provided to third parties, LRIC allows for the recovery of all fixed and variable costs which are incremental to the provision of termination services, i.e. those additional costs which are due to the additional terminating traffic from third parties. Costs which may be incremental to termination include wholesale commercial costs such as billing costs which are dedicated to the wholesale termination service or network-related costs such as additional Mobile Switching Centres (MSCs) or backbone infrastructure required to carry the terminating traffic for third parties. Furthermore, where certain network elements, such as cell sites or Base Transceiver Stations (BTS), are shared for the purposes of supplying origination and termination services, these network elements would be included in the termination cost model to the extent that they are needed because of the additional capacity necessary to carry terminating traffic. Additional spectrum costs which are directly related to the provision of the wholesale termination service to third parties would also be taken into account.

### **3.4. Need for an EU Recommendation**

A key objective of issuing an EU Recommendation on the regulatory treatment of fixed and mobile termination rates in the EU is to consolidate the development of the internal market for telecoms services.

As is clear from Box 1 above, the Commission has consistently stated in its comments under the Article 7 consultation procedure that termination rates should be based on the costs of an efficient operator and has continually called upon the national regulators to work together towards a coherent approach to cost accounting in call termination markets. Thus, the Commission's position has always been clear. However, while some progress has been made on the level of asymmetries within Member States, clear inconsistencies in regulation still persist with associated implications for competition and consumers. This is in spite of consistent comments from the Commission indicating that termination rates should be set at the level of efficient cost. As can be seen from sections 3.1 and 3.2, the considerable variation in the methodologies which national regulators employ when regulating termination rates contribute to significant differences in termination tariffs across the Member States. Furthermore, although termination rates are gradually decreasing, the absolute level of MTRs remains much higher on average than for FTRs. Inconsistent regulation of FTRs and MTRs gives rise to a number of economic and competitive consequences for fixed networks and their subscribers when calling mobile networks. In addition, above-cost termination rates can impede the ability of smaller networks to enter and expand in mobile markets. Differing rates and methodologies across the EU also have important implications for cross-border competition and investment. In particular, the potential for cross-subsidisation of operators' activities across different countries creates an implicit incentive for regulators to avoid lowering their termination rates and their industry cash flows significantly below those of other EU countries.

The lack of harmonisation in the application of cost-accounting and cost-orientation principles to termination markets to date demonstrates a need for common guidelines and a common approach which will provide greater legal certainty and the right incentives for potential investors. A common approach to call termination markets based on efficient costing principles should help foster a stable and effective regulatory environment for future investments and contribute to a more level playing field and enhanced competition between different operators and networks (e.g. fixed and mobile networks). It should also ease the regulatory burden of operators that are active on a cross-border basis and reduce cross-country distortions of investment and competition, thereby further consolidating an internal market for



telecoms services. It is important that all European consumers should have the opportunity to benefit from such enhanced competition and investment through lower prices and innovative services.

Under the current regulatory framework, the Commission can comment on draft regulatory measures notified to it under the procedure provided for in Article 7 of the Framework Directive. However, as the national regulators have not interpreted the costs of an efficient operator in a consistent manner when regulating termination markets across the EU, it is necessary for the Commission to issue a Recommendation in accordance with Article 19 of the Framework Directive. Article 19 provides an additional mechanism for reinforcing the consolidation of the internal market and the harmonised application of the regulatory framework. Therefore, it complements the Article 7 consultation procedure in achieving greater consistency when regulating termination rates across Member States to the ultimate benefit of European consumers. In line with Article 19, Member States shall ensure that NRAs take the utmost account of the Commissions' recommendations when carrying out their tasks. There is at present no possibility for the Commission to adopt another legal instrument or to give binding instructions to the NRAs with regard to regulatory obligations.

#### **4. ASSESSMENT OF THE POSSIBLE IMPLICATIONS OF THE RECOMMENDATION**

##### **4.1. Context/Background**

The following involves an assessment of the implications of national regulators moving to implementing the Recommendation which, based on the current regulatory framework and the Commission's previous decisions under the Article 7 procedure, sets out a consistent methodology for regulating termination rates based on the costs of an efficient operator. While any further reductions in regulated termination rates in the EU will depend on the extent to which estimated termination rates might currently exceed the level of efficient cost, there appears to be a general acceptance among regulators that further reductions in termination rates are likely.

Based on existing regulatory practice, national regulators anticipate further termination rate reductions in the EU of approximately 40% over the forthcoming 3 years, in particular with regard to MTRs<sup>24</sup>. Given that national regulators still apply widely diverging interpretations of the costs of an efficient operator, it may be expected that the Commission's recommended methodology will lead to a more consistent and effective interpretation of this cost concept. Depending on the level of any variance between rates regulated on the basis of the regulators' existing approaches and the costs of an efficient operator, using the recommended methodology could lead to significant reductions in termination rates, in some cases possibly in excess of that already predicted by national regulators using their existing methodologies.

On that basis, the following assessment considers the implications of moving from the current regulatory environment of diverging interpretations of cost orientation in call termination markets to a situation where all national regulators in the EU apply a rigorous and consistent interpretation of the costs of an efficient operator.

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<sup>24</sup> See ERG Press Release ERG (08) 32, 3 June 2008, available from [http://www.erg.eu.int/doc/whatsnew/erg\\_08\\_32\\_25th\\_plen\\_vilnius\\_%20press\\_080603.pdf](http://www.erg.eu.int/doc/whatsnew/erg_08_32_25th_plen_vilnius_%20press_080603.pdf)

## 4.2. Implications for industry

### 4.2.1. Implications for the mobile sector as a whole

As a result of regulatory intervention, termination rates are on a downward trend in the EU. According to the Progress Reports<sup>25</sup> average MTRs fell by more than 30% from 14.70 eurocents/minute in 2004 to 9.67 eurocents in October 2007, i.e. a yearly reduction of 13%. Termination charges have continued to decrease into 2008 and at October 2008 the EU average MTR was (at 8.55 eurocents) 11.58% lower than in 2007. When considering the possible impacts of further reductions in termination rates, it might be useful to analyse the developments of the European mobile markets during the last few years in order to get a deeper understanding as to how falling MTRs influenced market evolution.

In Europe, mobile revenues continued to increase, although by a decelerating rate, reaching total revenues of an estimated €137 billion in 2007 from €22 billion in 2004. This corresponds to an average annual growth rate of about 4% for this period, having overcome the growth rates of the telecom sector as a whole. The mobile revenue growth rate reflects increasing competition and falling retail prices, coupled with saturation in most countries and falling termination rates. Retail revenues have been further boosted by data and other value-added services accounting for around 7% of industry turnover in 2007 (excluding SMS) and are continuing to show signs of growth<sup>26</sup>.

These developments imply that we are witnessing structural changes concerning the sources of mobile revenues which are expected to continue. The growing importance of data and value-added services and the falling retail prices imply that the ratio of revenues from voice services is slowly decreasing. Similarly, it may be expected that, due to declining MTRs, the ratio of termination revenues would also continue to decrease from the current level of approx. 15%–20%, depending on the size of the operator.

According to analysts<sup>27</sup>, a reduction in the level of termination rates for mobile operators would reduce both their revenues and their Earnings Before Interest and Taxes (EBIT), while increasing fixed operators' EBIT, due to a reduction in payments to other operators. It is further noted that, while MTR cuts would progressively reduce the EBIT of leading mobile operators, they would also level the playing field and benefit net payers of termination and indirectly facilitate more intense price competition by challengers whose low market shares constitute an impediment to competition on voice prices. On the contrary, other sources<sup>28</sup> suggest that weaker third, fourth or fifth mobile entrants would suffer proportionately more than incumbent (first or second) market entrants as asymmetry in MTRs is removed. Further, the possible downside for European operators is estimated as being modest, in any case, given that their net exposure to interconnect is generally small (accounting for about 3–6% of service revenues). Another estimate<sup>29</sup> foresees that termination changes affect *circa* 7% of the European Earnings Before Interest, Taxes, Depreciation and Amortisation (EBITDA) noting that the faster the reduction in termination rates, the greater the pressure on third operators initially, although on a 2–3 year view it would become easier to charge lower off-net prices which compete with on-net. Further, lower prices would generally drive up fixed substitution and Capital Expenditures (CAPEX), again initially hurting third operators more since

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<sup>25</sup> See 10<sup>th</sup> to 14<sup>th</sup> Progress Reports.

<sup>26</sup> See 10<sup>th</sup> to 13<sup>th</sup> Progress Reports.

<sup>27</sup> Natixis, Morgan Stanley.

<sup>28</sup> Arete, ING.

<sup>29</sup> Citibank.

networks tend to be thinner, with CAPEX pressure weaker on those with built-out 3G networks.

The divergent nature of the above estimations lies in the differences of assumptions made regarding the possible magnitude of MTR reductions. On the one hand, information from smaller mobile operators indicates that either a very significant asymmetry or a significant reduction in MTRs would be needed to offset claimed financial disadvantages deriving from their smaller size as well as the effects of traffic imbalances and on-net/off-net pricing by incumbent operators. Asymmetric MTRs, however, only reinforce larger mobile operators' incentives to exploit tariff-mediated network effects, i.e. they lead to further differentiation in on-net and off-net mobile call tariffs and as such are not appropriate for creating a level playing field between operators of different size and thereby encouraging competition. On the other hand, applying symmetry where termination rates are at a higher level would definitely harm smaller mobile operators as any financial disadvantages resulting from traffic imbalances vis-à-vis the larger operators would be magnified without any associated compensation. Thus, a significant reduction in termination rates to the cost level of efficient service provisioning would likely reduce the magnitude of any financial disadvantages stemming from traffic imbalances and thereby help facilitate competition from smaller mobile operators.

The following analysis seeks to understand the likely implications of reductions in wholesale termination rates for end user prices and the distribution of any associated costs/benefits arising from these changes across the industry and consumers in general<sup>30</sup>. What is important to recall here is that termination is a zero-sum game meaning that the sum of the losses for certain operators amount to the sum of gains for the others. Thus, any reduced revenues and profits do not disappear; rather they represent a significant transfer between operators (of different size and/or of different networks). Termination rates based on the costs of efficient service provisioning help to ensure that this transfer is equitable and justified by the objective of promoting efficient competition and creating a level playing field for different operators, thereby ultimately translating into consumer benefits (including lower retail prices and increased traffic/usage).

The starting point of the economic model developed by the Commission services to assess the likely impacts of the recommended approach is the current situation prevailing on the mobile markets. The ARPM<sup>31</sup> across the EU in 2007 was approximately 12.2 eurocents.<sup>32</sup> Average MTRs were 9.67 eurocents per minute in 2007<sup>33</sup>.

Two scenarios of MTR reductions by 2012 will be considered: i) the baseline scenario based on a rate of reduction of 40%; and ii) the recommended scenario based on the rate of reduction of 70%. In line with recent ERG statements, the baseline scenario assumes a reduction of MTRs similar to the one experienced in the 4 years preceding 2007 as a result of regulatory interventions<sup>34</sup>. The second scenario considers a higher rate of reduction of 70%, as expected from the implementation of the recommended approach.

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<sup>30</sup> A more detailed assessment of these implications, including a description of the model used by the Commission services for calculating the possible impacts on the industry and on consumers under different assumptions, can be found in the Annex.

<sup>31</sup> Because of the great variety of retail price plans and customer profiles, getting an estimate for actual retail prices is virtually impossible in a meaningful format. ARPM gives an estimate of actual prices and how they are likely to evolve.

<sup>32</sup> Merrill Lynch, Q4 2007

<sup>33</sup> 13<sup>th</sup> Progress Report.

<sup>34</sup> See footnote 24.

As regards the latter estimate, this is intended as a proxy for the average EU-wide MTR reduction resulting from applying the Recommendation. It is, however, difficult to predict the precise level of any resulting change in termination rates. The Commission's Recommendation first and foremost aims at a consistent and effective methodology for calculating termination rates across the EU. The objective is not to regulate down to a particular level. Furthermore, it is possible that under the recommended approach termination rates will continue to vary across the EU (albeit on a smaller scale) due to continuing national specificities (e.g. population density, geography, labour costs, etc.). Moreover, the magnitude of any reductions may vary from one Member State to the next depending on the existing MTR level.

In any case, it may be observed that in mobile markets to date NRAs have tended to implement glide paths with a relatively gradual rate of reduction towards the efficient cost level, resulting in average MTRs which are still almost nine to ten times higher than FTRs. It may therefore be expected that an appropriate definition of the cost of an efficient operator would yield reductions in excess of recent trends.

The purpose of the proposed approach is to mimic a competitive market which does not work for mobile termination markets due to the CPP principle. If the market mechanism were functioning properly, all operators would price closer to the level of efficient cost as otherwise they would lose market share and revenues to their more efficient rivals. On-net retail tariffs may therefore provide an indication of an upper limit for the cost of termination in a competitive market scenario. On-net tariffs are frequently below the price of off-net calls and in some cases even below the level of the off-net termination tariffs<sup>35</sup>. Given that on-net charges include both origination and termination costs, it seems reasonable to infer that the efficient cost of termination that would prevail in a competitive market situation would in fact be much lower than those estimated via presently applied LRIC + or FAC models.

Furthermore, when examining the cost structure of mobile operations, it can be noted that, on average, around 75% of the costs of mobile call termination are currently network-related, slightly more than half of which are generated by the radio access network. The remaining 25% of the total cost of mobile call termination is typically accounted for by spectrum costs, business overheads and wholesale commercial costs. According to the recommended approach, only those costs which are capacity-driven and incremental to the provision of a wholesale call termination service would be taken into account

Indeed, some costing estimates would indicate that average reductions in the region of 70% could result. Accordingly, MTRs are estimated to be at the level of 5.5 eurocents/minute under the baseline scenario and 2.5 eurocents/minute under the recommended approach<sup>36</sup>. The impact of any reduction of MTRs on retail prices under the baseline scenario and the recommended approach needs to be identified

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<sup>35</sup> For example, according to Harbord and Pagnozzi (2008), average on-net call charges in the UK were 3.5 ppm in 2006 and were below Ofcom's estimates of LRIC which exceeded 5 ppm for all of the incumbent operators. In Spain, the largest mobile operator also offered an on-net tariff for contract customers in 2007 at 3 eurocents/minute while the corresponding tariff for off-net calls was 30 eurocents/minute. The Portuguese regulator (ANACOM) also considered in a 2007 consultation that on the basis of on-net prices, termination costs may be closer to 3.6 eurocents/minute, compared to the regulated rate of 11 eurocents for 2007.

<sup>36</sup> In view of the uncertainty surrounding this estimate and also persistent national differences, additional sensitivity testing has been carried out which demonstrates that with a termination rate in the range of 1.5 to 3 eurocents there are minimal variations in the impacts on termination revenues and total industry profits, while the change in total social welfare increases with decreasing termination rates.

A first important estimate to be made concerns the magnitude or likely extent of the pass-through of the cost reduction to the retail level. As end-user charges are implicitly composed of origination and termination elements, the issue is to what extent end-user charges will reflect the termination rate reduction. For the purposes of comparison, we assume that a 0.33 pass-through rate best describes the link between MTRs and retail price developments. The level of pass-through is strictly linked to the level of competition observed in the market: the higher the competition in the market, the higher the pass-through will presumably be. The relatively low value of 0.33 considered in this exercise, is an estimation aimed at taking account of the current level of competition on the retail mobile markets. This is, however, expected to intensify as a result of the further decrease in MTRs under the recommended approach<sup>37</sup>.

A second important estimate concerns the elasticity of demand that measures how a reduction of prices will affect the volumes consumed. Our conservative estimate (based on publicly available country- and/or company-specific third-party estimates)<sup>38</sup> is that the overall impact of an MTR reduction is likely to be approximately -0.50, i.e. 50% of the revenue losses resulting from reduced prices will be offset by higher consumption. However, we have also analysed the results of the model assuming various pass-through rates (0.00; 0.66; 1.00) and at different demand elasticity levels (0.00; -0.80; -1.00). These results are presented in the Annex.

Assumptions have also been made concerning the demand elasticity of fixed-to-mobile calls and the extent to which fixed operators will likely pass their gains from lower MTRs to consumers originating fixed-to-mobile calls. Our conservative estimate for the price elasticity of demand (-0.30) reflects the fact that fixed services are generally considered to be more inelastic than mobile services<sup>39</sup> and the lower level of pass-through (0.20) is intended to mirror the fact that competitive forces are generally considered to be weaker on the fixed markets than on their mobile counterparts<sup>40</sup>. However, similar to mobile services, the analysis has been carried out assuming various pass-through rates (0.00; 0.50; 0.80) and different demand elasticity levels (0.00; -0.40; -0.60). The results of these calculations are also shown in the Annex.

The model has revealed that, under the above assumptions, the mobile industry as a whole will not suffer significantly from the more comprehensive and harmonised approach recommended by the Commission. Although mobile termination revenues would decrease more significantly under the recommended approach than under the baseline scenario and there would also be less voice revenues generated during the period considered (i.e. between

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<sup>37</sup> The possible impacts for competition will be further elaborated in the following sections.

<sup>38</sup> Most available studies have found relatively moderate price elasticities. Hausman, for example, finds an own-price elasticity for mobile-originated calls of -0.5 to -0.6 in the US. In a study on the Australian mobile market, Access Economics reports a price elasticity of -0.8. Summarising the results from different studies by DotEcon, Frontier Economics and Holden Pearmain, in its 2003 report on the charges for terminating calls from fixed and mobile networks, the UK Competition Commission reports own-price elasticities for mobile calls ranging between -0.48 and -0.65.

<sup>39</sup> In its 2003 report on the charges for terminating calls from fixed and mobile networks, the UK Competition Commission also reported on own-price elasticities for fixed-to-mobile calls. Based on the different studies by DotEcon, Frontier Economics and Holden Pearmain, the elasticity of fixed-to-mobile calls ranged from -0.11 to -0.43. Access Economics estimated an elasticity level of -0.08 for the Australian market.

<sup>40</sup> However, in a 2006 consultation carried out by Ofcom on its Mobile Call Termination Market Review, Ofcom found that, in the market as a whole, fixed operators have directly passed through about 64% of the reductions in mobile termination charges to consumers.

2007 and 2012), it is also noted that mobile operators' termination expenses would be considerably lower under the recommended approach. This implies that the overall impact on industry cash flow (and thus on profits, other things being equal) would be much lower than its effect on pure revenue indicators.

This is a static evaluation, however, that does not take into account the possibility for an operator to generate new revenues with other services, such as mobile broadband. A recent report from Analysys Mason estimates that non-voice ARPU would rise from €5.8 in 2006 to €10.8 by 2012, i.e. from 19.3% to 32.4% of total ARPU. Mobile service revenue is likely to grow at a Compound Annual Growth Rate (CAGR) of 5.4% during the same period<sup>41</sup>. Reductions in operators' EBITDA or ARPU also follow other tariff reductions (at retail level for instance), or increased customer acquisition costs, terminal subsidies and of course network investments, although EBITDA for mobile operators in Europe remains quite high.

Furthermore, the model only considers the effects of termination rate reductions on call prices assuming that a corresponding fall in retail off-net mobile and fixed-to-mobile call tariffs is expected, the extent of which would however depend on the degree of pass-through. It is often argued, however, that an increase in retail charges or a restructuring of retail tariffs (such as a decrease or an elimination of handset subsidies or the introduction of minimum monthly commitments) might be expected as a result of the so-called waterbed effect<sup>42</sup>. As is further addressed in section 4.3.4 below, a strong waterbed effect is, however, not expected although some tariff restructuring is possible.

Moreover, as pointed out in sections 3.2 and 3.3 above, one of the main objectives of the Recommendation is to avoid competitive distortions between fixed and mobile operators and between operators of differing size. The dynamic effects of the proposed approach are not reflected in the static economic model prepared by the Commission services but should not be understated. Enhanced competition resulting from the elimination of the competitive distortions associated with above-cost termination rates should provide investment and competitive opportunities for a range of different operators in the mobile sector. This should serve to constrain the costs of mobile phone ownership and usage for all end-users, as is further discussed in section 4.3. Furthermore, increased competition should in turn encourage operators to offer innovative bundled and/or convergent services, providing additional revenue sources and opportunities and thereby reinforcing the financial stability of the sector as a whole.

#### *4.2.2. Implications for the fixed sector as a whole*

Similarly to MTRs, FTRs are on a downward trend as a result of regulatory intervention in the EU, although their rate of decrease is much lower than for their mobile counterparts. The main reason for this is that regulation of FTRs has a longer history and national regulators have already succeeded in approximating FTRs closer to the underlying costs of providing termination services, at least for incumbent operators. However, regulators often allow new-entrant alternative operators to set higher asymmetric termination rates. According to the

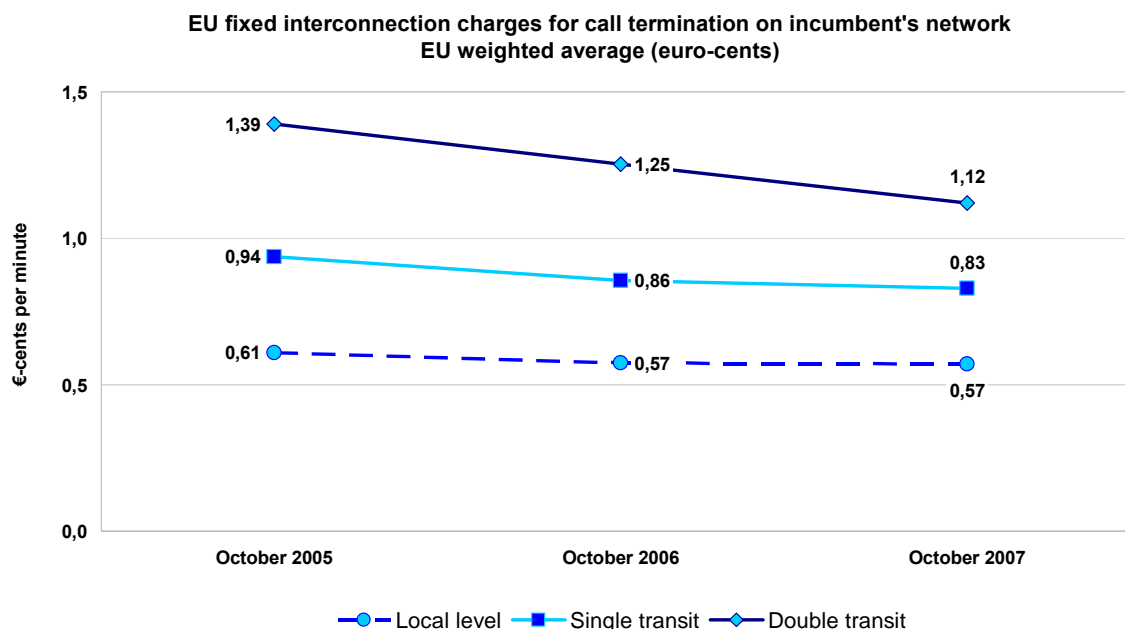
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<sup>41</sup> The Western European Mobile Market: trends and forecasts 2007-2012, available from: <http://research.analysys.com> (quoted by <http://www.3g.co.uk/PR/Sept2007/5122.htm>).

<sup>42</sup> The waterbed effect implies that a reduction in the level of termination charges can potentially increase the level of retail prices. Economic theory suggests that, under competitive conditions, operators might have incentives to increase some elements of the retail price in order to recoup their losses due to lower termination revenues. The issues relating to this possible effect are further considered in sections 4.3.4 and 4.3.6.

annual Progress Reports, average FTRs<sup>43</sup> fell by approximately 14% from 2005 to 2007, i.e. from 0.96 eurocents/minute to 0.83 eurocents/minute. However, this average decrease conceals diverging shifts in the prices of the different termination services. While prices of higher-level termination services continued to decline, local termination fees remained stable during 2006 and 2007. The evolution of FTRs is illustrated by the following chart.

Chart 6: EU fixed interconnection charges for call termination on incumbent networks



Source: Commission's 13<sup>th</sup> Progress Report

The 13<sup>th</sup> Progress Report states that in 2007 fixed voice revenues were estimated at €79 billion and continued to decline at around 5%, as in 2006. In the fixed market, voice calls still constitute an important source of operators' revenue. However, while mobile voice telephony has grown in recent years, the fixed market for voice calls has continued to decline due to substitution by mobile calls<sup>44</sup> and IP services. Consequently, revenues from fixed call services are also declining and it may be expected that the trend will continue in the future. Increasingly, fixed network operators obtain revenues from other services, such as broadband Internet access services which have been growing steadily in the past years.

The starting point of the assessment of the impacts of the recommended approach is the current situation prevailing on the fixed markets. The average fixed-to-fixed call charge was estimated to amount to approximately 5.5 eurocents/minute across the EU in 2007<sup>45</sup>. Assuming that 35% of the incoming fixed traffic is terminated at local level, while another 35% at single-tandem level and the remaining 30% at double-tandem level, the average FTR

<sup>43</sup> The average has been calculated assuming that 35% of the incoming fixed traffic is terminated at local level and 35% at single-transit level, respectively, while the remaining 30% is terminated at double-tandem level.

<sup>44</sup> According to the 13th Progress Report, in 2006 only 67% of voice calls were made in the fixed network and 33% in the mobile network (in 2005 this was 73% and 27% respectively).

<sup>45</sup> According to the 13<sup>th</sup> Progress Report, incumbent fixed operators offered a 3-minute-long local call for 13.5 eurocents, while for a 10-minute-long local call they charged 36.1 eurocents on average. The national call charge was approximately 25.8 eurocents assuming a 3-minute-long call, and 75.8 eurocents for 10-minute-long calls.

of incumbent operators was 0.84 eurocents per minute in 2007<sup>46</sup>. We further assume that, as a result of continuing with the currently applied regulatory approaches, incumbent FTRs are likely to fall by 5% under the baseline scenario, whereas they are assumed to fall by 15% under the recommended approach by 2011<sup>47</sup> in equal proportions. A further small adjustment of the rates is expected to happen in 2012 when the Recommendation takes effect, resulting in an average FTR of 0.78 eurocents under the baseline scenario and 0.71 eurocents under the recommended approach.

In order to obtain consistent results from the models for fixed and mobile services, and in the absence of information about the likely pass-through rate and demand elasticity of the individual fixed call services (i.e. as regards different call directions), we assumed that both the extent to which end-user charges would reflect the termination rate reductions and the own price elasticity of demand for fixed services equals that of fixed-to-mobile calls used for estimating the impacts of MTR reductions. Our conservative estimate for the price elasticity of demand (-0.30) reflects that fixed services are generally considered to be more inelastic than mobile services. The lower level of pass-through (0.20) is intended to mirror the fact that competitive forces are generally considered to be weaker on the fixed markets than on their mobile counterparts. However, similarly to mobile services, the analysis has been carried out assuming various pass-through rates (0.00; 0.50; 0.80) and different demand elasticity levels (0.00; -0.40; -0.60), the results of which can be found in the Annex.

Assumptions concerning the demand elasticity of mobile services and the level of pass-through have also been used consistently with those made in the model for assessing the possible implications of MTR reductions. Thus, under the conservative scenario, the elasticity of mobile services has been assumed to be approximately -0.50, and we further assumed that mobile operators would likely pass on 33% of the savings from lower termination rates to their consumers. However, we have also analysed the results of the model assuming various pass-through rates (0.00; 0.66; 1.00) and at different demand elasticity levels (0.00; -0.80; -1.00). These results are included in the Annex.

The model has revealed that, under the above assumptions, the fixed industry as a whole is likely to gain significantly from the more comprehensive and harmonised approach recommended by the Commission. Although revenue streams of fixed operators would not be affected significantly (decreases in revenues would be somewhat higher under the recommended approach than under the baseline scenario), termination expenses would be significantly lower between 2007 and 2012 than under the baseline scenario. The change in termination expenses would in any case be much greater than the fall in revenues, implying that the overall impact on the industry cash flow (and thus on profits, other things being equal) would be positive.

The above assessment is aimed at estimating the possible impacts of the Recommendation on different industry indicators assuming all other things being equal. Thus, the results above do not reflect the decreasing trend in fixed-originated minutes, and further do not take into

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<sup>46</sup> Based on data from the 13<sup>th</sup> Progress Report.

<sup>47</sup> As for mobile services, the extent of any termination rate reductions will depend on the extent to which estimated termination rates might currently exceed the level of efficient cost, which could vary significantly between Member States and between incumbent and alternative operators. For the sake of simplicity, the computational model developed by the Commission services assumes that all incoming traffic is terminated on fixed incumbent operators' networks. (This implies that termination rate reductions and thus impacts on both the industry and on consumers are somewhat underestimated by the model).



account the possibility for an operator to generate new revenues with other services, such as broadband.

Furthermore, the model cannot capture all of the dynamic impacts of termination rate reductions which are extremely important in the case of fixed operators. By eliminating competitive distortions between fixed and mobile operators, the Recommendation will ensure a more level playing field for all. Fixed operators are currently constrained in their ability to compete on fixed–mobile converged services or to include mobile calls in their low-cost flat-rate packages involving fixed or data services due to MTRs currently being several times (almost nine to ten times on average) the level of FTRs. As is discussed further in section 4.3.5 below, high per-minute MTRs render it difficult for fixed carriers to offer flat-rate calling plans incorporating mobile calls due to uncertainty regarding likely levels of customer take-up and the associated cost risk. The indirect cross-subsidy from fixed to mobile networks also threatens to impede important innovations in fixed networks such as fibre roll-out and the delivery of high-bandwidth services to the ultimate detriment of fixed-line consumers. Reducing termination rates across all markets to the incremental cost of providing this service should therefore provide operators in the fixed sector with greater scope for offering various flat-rate packages and/or converged services, thereby creating additional revenue and competitive opportunities. This should in turn create balanced and efficient incentives to invest and innovate.

#### 4.2.3. Implications for the different operators

Different operators would be affected differently by the recommended approach. Fixed operators would benefit from direct transfers from mobile operators due to reductions in MTRs by approximately €6 billion between 2007 and 2012. When these reductions are coupled with indirect benefits stemming from increased demand for fixed-to-mobile calls, the cost savings would be even higher (more than €20 billion)<sup>48</sup>. Depending on the pass-through level, lower MTRs would also enhance the competitive position of fixed operators *vis-à-vis* mobile operators in reducing the relative price of fixed-to-mobile calls compared with on-net and off-net mobile calls. Due to an expected decrease in FTRs, there would be a significantly lower transfer in the other direction as well. An estimation of the direct transfer from mobile operators to their fixed counterparts has been calculated at around €0.1 billion over 5 years, which would not change significantly even when taking account of the indirect effects<sup>49</sup>.

The final effect on integrated incumbents (those having both fixed and mobile arms) would depend on the balance between profit and loss in their mobile division and cost reduction in their fixed division. The larger the difference between the fixed incumbent's market share compared with its mobile subsidiary, and the higher the fixed-to-mobile traffic volume, the greater the overall benefits from an MTR reduction for the company<sup>50</sup>. The reductions in MTRs would also enable operators to offer 'bucket pricing' at a low fixed price.

Consequences for mobile operators depend on different factors, but notably on the balance of their interconnection traffic and their ability to benefit from network effects.

In this respect, it should first be noted that smaller mobile network operators are usually late (or later) entrants to the market and their smaller size is frequently due to the delay in their

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<sup>48</sup> Under the baseline scenario, the direct transfer would amount to less than €4 billion between 2008 and 2012, while the indirect benefits to more than €10 billion.

<sup>49</sup> Under the baseline scenario, both direct and indirect effects would render mobile-to-fixed termination expenses mainly unchanged.

<sup>50</sup> CERNA-Warwick-WIK (2003), p. 62.

market entry. There is an extensive economic literature<sup>51</sup> dealing with the consequences of sequential entry in mobile markets and the ability of smaller operators to overcome the first-mover advantage of earlier entrants. It is often suggested that new entrants need entry-assistance to be able to compete with the ‘incumbents’ on an equal footing in the medium- or long-term<sup>52</sup>. As smaller mobile players are usually net senders of traffic due to incumbent or first or second mobile entrants typically having much higher market shares<sup>53</sup> and due to the presence of network effects which can be further reinforced by on-net/off-net price differentiation, the balance of termination-related payments is determined by the interaction of these two forces. The magnitude of traffic imbalances might also be influenced by the usage patterns of the operators’ average customers, i.e. whether they tend to originate more traffic than they receive or *vice versa*.

Although the overall financial impact of lower and symmetric MTRs on smaller operators may vary according to the nature of any traffic imbalances and the degree of asymmetry previously granted to them, it can be established that both their termination revenues and their payments would be affected. If symmetric termination rates were to be imposed at a higher absolute level, significantly higher termination expenses would continue to be incurred by smaller operators than under the recommended approach, since under the recommended approach the level of the termination rate is assumed to be lower. Symmetry at the level of truly cost-oriented (efficient) termination rates would reduce the payments of smaller market players, while rendering them capable of offering tariff packages and price plans with off-net prices comparable to that of the on-net charges of larger operators. This would in turn increase their ability to compete and thus encourage competition in the retail mobile markets to the ultimate benefit of consumers.

*Box 2: Concerns raised by different operators in the public consultation*<sup>54</sup>

The recommended approach was generally supported by a number of fixed operators, consumer organisations and some late-entrant mobile network operators on the basis that consumers would benefit from lower prices and increasing choice. However, concerns were voiced by other respondents on a number of key aspects of the Recommendation.

For example, certain larger mobile operators argued that the relevant increment would not contribute sufficiently to the recovery of joint and common costs and would result in reduced investment and would disadvantage low-usage pre-paid customers due to higher

<sup>51</sup> See for example Benzoni – Geoffron (editors), 2007, “A Collection of Essays on Competition and Regulation with Asymmetries in Mobile Markets”, Quantifica Publishing, Paris.

<sup>52</sup> According to the ERG Common Position on symmetry, in January 2007, 25 European countries allowed asymmetric MTRs and only six NRAs imposed symmetric mobile termination prices. The ERG estimated that the average asymmetry of mobile termination rates had been 0.9 eurocents/minute in 2007 having decreased from a level of 1.4 eurocents in 2004. Beyond the 27 EU Member States, the ERG data included Switzerland, Iceland, Croatia and Turkey. As for October 2006 and October 2007, the Commission’s 12th and 13th Progress Reports on the implementation of the telecoms regulatory framework in the Member States showed an average MTR of 11.01 and 9.67 eurocents/minute respectively with asymmetry accounting for about 8-9% of average MTRs.

<sup>53</sup> According to the 13<sup>th</sup> Progress Report, the average market share of the leading mobile operators in the EU was 39.4% in 2007. The main competitors accounted for 32.1% on average, while other competitors (number 3, 4, 5 or even 6 players) were able to acquire 28.6% altogether.

<sup>54</sup> The public consultation on the draft Recommendation on the regulatory treatment of fixed and mobile termination rates in the EU took place from 26 June to 10 September 2008. The consultation documents (the draft Commission Recommendation and the accompanying Explanatory Note) as well as the non-confidential responses submitted by interested parties are available from:

[http://ec.europa.eu/information\\_society/policy/ecommlibrary/public\\_consult/termination\\_rates/index\\_en.htm](http://ec.europa.eu/information_society/policy/ecommlibrary/public_consult/termination_rates/index_en.htm)

retail subscription fees and/or minimum monthly commitments.

Smaller mobile operators were also generally dissatisfied with the approach to asymmetries and in particular the definition of efficient scale. They were of the view that weaker economies of scale should be taken into account. However, many of these operators also acknowledged the need for significant reductions in MTRs to foster a level playing field.

A number of respondents also considered the length of transitional period, initially set for 31.12.2011, too short.

These concerns are addressed in more detail in the Recommendation and Explanatory Note.

In relation to **cost recovery**, it has to be recalled (see also section 3.3 above) that LRIC provides an estimation of the price that would prevail in competitive market circumstances and provides for recovery of all of the fixed and variable costs incremental to providing the wholesale termination service. In a two-way access situation, allowing termination rates above the incremental cost level facilitates competitive distortions between (competing) fixed and mobile networks and between operators with asymmetric market shares.

As regards **investment incentives**, dynamic considerations should be taken into account (see also sections 4.2.1, 4.2.2 and 4.3.4, 4.3.5). Enhanced competition resulting from the elimination of competitive distortions associated with above-cost termination rates should provide operators with greater scope for offering various flat-rate packages and/or converged services and in turn provide efficient incentives to invest and innovate. In addition, the elimination of the fixed-mobile cross-subsidy provides a more balanced framework for important innovations and investments in fixed networks, such as fibre roll-out and the delivery of high-bandwidth services to the ultimate benefit of fixed-line consumers.

Further to the **efficient scale**, it is important to mimic a competitive market outcome so as to provide appropriate incentives for efficiency. Temporary asymmetries should be phased out within a reasonable timeframe, unless there are objective cost differences beyond the control of the operators concerned. The Commission has however recognised the possibility for a transitional period for new mobile entrants to achieve the efficient cost level, taking into account actual developments in mobile markets.

As the Recommendation consolidates established costing principles, a **transitional period** of three years until 31.12.2012 (with additional flexibility in certain circumstances for smaller NRAs) is considered reasonable and proportionate (see section 5.2).

### 4.3. Implications for consumers and overall economic welfare

#### 4.3.1. *Implications of reductions in mobile termination rates for economic welfare*

Termination revenues are effectively financial transfers between operators, with the costs of the call ultimately being paid at the retail level. Thus, any change in their level does not necessarily imply a loss for the sector as a whole but rather a redistribution of those financial transfers. The level and distribution of these financial flows, however, has important consequences for consumers. Therefore, what is more important from a regulatory viewpoint than simply looking at financial transfers within the industry is the impact of the recommended approach on consumer welfare or on overall economic welfare.

Economic welfare is measured in terms of the sum of consumer and producer surplus. Consumer surplus refers to the difference between what consumers would have been willing to pay for a call and the price that they actually pay, whereas producer surplus refers to the

amount that producers benefit from selling at a market price that is higher than what they would have been willing to sell it for. In assessing the impacts of the recommended approach, changes in producer surplus are reflected by the changes in producers' profits resulting from any change in termination rates. Thus, any changes in economic welfare resulting from the recommended approach may be estimated as the net effect of the change in consumer and producer surplus. As noted above, lower retail charges and higher usage would imply a positive change in consumer surplus. The nature of any such change would, however, depend on a number of factors. These include the extent to which any cost savings are passed through to consumers or the extent to which any waterbed effect might be in operation (i.e. where reductions in operators' revenues might be passed through to consumers in the form of higher retail prices). It would also depend on the elasticity of consumer demand at the retail level. These factors are explored further below.

It is important to note, however, that fixed customers would in any case not be impacted by a waterbed effect and would likely experience a positive welfare effect from any reductions in MTRs, as they would ultimately pay less for a fixed-to-mobile call. Further, it has been suggested that, since call termination is a two-sided market, Ramsey pricing (which implies that products which have the lowest elasticities of demand would bear higher percentage mark-ups above marginal cost and *vice versa*) would help ameliorate any welfare losses. This is because it would minimise the reduction in quantities consumed, while ensuring cost recovery for the operators concerned. However, in addition to the non-trivial informational requirements needed to estimate elasticities under such an approach, it is not clear that consumer welfare would be increased as, depending on the level of retail competition, the higher wholesale prices may not be offset by correspondingly lower retail prices. Furthermore, fixed-line consumers would in any event likely be worse off as they would not benefit from the lower outgoing prices for mobile calls.

For a first impression of how consumers would be affected, one can make a simple comparison of the expected price movements and the resulting changes in traffic patterns. The calculations carried out by the Commission services have shown that, assuming the recommended approach yields larger reductions in termination rates than the existing regulatory approach, both mobile retail prices and fixed-to-mobile call charges would fall by a larger degree under the recommended approach than when continuing with the current regulation. Data have also revealed that this would imply a higher growth in demand for mobile and fixed-to-mobile calls (being although very moderate for the latter under both scenarios).

Increased traffic volumes due to lower retail prices lead to enhanced consumer surplus. The growth in consumer welfare is significantly higher under the recommended approach than under the baseline scenario and, although the decrease in producer surplus (profits) would also be greater, it would be exceeded to a far greater extent by the larger increase in consumer surplus. The overall impact – taking account of the effects on mobile retail prices and traffic as well as on consumption and prices of fixed-to-mobile calls – is thus a more dynamic rise in social welfare.

It is also clear that the higher the proportion of the decrease in termination charges which is passed on to consumers and/or the less elastic the demand for the different services, the greater is the difference for the operators between the two scenarios, i.e. the recommended approach implies higher losses in producer welfare. On the other hand, compared to the situation outlined above, the change in consumer surplus is even more intense under the recommended approach than when continuing with the current regulation if the demand is more elastic and/or a larger proportion of the wholesale price reductions are passed on to consumers. Similarly, the more elastic the demand and/or the higher the level of the pass-

through, the larger is the difference between the recommended approach and the baseline scenario in terms of the increase in social welfare. However, in a less plausible case, if operators were to increase their prices at the retail level, total welfare would be reduced. In this case, the more interventionist the regulator is, the greater is the negative impact on welfare. Past experience from regulating termination markets, however, suggests that competition at the retail level would induce operators to lower retail prices due to reductions in termination rates<sup>55</sup>.

#### *4.3.2. Implications of reductions in fixed termination rates for consumer welfare*

The implications of the recommended approach when applied to FTRs will be less significant than in the case of MTR reductions due to different market conditions and product characteristics. First of all, FTRs are already much closer to the deemed efficient cost level and thus, much more moderate reductions could be expected as a result of the recommended methodology. Further to this, the less intense competition on the fixed markets and the lower price elasticity of demand for fixed communications services leads to a lower level of pass-through from fixed operators to consumers implying that retail prices would only be slightly affected and thus demand growth for fixed voice calls would also lag behind its mobile counterpart. However, assuming that the recommended approach also yields larger reductions in FTRs than under the existing regulatory approach, fixed retail prices would fall by a larger degree than when continuing with the current regulation and a higher growth in demand for fixed calls might be expected.

Increases in traffic volumes and lower retail prices lead to enhanced consumer surplus. The growth in consumer welfare is significantly higher under the recommended approach than under the baseline scenario; however, the decrease in producer surplus (profits) would also be greater. Again, just like in the case of mobile termination, the higher the pass-through of the decreases in termination charges to consumers and/or the lower the demand elasticity of fixed services (in absolute terms), the greater the difference for fixed operators between the two scenarios, i.e. the recommended approach implies higher losses for them. Demand elasticity has a similar impact on consumer surplus as well, while the relationship between the level of the pass-through and welfare indicators in the case of consumers is the opposite to that for producers, i.e. the change in consumer surplus is even more intense under the recommended approach than when continuing with the current regulation if a larger proportion of the wholesale price reductions are passed on to consumers. Similarly, the more elastic the demand and/or the higher the level of the pass-through, the greater is the difference between the recommended approach and the baseline scenario in terms of the change in social welfare<sup>56</sup>.

#### *4.3.3. Total/joint impact of MTR and FTR cuts on economic welfare*

As all of the above statements regarding the respective implications of MTR and/or FTR reductions on different welfare indicators remain valid when also considering their joint impact on welfare, we do not repeat them here. The total or joint impacts of the recommended approach on termination when compared with the expected implications of continuing with the current regulatory approach are illustrated below. As noted above, in addition to the below estimations, it is also important to take account of the expected dynamic consequences of the

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<sup>55</sup> The results of these estimates are presented in the Annex.

<sup>56</sup> The results of these estimates are presented in the Annex.

Recommendation, in particular for investment and competition. These dynamic effects and their implications for consumer welfare are further elaborated in the following sections.

*Table 2: Joint impact on the telecoms industry<sup>57</sup>*

$(PT_{fixed}=0.20; PT_{mobile}=0.33; \epsilon_{fixed}=-0.30; \epsilon_{mobile}=-0.50)$

	Baseline scenario (billion €)	Recommended approach (billion €)	Difference (billion €)
Change in termination revenues (cumulative)	-35	-66	-31
Change in voice revenues (cumulative)	-17	-33	-16
Change in total revenues (cumulative)	-52	-99	-47
Change in termination expenses (cumulative)	-35	-66	-31
Impact on Cash Flow / Profit (cumulative)	-17	-33	-16

*Table 3: Welfare implications*

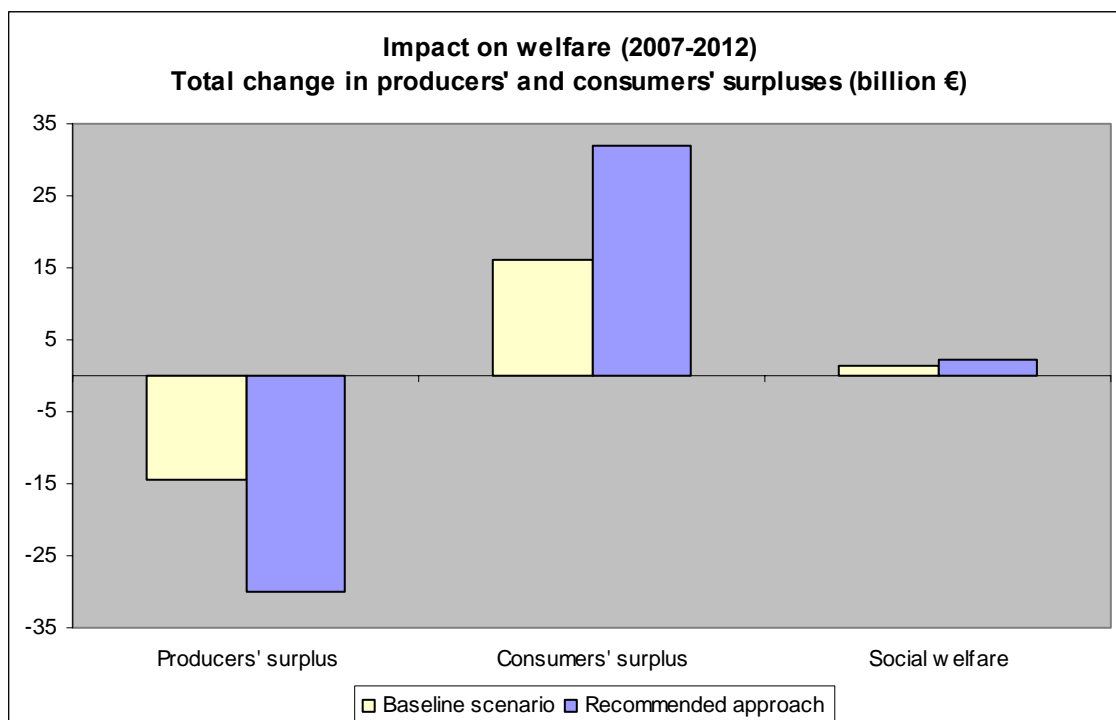
$(PT_{fixed}=0.20; PT_{mobile}=0.33; \epsilon_{fixed}=-0.30; \epsilon_{mobile}=-0.50)$

	Baseline scenario (billion €)	Recommended approach (billion €)	Difference (billion €)
Change in producers' surplus (cumulative)	-15	-30	-15
Change in consumers' surplus (cumulative)	16	32	16
Change in total / social welfare (cumulative)	2	2	1

<sup>57</sup> The table above clearly shows that termination is indeed a zero-sum game, i.e. any termination revenue losses do not disappear but will be transferred to another operator.

Chart 7: Welfare implications

( $PT_{fixed}=0.20$ ;  $PT_{mobile}=0.33$ ;  $\epsilon_{fixed}=-0.30$ ;  $\epsilon_{mobile}=-0.50$ )



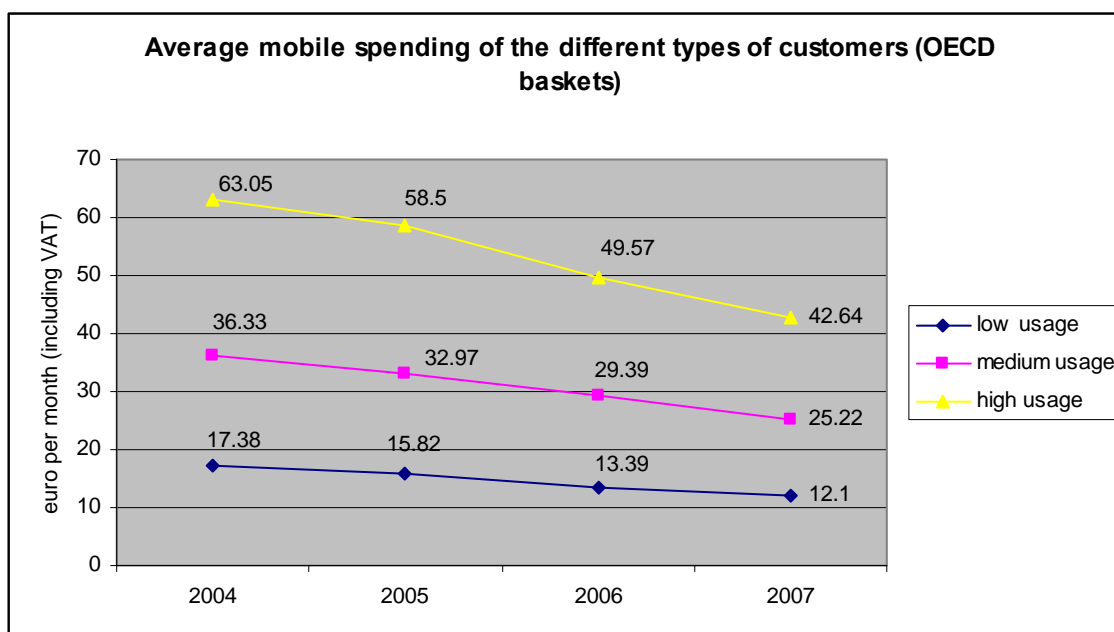
#### 4.3.4. Implications for prices and consumption

Termination charges, being wholesale transfers between operators, are not visible as such to end-users. The implications of termination charges to end-users need to be assessed in the light of their impact on retail prices, consumption levels and the overall dynamic effects (such as on product/service development) that result from intensified retail competition.

A reduction in wholesale termination rates can therefore be expected to result in an overall price reduction. Termination charges have decreased during the past years by over 10% on an annual basis. This coincided with an annual decrease of mobile retail prices<sup>58</sup> by around 11–12% between 2004 and 2007, while at the same time retail prices of fixed-to-mobile calls offered by the incumbent operators fell by more than 5% on a year-on-year basis. These developments seem to suggest that there is a significant positive correlation between the decrease in termination charges and retail prices.

<sup>58</sup> Measured by the average monthly spending of a hypothetical customer with different usage patterns (OECD 2002 baskets).

Chart 8: Average mobile spending of the different types of customers (OECD)



Source: 13<sup>th</sup> Progress Report

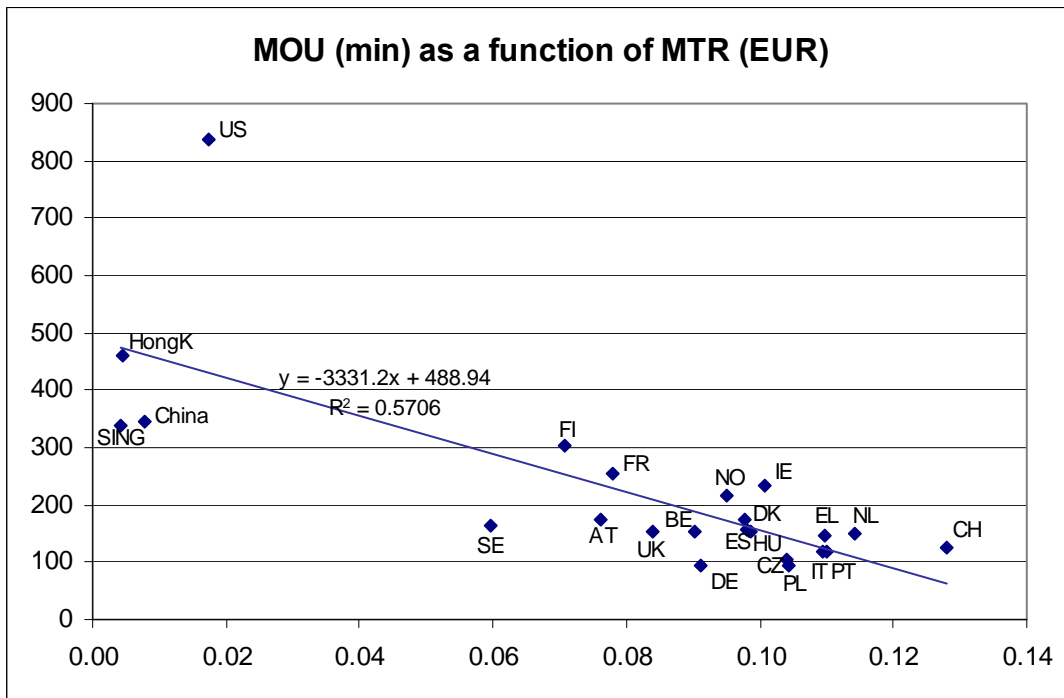
Some argue that the need for regulation of MTRs may be obviated as the prices of outgoing retail calls are linked to the wholesale prices for termination of incoming calls. For example, it has been suggested that if mobile operators increase their termination rates above cost, these gains would be competed away through reduced retail charges for subscription and outgoing calls. Similarly, it may be argued that lower termination charges may result in higher retail charges for subscribers. That outcome is known as the “waterbed effect”. On that basis, it may be argued that cost-based regulation of MTRs may be unjustified.

The overall development of termination rates and retail prices as indicated above, however, does not seem to support the conclusion that reductions in termination rates would lead to increases in retail prices, as suggested by the waterbed effect. In addition, in countries with low termination rates, retail prices are frequently lower and consumption levels higher than countries with higher termination rates. For example in the US, the average price per minute is about 50% of EU levels while the US ARPU is about 45% higher than in the EU. The figures below further demonstrate a negative correlation between the level of termination rates and the usage of mobile phones and a positive correlation between the level of termination rates and the ARPM. It can also be seen, however, that the ARPU does not correlate with the level of MTRs. It is rather determined by the intensity of usage and the retail price level.

This would suggest that given the higher usage and significantly lower RPM observed in certain countries where termination rates are much lower than in the EU, there would appear to be scope for further reductions in termination rates without this impacting negatively on end-user prices as the waterbed effect would suggest. In fact, the evidence presented below would suggest the contrary, i.e. that retail prices may be expected to decrease and usage to increase in the presence of lower termination rates.

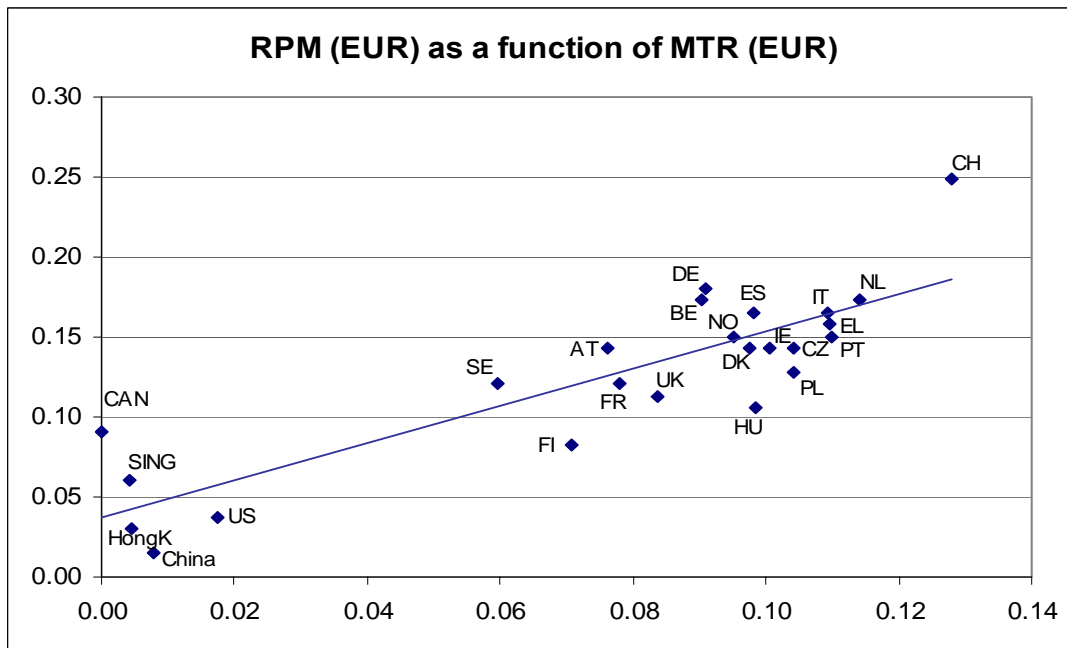


Chart 9: Relationship between minutes of use and mobile termination rates



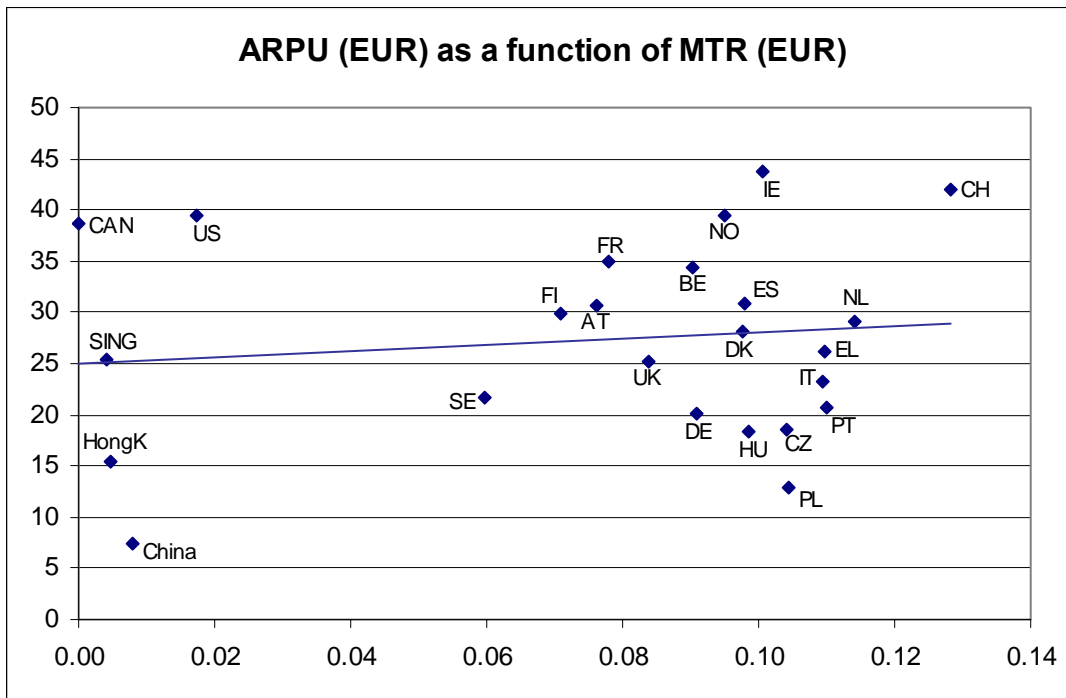
Source: Merrill Lynch Data, Q4 2006

Chart 10: Relationship between average revenue per minute and mobile termination rates



Source: Merrill Lynch Data, Q4 2006

Chart 11: Relationship between average revenue per user and mobile termination rates



Source: Merrill Lynch Data, Q4 2006

Notwithstanding these trends, however, it is still possible for a waterbed effect to be in operation even if retail prices are falling in absolute terms. An absolute price reduction may be attributable to reductions in other cost types, whereas a waterbed effect resulting from termination rate reductions could have the effect of slowing the pace of that absolute decline or of making mobile phone services more expensive for certain categories of phone users. Thus, it is important to consider the possibility of any waterbed effect which might follow from termination rate reductions under the recommended methodology.

Some regulators which have considered the possibility of a waterbed effect have concluded an ‘incomplete’ effect. Ofcom, for example, has noted that if the waterbed effect were complete, this would imply that mobile profits would be invariant to the level of the termination charge as any excess termination profits would simply be passed through to consumers and *vice versa*<sup>59</sup>. In such a scenario mobile operators would be unconcerned about the level of termination charges. This is, however, clearly not the case.

The existence or not of a waterbed effect and the magnitude of any such effect has been subject to considerable debate. Valletti and Genakos<sup>60</sup> examine empirically the existence and magnitude of this effect in the mobile telephony industry and find that the waterbed effect is strong but not full. They find that the waterbed effect is stronger the more intense competition is in markets with high levels of market penetration and high termination rates. Notwithstanding this finding, there is still considerable debate over the intensity of competition in mobile retail markets such that mobile operators would be compelled to transfer their excess termination profits to consumers as lower prices and *vice versa*. In that

<sup>59</sup> Ofcom, June 2004, Statement on Wholesale Mobile Voice Call Termination, [http://www1.bsc.org.uk/consult/condocs/mobile\\_call\\_termination/wmvct/?view=Welsh](http://www1.bsc.org.uk/consult/condocs/mobile_call_termination/wmvct/?view=Welsh).

<sup>60</sup> Genakos, C. and Valletti T., 2007, “Testing the waterbed Effect in Mobile Telephony”, Centre for Economic Performances (CEP), CEP Discussion Paper No 827.

regard, Ofcom notes that in a market with a limited number of competitors and significant entry barriers (due to spectrum scarcity), it is unlikely that this pass-through would be complete. CERNA–Warwick–WIK (2003) further noted in their study that higher termination fees were not all being returned to consumers in the form of lower outgoing call prices.

When looking at the simple interaction between MTRs and market saturation, Valletti and Genakos also find that the waterbed effect is lower in higher-penetration markets. They note that intuitively low-penetration markets usually consist of heavy users for whom the waterbed effect is expected to be strong but as the market becomes more saturated, this typically involves attracting marginal users who make and receive very few calls, and the waterbed effect decreases. Valletti and Genakos further examine whether there is a difference in the waterbed effect between pre-paid and post-paid users and find that “*pre-paid customers essentially are unaffected by regulation, whereas monthly subscribers bear the bulk of the price increases*” although they do find evidence of a waterbed effect over the long-run. This would tend to suggest that if a waterbed effect applies it is initially less likely to apply to marginal pre-paid users and more likely to apply to heavier post-pay users, implying that mobile penetration rates may be less affected. Over the longer term, the dynamic effects of enhanced competition should also be expected to preserve high penetration rates in the EU, as is discussed further below.

Furthermore, even if the waterbed effect exists, it has to be noted that termination rates which are above efficient costs will have dynamic impacts which may lead to market distortions and welfare-reducing effects, in particular in the light of the possibilities for fixed and small operators to compete with larger mobile operators. Arguments regarding a waterbed effect in mobile markets imply a mark-up above cost, thus raising the costs faced by fixed operators and smaller mobile operators with large traffic outflows to other more established mobile networks. There is economic literature which indicates that a regulatory policy which is focused on waterbed effects may be damaging to competition and may reduce welfare. This is due to the fact that above-cost termination rates and on-net/off-net price differentials may create so called tariff-mediated network externalities making large mobile networks more attractive to consumers than smaller mobile networks and also fixed networks.

It has been indicated in recent economic literature that, in the presence of call externalities<sup>61</sup>, mobile networks have strong incentives to implement on-net/off-net price differentials due to: (i) high mobile-to-mobile termination charges which exceed marginal costs; and (ii) their strategic incentives to reduce the number of calls that subscribers on rival networks receive, reducing the attractiveness of rival networks, and hence their ability to compete. This theory suggests that mobile call termination charges above marginal costs can lead to permanent net payments by smaller networks, because, even with a balanced calling pattern, traffic between networks will not be in balance. This effect is reinforced by call externalities since off-net prices set above costs imply that smaller networks receive relatively fewer calls. There is also empirical evidence on tariff-mediated network effects which support the theory that strategically-induced networks effects can be a profitable strategy for attracting and maintaining market share and for pre-empting entry or retarding the growth of smaller

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<sup>61</sup> A call externality refers to the fact that it is not only the calling party but also the called party which obtains a benefit from receiving a call. The externality arises in this instance because under the CPP principle such benefits accruing to the called party are not taken into account, but only the calling party is charged for the call.

networks<sup>62</sup>. Even if the Recommendation does not propose to set termination rates at the level of marginal cost (or below as suggested by some of this literature), by excluding a mark-up above pure LRIC it addresses the issue of network effects and thereby contributes to a level playing field between all mobile and fixed operators, thereby bringing benefits from enhanced competition to end-users.

In addition, while the Valletti/Genakos empirical study provides a useful insight into the possible role of waterbed effects, it is also very important to take a dynamic perspective of the positive competition effects resulting from the recommended methodology. As noted above, reducing termination rates to the level of efficient cost should significantly reduce the payments made by fixed operators for fixed-to-mobile calls and for smaller mobile operators which are net senders of call traffic to other mobile networks. This should facilitate more intense price competition from these operators which would be better positioned to provide competitive offers for off-net mobile calls. Increased competitive pressure resulting from the creation of a more level playing field for the provision of mobile calls will help ensure a continued downward momentum for overall retail prices, thereby off-setting any potential short-term waterbed effects.

#### 4.3.5. Implications for product/service development

It is argued that above-cost termination rates create a floor to retail pricing. Where termination rates exceed an efficient level of cost they tend to make it difficult for carriers to offer flat-rate calling plans due to the uncertainty regarding the likely level of customer take-up of such plans<sup>63</sup>. As noted by Marcus (2004), in the presence of a higher cost base “[a] flat rate plan would have to address many business risks, including the prospect that the plan might attract large numbers of self-selected customers who had significantly above-average usage patterns”. High per-minute termination costs thus impose an artificial per-minute cost structure on carriers, which will likely be passed through to customers in the form of per-minute retail rates. According to some commentators, such usage-sensitive rates would likely reduce the use of the network below efficient levels<sup>64</sup>. WIK–Consult (2008) notes further that consumers appear to have a strong preference for flat-rate retail pricing arrangements (or banded flat-rate plans where customers enjoy a flat rate so long as they do not exceed a maximum number of minutes) due to their predictability and relative simplicity. Moreover, consumers tend to respond to flat-rate plans by making extensive use of the service in question. As communications services are typically characterised by significant upfront costs and low marginal costs, such flat-rate plans can be efficient for both the consumer and the provider and promote a higher utilisation of the service.

CERNA–Warwick–WIK (2003) further notes that retail bucket-pricing has been used largely by mobile network operators in the US and that high MTRs had prevented such kind of offers

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<sup>62</sup> See Birke, D. and G.M.P. Swann, 2006, “Network Effects and the Choice of Mobile Operator”, *Journal of Evolutionary Economics*, 16(1-2), 65-84.

<sup>63</sup> See J Scott Marcus, July 2004, “Call Termination Fees: The U.S. in global perspective”, presented at the 4th ZEW Conference on the Economics of Information and Communication Technologies, Mannheim, Germany. See also Patrick DeGraba, December 2000, “Bill and Keep at the Central Office As the Efficient Interconnection Regime”, OPP Working Paper no. 33, “... because carriers will view traffic-sensitive interconnection charges as raising their marginal costs, they will tend to raise their traffic-sensitive retail prices, even though the underlying cost structure of the networks may be non-traffic-sensitive”.

<sup>64</sup> DeGraba (2000).

evolving in Europe as the more minutes an operator sells, the more termination fees it would have to pay to competitors as a result.

DeGraba (2000) also notes that the ISP market illustrates the importance of rate structure on usage. When AOL changed from usage-sensitive rates to a flat charge for unlimited usage in 1996, the number of customers and usage per customer rose dramatically and other competitors soon followed. Similarly, the introduction by US mobile operators of pricing plans that include buckets of minutes appears to have contributed significantly to the growth in wireless usage. The FCC also notes the Digital One Rate plan, introduced by AT&T Wireless in May 1998, as one notable example of an independent pricing action that altered the market to the benefit of consumers<sup>65</sup>. Today all of the nationwide operators offer some version of a national-rate pricing plan according to which customers can purchase a bucket of minutes to use on a nationwide or nearly-nationwide network without incurring roaming or long-distance charges.

Reducing termination rates to the incremental cost of providing this service should therefore provide operators with greater scope for offering various flat-rate packages as a lower wholesale cost will reduce their exposure in the event of a significant increase in usage at the retail level. While the change in customer usage patterns and any associated change in ARPU will of course depend on the level of customer elasticity, experience from other countries provides a strong indication that a lower price will lead to notably higher utilisation. Merrill Lynch data indicates, for example, that despite service-based revenue per minute being as low as \$0.05 in the US in 2006, ARPU was almost 50% higher than that in the EU due to minutes-of-use being significantly higher. This suggests that lower retail prices tend to be associated with significantly higher usage.

Furthermore, above-cost termination rates may pose a barrier to the development of innovative bundles of services involving combinations of fixed and mobile services. Fixed operators are also constrained in their ability to offer flat rates for mobile call services as part of their low-cost flat-rate packages involving fixed-voice or data services due to MTRs currently being several times (almost nine to ten times) that of FTRs. In addition, where off-net termination charges are set at a level above efficient cost, smaller mobile operators may experience difficulties competing with larger mobile operators on the basis of flat-rate packages or bundles due to a significant proportion of their mobile traffic being destined for off-net<sup>66</sup>.

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<sup>65</sup> See FCC, September 2006, Eleventh Annual Report to Congress on the State of Competition in the Commercial Mobile Radio Services (CMRS), FCC 06-142. The FCC CMRS reports are available from: [http://wireless.fcc.gov/index.htm?job=cmrs\\_reports](http://wireless.fcc.gov/index.htm?job=cmrs_reports)

<sup>66</sup> The differing evolution of flat-rate offers involving off-net calls in the EU and US may be observed from a brief review of different packages advertised by a mobile operator (in August 2008) which is active both mobile markets. For example, according to T-Mobile's website its most popular plan in the US was "myFaves300" which, for a price of \$39.99 (approx. €26.95) per month, included unlimited calls to five selected numbers at any time of the day regardless of the network, an additional 300 "Whenever" minutes and unlimited night and weekend calls. Additional minutes were charged at a rate of \$0.40 (approx. €0.27) per minute. For its German customers T-Mobile advertised (for a basic monthly price of €29.95 per month) an offer called "Max M" which included free anytime calls to the fixed network and to T-Mobile's network but which charged an all-day rate of €0.29 for calls to other German mobile networks. In the UK, T-Mobile advertised for £25.00 (approx. €31.50) per month an offer called "Combi 25" which included 300 minutes and 600 texts which could be used at anytime and to any mobile network. Once the inclusive minutes and texts were used, an additional rate of 30p (approx. €0.38) per minute would apply. This simple comparison helps to illustrate the difference

Reducing termination rates to the level of efficient cost should help reduce the per-minute costs faced by fixed operators and smaller mobile operators, thereby providing a more level playing field between all operators and enabling them to provide more innovative retail offers such as flat-rate offers or bundles involving various combinations of fixed and mobile calls services.

According to some commentators, large financial transfers from fixed to mobile networks as a result of the historically high levels of MTRs serve to injure fixed customers and their operators and may have damaged competition in the fixed market. CERNA–Warwick–WIK (2003) estimates the scale of the fixed transfer over the years 1998–2002 at €19 billion for France, Germany and the UK. WIK–Consult (2008) also estimates the financial transfers from fixed to mobile networks to have been about €10 billion in Germany for the period 1998–2006 and notes a possible distortion of network evolution in favour of mobile networks leading to a possibly faster decline of fixed network subscriptions and usage than would otherwise be the case. They note further that mobile operators may have some tendency to compete away some of these profits through promotional handset subsidies and other promotional incentives but they retain more than they return to customers.

Given that MTRs are still several times the level of FTRs in the EU, it may be expected that reducing MTRs to the level of efficient cost will also reduce the level of transfers from fixed to mobile networks with consequent benefits for fixed consumers. Fixed consumers will no longer subsidise the mobile market when making fixed-to-mobile calls. This may also be expected to provide a more balanced regulatory environment for all operators serving to promote the most efficient investments in both fixed and mobile networks. For example, this more stable and balanced regulatory environment will clearly be of utmost importance in maintaining the pace of investments in NGNs in Europe. Such networks will allow higher bandwidths and more efficient provision of multiple services to be provided over a single infrastructure to the ultimate benefit of European consumers.

#### 4.3.6. *Implications for pre-paid customers*

Pre-paid mobile subscriptions constitute on average around 60% of all mobile subscriptions in the EU. This average number conceals wide differences in the size of the pre-paid segment in different individual countries. For instance, in Italy 90% of all subscribers in 2007 were pre-paid subscribers, whereas the percentage in Finland was only 5%<sup>67</sup>. Even if pre-paid customers are often perceived as low-usage customers, this does not hold true for the pre-paid segment as a whole. In general, looking at EU countries there is no strong negative correlation between the size of the pre-paid segment and ARPU<sup>68</sup>.

Despite the above general observation, it is true that a low-usage customer is more likely to subscribe to a pre-paid than to a post-paid scheme<sup>69</sup>. Furthermore, certain very low-usage

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between flat-rate plans offered in the US versus those offered in Europe in terms of the range of networks and/or number of free minutes which are included.

<sup>67</sup> Based on data from the 13<sup>th</sup> Progress Report.

<sup>68</sup> Source: Merrill Lynch data. In Ireland, for example, the proportion of pre-paid subscriptions is approx. 74% of all active mobile subscriptions while a ComReg report for Q4 2007 (using data from the Yankee Group) estimated it to have the highest mobile ARPU (€44.33 per month) across 16 EU countries examined (ComReg 08/22, March 2008, Irish Communications Market Quarterly Key Data Report).

<sup>69</sup> For example, according to Belgacom Mobile's 2007 annual report, the ARPU created by post-paid customers was around €68 in 2006, while ARPU for pre-paid customers was around €20. The corresponding figures for Mobistar were €57.5 and €17.5, respectively (Mobistar Analyst Presentation Full Year Results 2006).

customers typically receive more calls than they make. Therefore, it is argued that termination revenues (above the level of cost) are important especially for operators having a large proportion of very low-usage pre-paid customers. If termination rates are reduced to the level of efficient costs, it is argued that a portion (albeit marginal) of these low-usage pre-paid customers may not be profitable any more. It is further argued that reductions in MTRs would make it difficult to maintain current pre-paid offers and it may be necessary to cut handset subsidies by a certain amount, and/or introduce certain minimum commitment requirements in retail pre-paid packages<sup>70</sup>.

However, this represents a relatively static viewpoint of competition and customer behaviour in a network industry<sup>71</sup>. The above line of argument implies that operators whose customer base consists largely of low-usage pre-paid subscribers are subsidised by other networks, including fixed networks, and finally by the subscribers of those networks. Given that this may result in higher prices for certain end-users and raise possible allocative-efficiency concerns, setting MTRs above the level of efficient costs in order to serve very low-usage customers does not seem to be justified due to the various market distortions it is likely to engender. This holds unless the presence of 'network externalities' can be demonstrated to the extent that such a cross-subsidisation would increase overall consumer welfare (fixed and mobile) and that such externalities would outweigh any positive call externalities which might arise.

A network externality is created if the addition of a marginal subscriber to a network may also be of value to other subscribers. For example, other fixed and mobile subscribers might derive a benefit from being able to contact and be contacted by this additional subscriber. The externality arises because the benefit to other subscribers is not taken into account when the decision of whether or not to join a network is made. Thus, a sub-optimal number of customers may choose to become network subscribers. Consequently, it has been argued that it may be appropriate for wholesale termination charges to include an externality mark-up above cost which may then be used by operators to subsidise the addition of marginal subscribers to their networks with associated benefits for all consumers calling those networks.

However, this argument relies on a number of assumptions including the existence of strong retail competition and a pass-through of the wholesale termination mark-up to marginal subscribers at the retail level, rather than being retained by the relevant operator as excess profits. Furthermore, this argument in favour of a network externality mark-up is also based on the hypothesis that customer penetration levels are not yet near saturation levels as otherwise network externalities would be largely exhausted. This is clearly not the case in the EU given that mobile penetration has already reached a high level in the vast majority of Member States. Thus, permitting mobile operators to charge other networks, including fixed networks, termination rates which are above an efficient level of cost does not appear justified on the basis of perceived consumer benefits deriving from network externalities at this stage of market development. Indeed, in view of the penetration levels which currently exist in a

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<sup>70</sup> It may also be argued that operators would try to switch customers to post-paid schemes. On this point, however, it has to be noted that mobile operators, independently of the level of termination rates, try to move customers to post-paid schemes to stabilise cash-flows and reduce churn. For example, BASE announced in its Q3/2007 report increased activity in marketing post-paid formulas. See [http://www.base.be/01/MyDocuments/PR\\_20071030\\_Q3\\_2007\\_Results\\_EN.pdf](http://www.base.be/01/MyDocuments/PR_20071030_Q3_2007_Results_EN.pdf)

<sup>71</sup> It is also based on the assumption that these customers receive a substantial proportion of their incoming calls from other networks (i.e. incoming off-net calls) which in the presence of network effects might not necessarily hold.

majority of Member States, mobile operators are more likely to concentrate their offers, such as handset discounts, on enticing existing customers away from their competitors rather than necessarily increasing the overall number of mobile subscriptions. This is discussed further below.

Another argument put forward is that lower termination rates may also make it more difficult for operators to retain existing marginal- or low-spending subscribers on their networks. Comparisons are drawn in that respect with the US which has lower penetration rates and is claimed to service a smaller proportion of low-spending consumers than in the EU. It is suggested that mobile penetration in Europe might fall closer to US levels if termination rates are regulated on a pure LRIC basis. However, given current levels of market penetration in the EU, incentives to create network effects, and the fact that the regulated termination rates would continue to cover the incremental cost of this service, it is not clear why operators would not be capable of internalising any such access externalities going forward or why mobile penetration levels would fall as a result.

According to the 13<sup>th</sup> Progress Report, the average EU penetration rate was already around 112% in 2007, and above 100% in 21 Member States<sup>72</sup>. Network operators have incentives to have as many subscribers on their networks as possible because subscribers benefit from being able to call other subscribers located on the same networks as themselves (i.e. network or club effects are generated). Revenue-generating customers benefit from being able to call more users and are more likely to stay on the network and make calls when those customers are available. The incentive for operators to create communities of interest suggests mobile network operators would seek to retain their pre-paid customers, even if their termination rates were regulated on a pure LRIC basis. Thus, it may be expected that mobile network operators would seek to retain their pre-paid customers on their networks even if they were no longer subsidised by above-cost termination rates paid by customers of other networks. This is also borne out by market trends in the US where penetration levels are steadily increasing. Merrill Lynch estimated US mobile penetration at the end of 2006 at approximately 77%<sup>73</sup>, up from 70% at the end of 2005<sup>74</sup>. The FCC estimated that, at the end of 2007, US mobile penetration was at approximately 86% of the total US population, up from 80% in 2006<sup>75</sup>.

According to the FCC 12<sup>th</sup> CMRS report, some analysts attributed this high subscriber growth to the attractiveness of innovative service models, particularly prepaid options. As one analyst wrote, “*Our survey suggests that prepaid is playing a major role in growing US wireless penetration*”<sup>76</sup>. The FCC’s 13<sup>th</sup> CMRS report further notes an increasing focus by mobile operators, and in particular mobile virtual network operators, on pre-paid plans. The report notes that in some cases operators are tailoring their offerings to suit segments of the market that do not want or cannot get a traditional cellular plan, particularly the youth market. Crandall and Sidak (2004) also found that “...[M]obile penetration in Canada and the United States will likely equal the penetration rates of CPP countries in the near term ...”<sup>77</sup>. The

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<sup>72</sup> Since the time of writing, the 14<sup>th</sup> Progress Report has been published which shows that the average EU mobile penetration rate was at 119% as of October 2008.

<sup>73</sup> FCC, February 2008, 12th Annual CMRS Competition Report, FCC 08-28.

<sup>74</sup> FCC 06-142.

<sup>75</sup> FCC, January 2009, 13th Annual CMRS Competition Report, DA 09-54.

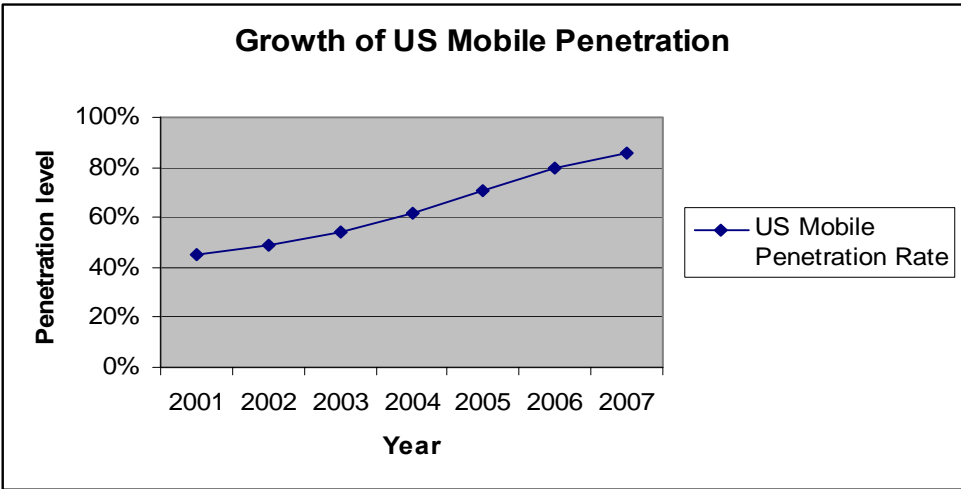
<sup>76</sup> Simon Flannery *et al.*, Jan. 17 2007, “Robust Wireless Quarter as Prepaid Surges”, Morgan Stanley, Equity Research, at 13. As reported in FCC 08-28.

<sup>77</sup> Sidak, J. Gregory and Crandall, Robert, 2004, “Should Regulators Set Rates to Terminate Calls on Mobile Networks?” Yale Journal on Regulation, Vol. 21, <http://ssrn.com/abstract=462041>.



below graph indicates the pace of increase in mobile penetration in the US over the period 2001-2007.

Chart 12: Growth of US mobile penetration



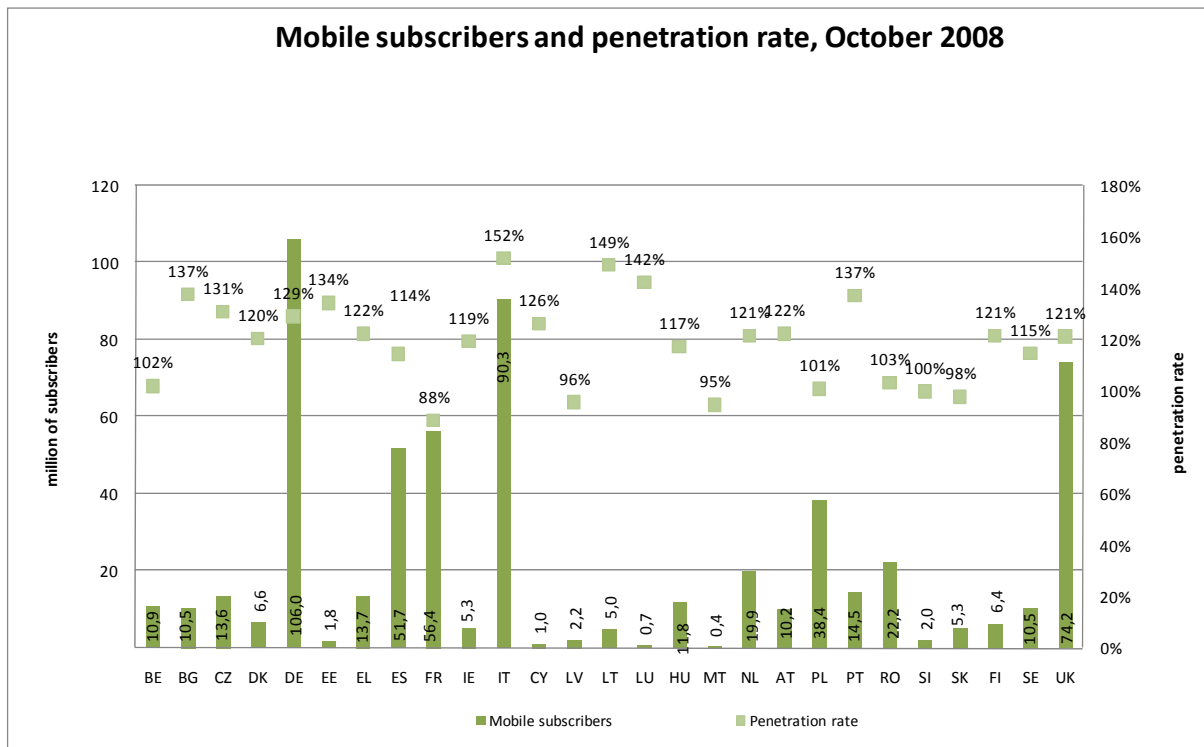
Source: Federal Communications Commission estimates

This steady increase in penetration levels in the US in a situation of lower termination rates and retail prices suggests that once operators attract subscribers to their networks they will still have incentives to retain and grow that customer base so as to create communities of interest for their existing subscribers. Operators may therefore be expected to internalise this externality in the absence of a mark-up above cost<sup>78</sup>.

Furthermore, while the charging structure at retail level might be adjusted in order to reflect changes in the charging structure at wholesale level, it is important to consider a dynamic perspective of possible changes in customer behaviour in response to the changes in the retail pricing structure, although there are of course difficulties in trying to make predictions about the likely nature of any such changes. For example, it is argued that operators may have to reduce handset subsidies in order to offset the reduction in revenues accruing to lower-spending customers. However, penetration levels in countries such as Italy and Finland are high despite handset subsidies having been restricted in both countries in the past.

<sup>78</sup> This is further illustrated by the case of India as indicated by Marcus (2007). In 2003 India introduced a CPNP regime but implemented unusually low fixed and mobile termination rates of just 0.0007 USD per minute. The number of subscribers went from some 13 million at the beginning of 2003 to more than 100 million subscribers by the middle of 2006. Furthermore, this dramatic surge was not at the expense of usage which nearly doubled over the same period.

Chart 13: EU mobile penetration



Source: Commission's 14<sup>th</sup> Progress Report

As noted above, according to the most recent Commission Progress Report, Italy in particular had 152% mobile market penetration as of October 2008. This suggests that handset subsidies are not a necessary inducement for marginal customers to join mobile networks. If more affordable calls are introduced for end-users as a result of the change in wholesale pricing, it may be expected that this would also encourage increased usage and take-up by consumers (the extent of any change in consumption would of course depend on the demand elasticity). This may in turn help offset any reduction in incoming termination revenues and help to continue funding marginal subscribers on their networks.

Furthermore, in an environment of high penetration, marginal customers may rely increasingly on second-hand handsets and handset subsidies may become less relevant. Alternatively, where such subsidies continue to be applied they may increasingly be used to fund switchers from competing mobile networks or to upgrade customers to 3G networks, rather than to attract marginal subscribers as such. According to Albon and York (2008), handset subsidies in the retail mobile market in Australia are not primarily directed at attracting new mobile subscriptions, rather a substantial proportion of the handset subsidies are directed at enticing existing customers to particular networks and to migrating customers to 3G<sup>79</sup>. As neither of these activities is directly aimed at retaining marginal subscribers for voice services, this would not appear to provide sufficient justification for recovering these subsidies via the regulated voice call termination charge. Furthermore, in its 2002/2003 inquiry into the UK mobile market, the Competition Commission noted that some of the customers benefiting from replacement handsets may need no inducement to be a mobile customer as they have already made the commitment to join a network and are reluctant to

<sup>79</sup> Rob Albon and Richard York, 2008, "Should mobile subscription be subsidised in mature markets", Telecommunications Policy 32, 294-306.

forgo the benefits of mobile ownership. For example, it noted information from O2 pointing out that handset upgrades at less than cost are only made available to post-pay customers who have already been subscribers for a certain period of time. It was further noted that handset subsidies are more likely to be available to existing customers if they are high spenders<sup>80</sup>. In its 2009 assessment of the UK mobile market, and specifically in disallowing a network externality surcharge which had been applied by Ofcom, the UK Competition Commission further noted this risk of ‘leakage’ whereby the surcharge is not fully passed through to the marginal customers for whom it is intended. Rather, it may be used to subsidise subscription for the more profitable, non-marginal consumers potentially leading to unnecessary upgrading or switching of handsets and/or excessive customer churn<sup>81</sup>.

Thus, the existing high penetration levels in the EU and the incentives for network operators to create communities of interest suggest mobile network operators would seek to retain their pre-paid customers, even in the event of a reduction in their termination rates. In the current environment of high penetration, handset subsidies or promotions may also be less relevant for attracting marginal customers. Furthermore, it is important to note that under the recommended approach the incremental cost of terminating calls to low-usage or marginal customers already on the networks will in any case continue to be financed through the regulated termination charge. Price and service innovations resulting from enhanced competition should also provide additional revenue opportunities for the sector, to the extent that these impact positively on customer consumption behaviour, which in turn may be reinvested across the broad spectrum of users.

#### 4.3.7. Overall dynamic implications for consumers

Although difficult to predict, it is important to examine the likely consumer impacts of the Recommendation from a dynamic standpoint. In that respect, and further to the above discussion, a number of key implications may be identified.

While some retail pricing adjustments may occur, MTR reductions can be expected to ultimately translate into lower retail prices for fixed and mobile calls. As the proposed approach implies aligning termination rates to efficient cost and operators will have strong incentives to compete for subscribers, suggestions of a strong waterbed effect seem unjustified. Furthermore, as discussed above in section 4.3.4 it is not expected that any initial price restructuring would negatively impact on subscription by low-end customers. Taking into account *inter alia* the incentives to create communities of interest and network effects, the operators will continue to have sufficient motivation to retain these customers on their networks. Indeed a stronger competitive dynamic should result in more affordable calls for both fixed and mobile end users, including low-end pre-paid users.

Reducing termination rates to the incremental or efficient cost of this service will also provide fixed and smaller mobile operators with greater scope for offering bundled or flat-rate packages including mobile calls and/or fixed-mobile converged services. A balanced regulatory approach to both fixed and mobile networks should also facilitate investments in the fixed sector such as in NGNs which would yield important benefits to consumers in terms of high-bandwidth services. Price and service innovations in turn pave the way for increased

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<sup>80</sup> UK Competition Commission, 2003, p. 240.

<sup>81</sup> UK Competition Commission, January 2009, *Hutchinson 3G UK Limited v Office of Communications* (Case 1083/3/3/07), *British Telecommunications plc v Office of Communications* (Case 1085/3/3/07), *Mobile phone wholesale voice termination charges, Determination*, [http://www.competition-commission.org.uk/appeals/communications\\_act/mobile\\_phones\\_determination.pdf](http://www.competition-commission.org.uk/appeals/communications_act/mobile_phones_determination.pdf)

customer usage<sup>82</sup>, providing additional revenue opportunities for the operators and thereby reinforcing the financial solidity of the sector.

The recommended approach is consistent with the interests of all European consumer groups, including low-spending or marginal consumers, and will continue to preserve operators' incentives to retain these customers on their networks.

## **5. PROCEDURAL ISSUES**

### **5.1. Impact Assessment Board**

The present Staff Working Paper was examined by the Impact Assessment Board (IAB) which issued its opinion on the quality of the assessment on 24 November 2008. The IAB considered the document to be well-written, providing a good overview of the rationale for the Recommendation and its possible impacts. The IAB's key recommendations for improving the paper may be summarised as follows.

The IAB noted that the paper should present the main features of the recommended methodology, including the treatment of common costs and definition of an efficient operator, and highlight any differences between the Commission's previous and current views on the relevant methodology. According to the IAB, the paper should also describe more clearly the current and expected take-up of the Commission's methodology by national regulators and substantiate the expected MTR reduction of 70%. It should also indicate to what extent differences in termination rates can be explained through methodological differences and what part through national specificities or objective cost differences between Member States. The IAB further recommended enhancing the analysis of the dynamic impacts on product development and competition and setting out more clearly the value-added by EU action. It also suggested assessing the risk of a waterbed effect more conclusively. The IAB further recommended the inclusion of a section on evaluation and monitoring arrangements, a summary of the outcomes of the public consultation with stakeholders, as well as examples of what the Recommendation would mean for operators in different stylised situations.

The IAB's recommendations were incorporated into the Staff Working Paper. As regards an overview of the main elements of the recommended methodology, a summary of its key features has been included in section 3.3 (in addition to the description given in the Recommendation and accompanying Explanatory Note). An overview of previous Commission comments on costing methodologies in termination markets is also included in this section. This illustrates how the Recommendation is a consolidation and formalisation of established efficient costing principles as already articulated by the Commission in the context of the Article 7 consultation procedure.

In relation to the anticipated take-up of the Recommendation by national regulators, this is now elaborated in an additional section on evaluation and monitoring arrangements (section 5.3) where the basis for implementing the Recommendation (Article 19 of the Framework Directive) is further highlighted as is the Commission's ongoing guidance role under Article 7 of the Framework Directive. In terms of the basis for the modelled MTR reduction of 70%, this has been further explained in section 4.2. In that respect, it is difficult to predict the precise magnitude of any change in termination rates, although a more rigorous application of the efficient cost concept should yield reductions in excess of the more gradual glide paths applied by national regulators to date. Additional justification for the timeframe for reducing

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<sup>82</sup> The magnitude of this response will of course depend on the demand elasticity.

termination rates to the costs of an efficient operator may be found in section 5.2. Furthermore, additional discussion of the extent to which differences in termination rates can be explained through methodology or rather relate to objective cost differences between Member States is included at the end of section 3.1. While it is noted that national specificities can certainly influence the level of termination rates, the magnitude of the differences currently observed across the EU cannot be solely explained on this basis and it appears that methodology plays a significant role.

The discussion of the dynamic implications of the proposed Recommendation for competition and consumers has been further expanded throughout sections 4.2 and 4.3. In particular, a detailed discussion of a possible waterbed effect is contained in section 4.3.4. Furthermore, a box summarising and addressing the key arguments raised during the public consultation has been included in section 4.2.3. These arguments are further addressed throughout the body of the Staff Working Paper, in particular in sections 3.3, 4.2.1, 4.2.2, 4.3.4, 4.3.5, 4.3.6 and 5.2, as well as in the Recommendation and accompanying Explanatory Note. As suggested by the IAB, Table 4 also includes some additional examples of what the Recommendation would mean for operators in different situations, although this is inherently difficult to predict and depends on the balance of traffic flows for the operators in question. In any event, it is anticipated that the dynamic implications of reducing termination rates to efficient cost levels should yield competitive and investment opportunities for all operators with consequent benefits for consumers.

## **5.2. Assessment of administrative/regulatory burden**

The timeframe proposed by the Recommendation for its implementation seeks to balance two key objectives. It seeks to set a transitional period long enough to provide regulators and operators with an appropriate degree of regulatory predictability and certainty allowing them to adapt to the new requirements, while ensuring that the competitive process delivers maximum benefits to consumers as soon as possible by applying a consistent approach to termination rate-setting and eliminating competitive distortions associated with above-cost termination rates.

Mobile termination charges were historically set at high levels while FTRs were set closer to the incremental cost of the service. While MTRs are on a downward trend as a result of regulatory intervention in the EU, regulators have tended to implement glide paths with a gradual rate of reduction towards the efficient level. This has delayed the true cost orientation of MTRs and in 2007/2008 they were still on average almost nine to ten times the equivalent fixed rate. As explained earlier, termination rates that are set above the costs of an efficient operator can give rise to competitive distortions between different networks and between operators with asymmetric market shares and traffic flows. Therefore, the longer the transitional period for the implementation of truly cost-oriented termination rates, the longer any competitive distortions are allowed to persist. It should also be noted that the Commission has clearly signalled its policy as regards the regulation of termination rates on numerous occasions to date both under the Article 7 procedure and by asking national regulators to work together towards a coherent cost-based approach to regulating termination rates. As the Recommendation is a consolidation of these established costing principles, a period of three years (i.e. until 31 December 2012) is considered a reasonable and proportionate timeframe for its implementation.

Furthermore, the Commission services recognise that there are non-trivial costs associated with developing cost models for setting wholesale termination rates. However, given that several national regulators have already implemented cost models for the calculation of

termination rates, implementing a bottom-up LRIC model based on current cost is not considered overly burdensome for these NRAs. In particular, a number of regulators already use a hybrid approach, i.e. a combination of top-down and bottom-up modelling. In the Recommendation, it is expressly foreseen that the results of a bottom-up model may be compared with those resulting from a corresponding top-down model to verify and improve the robustness of the results from the bottom-up approach. Thus, for these regulators, the anticipated administrative/regulatory burden of implementing the recommended approach is likely to be more contained.

In exceptional circumstances where an NRA is not in a position, in particular due to limited resources, to finalise the recommended cost model in a timely manner, the Recommendation allows NRAs to consider setting interim prices based on an alternative approach until 01 July 2014, provided that this approach would result in outcomes consistent with the Recommendation and generate efficient outcomes consistent with a competitive market. This is considered to provide sufficient time and flexibility to those less-resourced NRAs to enable them to implement the recommended approach over a reasonable period whilst also ensuring that the Recommendation achieves its key objectives, i.e. to increase the consistency and effectiveness of the regulation of termination rates across the EU. Where, however, it would be objectively disproportionate for those NRAs with limited resources to apply the recommended cost methodology after 01 July 2014, such NRAs may continue to apply an alternative methodology (provided that, as mentioned above, it would result in outcomes consistent with the Recommendation and generate efficient outcomes consistent with a competitive market) up to the date for review of the Recommendation, unless the body established for cooperation among NRAs and the Commission provides sufficient practical support and guidance to overcome this limitation of resources and, in particular, the cost of implementing the recommended methodology.

### **5.3. Monitoring of the adopted Recommendation**

In practice, monitoring already takes place in the context of the Article 7 procedure, under which an NRA has to notify its draft regulatory measures to the Commission. The Commission may make comments to the NRA concerned. The NRAs are subsequently required to take the utmost account of the comments of the Commission, in line with Article 7(5) of the Framework Directive. Once the Recommendation applies, the Commission will assess and, if necessary, comment upon any price regulation proposed for operators designated as having significant market power in the light of the Recommendation.

Furthermore, the legal basis for implementing the Recommendation may be found in Article 19 of the Framework Directive. This provision places an obligation on the Member States to supervise and ensure compliance by their NRAs with the Recommendation when carrying out their tasks.

The Commission services also issue each year a Communication entitled “Progress Reports on the Single European Electronic Communications Market”, conducted for the main telecommunications services, as part of their regular monitoring of the implementation of the Regulatory Framework in all Member States. This provides *inter alia* an annual overview of both fixed and mobile termination rates in the EU.

In addition, acting as an interface between the Member States and the European Commission, the ERG assists the Commission in consolidating the internal market for electronic communications networks and services, by *inter alia* issuing benchmarking reports on the application of the Regulatory Framework. Therefore, it can be expected that the ERG’s work

will also prove an effective tool for monitoring the implementation of the Recommendation in the Member States. Such frequently published international price comparisons provide the Commission with clear visibility over the development of termination rates at EU level while also providing an incentive to NRAs to seek to improve their country's performance relative to their international peers.

## **6. SUMMARY OF IMPLICATIONS OF THE RECOMMENDED APPROACH**

The following table summarises the key implications of the recommended approach for the regulatory treatment of fixed and mobile termination rates in the EU. It assesses these implications according to five main themes: implications for investment; promotion of competition; implications for consumers; administrative burden; and consistent regulatory practice.

Table 4: Summary of implications of recommended approach

	<p align="center"><b>Recommendation on the regulatory treatment of fixed and mobile termination rates in the EU</b></p>	<p align="center"><b>Additional considerations</b></p>
<p><b>Implications for investment</b></p>	<p><b>Pros</b></p> <ul style="list-style-type: none"> <li>– Yields price closer to marginal costs, results in a more efficient pricing structure sending efficient investment signals to operators</li> <li>– Where reductions in termination costs are passed through to retail level, increased usage provides revenue opportunity</li> <li>– More consistent and balanced regulatory environment between fixed and mobile networks facilitates efficient investments in fixed networks, such as development of NGNs and high bandwidth offerings</li> </ul> <p><b>Cons</b></p> <ul style="list-style-type: none"> <li>– Might lead to transitory reduction in wholesale revenues for some large operators which are net receivers of traffic. [Although may be off-set by lower termination expenses paid to other networks and/or increased revenues from an expansion of customer usage].</li> <li>– May imply need to change retail pricing structure</li> </ul>	<p><u><b>Expected implications for different operators</b></u></p> <p><b>Larger mobile operators</b> (e.g. &gt;20/30% market share)</p> <ul style="list-style-type: none"> <li>– Possible temporary reduction in wholesale revenues due to reduced revenues from incoming off-net calls, although depends on balance between termination revenues and expenses. Short-term losses may be offset by other revenue streams.</li> <li>– Increased competition from fixed and late entrant mobile operators should promote innovation in retail offers, providing additional investment incentives for all operators over medium-to-longer term.</li> </ul> <p><b>Small-to-medium-sized mobile operators</b> (e.g. &lt;20/30% market share)</p> <ul style="list-style-type: none"> <li>– Possible short-term revenue pressure for some operators in transition to efficient rates and elimination of asymmetries.</li> <li>– Benefits over medium-to-longer term from reduced termination payments for off-net calls at efficient cost level.</li> <li>– Level playing field and enhanced competition should provide additional revenue and investment opportunities.</li> </ul> <p><b>Fixed operators</b></p> <ul style="list-style-type: none"> <li>– Benefits from reduced payouts to mobile networks</li> </ul>



		<p>which offset any reductions in termination revenues for incoming calls.</p> <ul style="list-style-type: none"><li>- Level playing field and enhanced competition should provide additional revenue and investment opportunities for fixed operators, such as in the development of NGNs and high bandwidth offerings.</li></ul>
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<p><b>Promotion of competition</b></p>	<p><b>Pros</b></p> <ul style="list-style-type: none"> <li>– Reduces inefficient cross-subsidies between operators</li> <li>– More consistent and balanced regulatory treatment of fixed and mobile networks in support of increased fixed-mobile competition and bundled/convergent-type services</li> <li>– Reduces termination payments of net senders of call traffic and leads to more neutral cost signals between on-net and off-net traffic helping to create a more level playing field and facilitate increased competition between different operators</li> </ul> <p><b>Cons</b></p>	<p><b><u>Expected implications for different operators</u></b></p> <p><b>Larger mobile operators</b> (e.g. &gt;20/30% market share)</p> <ul style="list-style-type: none"> <li>– Expected to experience more intense competitive pressure from fixed and late entrant mobile operators and reduced incentives for significant on-net/off-net price differentials.</li> </ul> <p><b>Small-to-medium-sized mobile operators</b> (e.g. &lt;20/30% market share)</p> <ul style="list-style-type: none"> <li>– Improved competitive positioning due to reduced on-net/off-net price differentials and reduced cost of traffic imbalances vis-à-vis larger operators. Cheaper MTRs facilitate development of various bundled or flat-rate offers incorporating off-net mobile calls.</li> </ul> <p><b>Fixed operators</b></p> <ul style="list-style-type: none"> <li>– Increased ability to compete with mobile offers due to reduced payments for fixed-to-mobile calls. Cheaper MTRs facilitate development of bundled/convergent services</li> </ul>
<p><b>Implications for consumers</b></p>	<p><b>Pros</b></p> <ul style="list-style-type: none"> <li>– Facilitates development of innovative pricing structures such as flat-rate retail packages</li> <li>– Enhanced competition also promotes lower retail prices and facilitates increased customer usage</li> <li>– Enhanced competition facilitates development of innovative services such as fixed-mobile convergent services/bundled offers</li> <li>– More consistent and balanced regulatory environment between fixed and mobile networks facilitates efficient investments in fixed networks, such as development of</li> </ul>	

	<p>NGNs and high bandwidth offerings</p> <ul style="list-style-type: none"><li>– Increased consumer choice due to the creation of a more level playing field between fixed and mobile operators</li></ul> <p><b>Cons</b></p> <ul style="list-style-type: none"><li>– Where any reductions in wholesale termination rates are not passed through to retail level, customers may not reap full benefits of approach. [However, enhanced competition should in any case benefit consumers in terms of efficient prices and innovative services]</li></ul>	
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<p><b>Administrative burden</b></p>	<p><b>Pros</b></p> <ul style="list-style-type: none"> <li>– As many NRAs have already developed a bottom-up model, adaptation of such models may not be too costly</li> <li>– Transition period until 31.12.2012 provides time for NRAs to put cost models in place and for operators to adapt their business plans while also ensuring timely delivery of consumer benefits</li> <li>– Extended period until 01.07.2014 provides flexibility for less well-resourced NRAs</li> </ul> <p><b>Cons</b></p> <ul style="list-style-type: none"> <li>– More difficult to implement in countries not having any bottom-up models</li> <li>– Implementation issues may arise in countries where glide paths already defined until end of 2011/2012</li> </ul>	
<p><b>Consistent EU regulatory practice</b></p>	<p><b>Pros</b></p> <ul style="list-style-type: none"> <li>– Leads to more consistent regulation of call termination markets across the Member States, particularly in the definition of the relevant increment and the associated costs which are taken into account</li> <li>– Greater consistency and regulatory predictability for operators active on a cross-border basis</li> <li>– Greater consistency and regulatory predictability for both fixed and mobile networks within Member States</li> <li>– Promotes efficient and balanced investment incentives and balanced investment incentives across the EU</li> </ul> <p><b>Cons</b></p>	

## ANNEX

### **Description of the computational model developed by the Commission services**

The starting point of the economic model used to assess the likely impacts of the recommended approach is the current situation prevailing on the mobile markets. The ARPM<sup>83</sup> across the EU in 2007 was approximately 12.2 eurocents<sup>84</sup>. Average termination rates were 9.67 eurocents/minute in 2007<sup>85</sup>.

Two scenarios of MTR reductions by 2011 are considered: i) the baseline scenario based on a rate of reduction of 40%; and ii) the recommended scenario based on a rate of reduction of 70%. In line with recent ERG statements, the baseline scenario assumes a reduction in MTRs similar to the one experienced in the 4 years preceding 2007 as a result of regulatory interventions. The second scenario considers a higher rate of reduction of 70%, as expected from the implementation of the recommended approach<sup>86</sup>. A further small adjustment of the rates is expected to happen in 2012 when the Recommendation takes effect. As a result, MTRs are estimated to be at the level of 5.5 eurocents/minute under the baseline scenario and 2.5 eurocents/minute under the recommended approach.

For the purposes of estimating the likely implications for fixed operators, the average fixed-to-fixed call charge was estimated to amount to approximately 5.5 eurocents/minute across the EU in 2007<sup>87</sup>. Assuming that 35% of the incoming fixed traffic is terminated at local level, while another 35% at single-tandem level and the remaining 30% at double-tandem level, the average FTR of incumbent operators was 0.84 eurocents/minute in 2007<sup>88</sup>. We further assume that, as a result of continuing with the currently applied regulatory approaches, incumbent FTRs are likely to fall by 5% under the baseline scenario and by 15% under the recommended approach by 2011<sup>89</sup> in equal proportions. A further small adjustment of the rates is expected to happen in 2012 when the Recommendation takes effect, resulting in an average FTR of 0.78 eurocents/minute under the baseline scenario and 0.71 eurocents under the recommended approach.

The impact of any termination rate reduction on retail prices under the baseline scenario and under the recommended approach needs to be identified.

A first important estimate concerns the magnitude or likely extent of the pass-through of the cost reduction to the retail level. As end-user charges are implicitly composed of origination

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<sup>83</sup> Because of the great variety of retail price plans and customer profiles, obtaining an estimate for actual retail prices is virtually impossible in a meaningful format. Average revenue gives an estimate of actual prices and how they are likely to evolve.

<sup>84</sup> Merrill Lynch, Q4 2007.

<sup>85</sup> 13<sup>th</sup> Progress Report.

<sup>86</sup> As noted above, the extent of any termination rate reductions will depend on the extent to which estimated termination rates might currently exceed the level of efficient cost, which could vary significantly between Member States. Thus, 70% is used for the purposes of this analysis as it is likely to be closer to the upper limit of any anticipated reductions in regulated termination rates.

<sup>87</sup> According to the 13<sup>th</sup> Progress Report, incumbent fixed operators offered a 3-minute-long local call for 13.5 eurocents, while for a 10-minute-long local call they charged 36.1 eurocents on average. A national call charge was approximately 25.8 eurocents assuming a 3-minute-long call, and 75.8 eurocents for a 10-minute-long call.

<sup>88</sup> Based on data from the 13<sup>th</sup> Progress Report.

<sup>89</sup> As for mobile services, the extent of any termination rate reductions will depend on the extent to which estimated termination rates might currently exceed the level of efficient cost, which could vary significantly between Member States and between incumbent and alternative operators. For the sake of simplicity, the computational model developed by the Commission services assumes that all incoming traffic is terminated on fixed incumbent operators' networks. (This implies that termination rate reductions and thus impacts on both the industry and on consumers are somewhat underestimated by the model).

and termination elements, the issue is to what extent end-user charges would reflect the termination rate reduction. For the purposes of comparison, we assume that a 0.33 pass-through rate best describes the link between MTRs and retail price developments. The level of pass-through is strictly linked to the level of competition observed in the market: the higher the competition in the market, the higher the pass-through will presumably be. The relatively low value of 0.33 considered as the baseline scenario is an estimation aimed at taking account of the current level of competition on the retail mobile markets which is, however, expected to intensify as a result of the further decrease in MTRs under the recommended approach<sup>90</sup>.

A second important estimate concerns the elasticity of demand that measures how a reduction of prices would affect the volumes consumed. Our conservative estimate (based on publicly available country- and/or company-specific third-party estimates<sup>91</sup>) is that the overall impact of a reduction in the retail price of mobile calls is likely to be approximately -0.50, i.e. 50% of the revenue losses resulting from the reduced prices will be offset by higher consumption. However, we have also analysed the results of the model assuming various pass-through rates (0.00; 0.66; 1.00) and different demand elasticity levels (0.00; -0.80; -1.00).

Assumptions have also been made concerning the demand elasticity of fixed-to-mobile calls and the extent to which fixed operators would likely pass their gains from lower MTRs to consumers originating fixed-to-mobile calls. Our conservative estimate for the price elasticity of demand (-0.30) reflects that fixed services are generally considered to be more inelastic than mobile services<sup>92</sup> and the lower level of pass-through (0.20) is intended to mirror the fact that competitive forces are generally considered to be weaker on the fixed markets than on their mobile counterparts. However, similarly for mobile services, the analysis has also been carried out assuming various pass-through rates (0.00; 0.50; 0.80) and different demand elasticity levels (0.00; -0.40; -0.60).

In order to obtain consistent results from the models for fixed and mobile services, and in the absence of information about the likely pass-through rate and demand elasticity of the individual fixed call services (i.e. in terms of different call directions), we assumed that both the extent to which end-user charges would reflect the termination rate reductions and the own price elasticity of demand for fixed call services equals that of fixed-to-mobile calls used for estimating the impacts of MTR reductions. Thus, a price elasticity of demand of -0.30 and a pass-through rate of 0.20 has been used in the most probable scenario. However, similarly for mobile services, the analysis has been carried out assuming various pass-through rates (0.00; 0.50; 0.80) and different demand elasticity levels (0.00; -0.40; -0.60).

Based on the above assumptions, the model first calculates the estimated retail prices at the different pass-through levels and the demand growth for the different types of call services assuming different price elasticities of demand. Following this, the relative (percentage) change in termination and voice revenues can also be computed which, together with the actual revenues for 2007, produces the estimated figures for nominal changes in termination,

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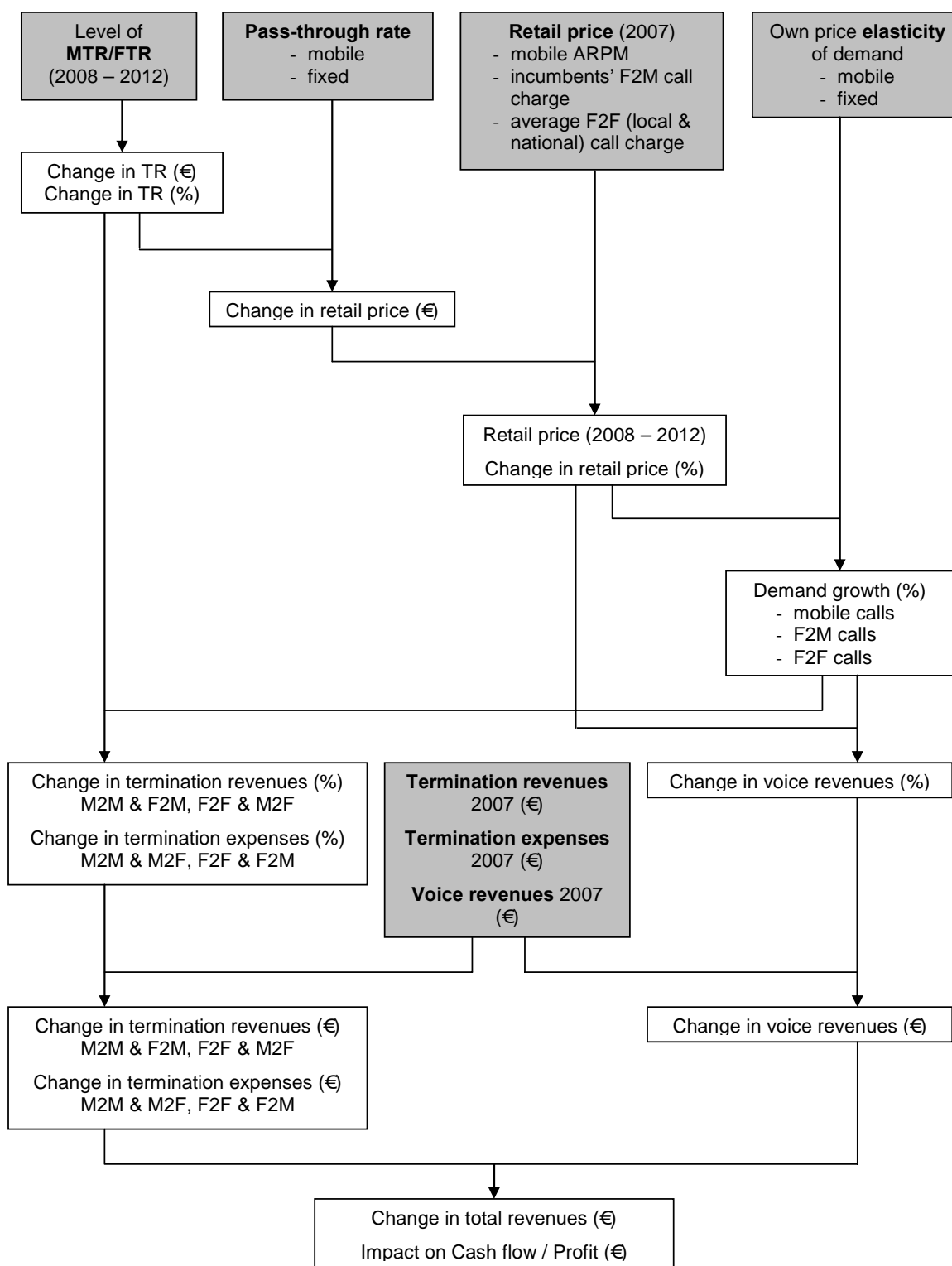
<sup>90</sup> The possible impacts for competition are further elaborated in the preceding sections.

<sup>91</sup> Most available studies have found relatively moderate price elasticities. Hausman, for example, finds an own-price elasticity for mobile-originated calls of -0.5 to -0.6 in the US. In a study on the Australian mobile market, Access Economics reports a price elasticity of -0.8. Summarising the results from different studies by DotEcon, Frontier Economics and Holden Pearmain in its 2003 report on the charges for terminating calls from fixed and mobile networks, the UK Competition Commission reports own-price elasticities for mobile calls ranging between -0.48 and -0.65.

<sup>92</sup> In its report on the charges for terminating calls from fixed and mobile networks the UK Competition Commission has also reported on own-price elasticities for fixed-to-mobile calls. Based on the different studies by DotEcon, Frontier Economics and Holden Pearmain, the elasticity of fixed-to-mobile calls ranged from -0.11 to -0.43. Access Economics estimated an elasticity level of -0.08 for the Australian market.

voice and total revenues for the following years. In order to obtain the proposed measures' impact on financial flows, the model estimates relative and absolute changes in termination expenses in a similar way. The following chart gives an overview of the structure of the model.

Chart 14: Structure of the computational model





### The results of the computational model under the conservative scenario

As outlined above, we considered that a modest estimate of the price elasticity levels and the pass-through rates would approximate the current situation in the EU and would best serve the purposes of making a conservative evaluation of the likely implications of the recommended methodology on industry and on consumers. Thus, an own-price elasticity of demand of -0.50 has been considered for mobile call services and -0.30 for fixed call services. Similarly, a value of 0.33 has been used for estimating the pass-through rate of mobile services and 0.20 for fixed services.

The model has revealed that, under the above assumptions, the mobile industry as a whole will not suffer significantly from the more comprehensive and harmonised approach recommended by the Commission. Although under the recommended approach mobile termination revenues would be approximately €30 billion lower between 2007 and 2012 than under the baseline scenario and there would be more than €15 billion less voice revenues generated during the same period, mobile operators' termination expenses would also be considerably lower under the recommended approach. This implies that the difference in the overall impact on the industry cash flow (and thus on profits, other things being equal) would be approximately €6 billion within 5 years when compared to the baseline scenario.

Table 5: Impact on mobile operators' revenues and profits

( $PT_{mobile}=0.33$ ;  $PT_{F2M}=0.20$ ;  $\epsilon_{mobile}=-0.50$ ;  $\epsilon_{F2M}=-0.30$ )

	Baseline scenario (billion €)	Recommended approach (billion €)	Difference (billion €)
Change in termination revenues (cumulative)	-35	-65	-31
Change in voice revenues (cumulative)	-17	-33	-16
Change in total revenues (cumulative)	-52	-98	-46
Change in termination expenses (cumulative)	-22	-42	-20
Impact on Cash Flow / Profit (cumulative)	-30	-55	-26

The model has further shown that, under the above assumptions, the fixed industry as a whole is likely to gain significantly from the more comprehensive and harmonised approach recommended by the Commission. Although revenue streams of fixed operators will not be affected significantly (decreases in revenues would be somewhat higher under the recommended approach than under the baseline scenario), termination expenses would be approximately €1 billion lower between 2007 and 2012 than under the baseline scenario. The change in termination expenses would in any case be much greater than the fall in revenues, implying that the overall impact on the industry cash flow (and thus on profits, other things being equal) would be positive. The cumulative growth in industry profits is estimated to be more than €10 billion higher under the recommended approach than compared to the baseline scenario.

Table 6: Impact on fixed operators' revenues and profits

( $PT_{fixed}=0.20$ ;  $PT_{mobile}=0.33$ ;  $\epsilon_{fixed}=-0.30$ ;  $\epsilon_{mobile}=-0.50$ )

	Baseline scenario (billion €)	Recommended approach (billion €)	Difference (billion €)
Change in termination revenues (cumulative)	0	-1	-1
Change in voice revenues (cumulative)	0	0	0
Change in total revenues (cumulative)	0	-1	-1
Change in termination expenses (cumulative)	-13	-24	-11
Impact on Cash Flow / Profit (cumulative)	12	22	10

The above assessment is aimed at calculating the revenue and profit impacts on the mobile and fixed industry as a whole. From a regulatory viewpoint, however, it is more important to measure the impact of the recommended approach on consumer welfare or on overall economic welfare than simply looking at financial transfers within the industry or between sectors. Thus, the model seeks to estimate the consequences for consumers as well, resulting from lower retail prices and increased usage. Finally, by estimating the net effect of the changes in consumer and producer surplus, the Commission services have also calculated the implications for economic / social welfare.

For a first impression of how consumers would be affected, one can make a simple comparison of the expected price movements and the resulting changes in traffic patterns. The calculations of the Commission services have shown that, assuming the recommended approach yields larger reductions in MTRs than the existing regulatory approach, both mobile retail prices and fixed-to-mobile call charges would fall by a larger degree under the recommended approach than when continuing with the current regulation. Data have also revealed that this would imply a higher growth in demand for mobile and fixed-to-mobile calls (being although very moderate for the latter under both scenarios).

Table 7: Implications of reductions in MTRs for consumers

$$(PT_{mobile}=0.33; PT_{F2M}=0.20; \epsilon_{mobile}=-0.50; \epsilon_{F2M}=-0.30)$$

	Baseline scenario	Recommended approach
Decrease in mobile prices (cumulative)	-11.3%	-19.4%
Decrease in fixed-to-mobile call charges (cumulative)	-0.1%	-0.2%
Increase in mobile traffic (cumulative)	6.0%	10.9%
Increase in fixed-to-mobile traffic (cumulative)	0.0%	0.1%

The implications for consumers of the recommended approach when applied to FTRs will be less significant than that relating to MTR cuts due to different market conditions and product characteristics. First of all, FTRs are already much closer to the deemed efficient cost level and thus, much more moderate reductions could be expected as a result of the recommended methodology. Further to this, the less intense competition on the fixed markets and the lower price elasticity of demand for fixed communications services lead to a lower level of pass-through from fixed operators to consumers implying that retail prices would only be slightly affected and thus demand growth for fixed voice calls would also lag behind its mobile counterparts. However, assuming that the recommended approach yields larger reductions in termination rates than the existing regulatory approach for fixed termination, fixed retail prices would fall by a larger degree under the recommended approach than when continuing with the current regulation and a higher growth in demand for fixed calls might be expected, as indicated in the table below.

Table 8: Implications of reductions in FTRs for consumers

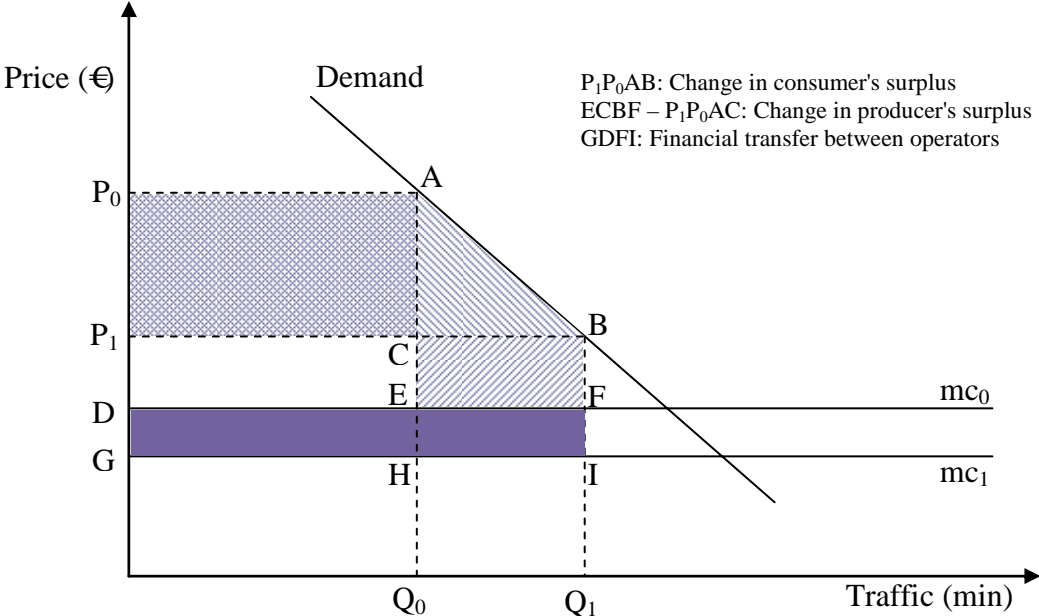
$$(PT_{fixed}=0.20; PT_{mobile}=0.33; \epsilon_{fixed}=-0.30; \epsilon_{mobile}=-0.50)$$

	Baseline scenario	Recommended approach
Decrease in fixed retail prices (cumulative)	-0.2%	-0.5%
Increase in fixed traffic (cumulative)	0.1%	0.1%

Increased traffic volumes due to lower retail prices lead to enhanced consumer surplus. In order to estimate the changes in consumer and producer surplus, the traditional microeconomic approach (Marshallian crossing) has been applied. The calculation of the different surpluses is based on the assumption that the demand curve is linear in the relevant price range. It has also been assumed that the marginal cost of a retail call equals twice the

efficient cost of call termination (which would prevail in the EU in 2012 under the recommended approach). This methodology implicitly assumes that the costs of origination and termination are similar<sup>93</sup> and that the marginal cost is stable (i.e. the marginal cost function is horizontal) within the different ranges of quantity.

Chart 15: Calculation of consumers' and producers' surplus (Marshallian crossing)



The growth in consumer welfare is significantly higher under the recommended approach than under the baseline scenario, however, the decrease in producer surplus (profits) would also be greater. Notwithstanding, the joint impact on the telecoms industry as a whole would result in a growth in social welfare, due to increased consumer welfare in excess of the negative change in producer surplus.

Table 9: Joint impact on the telecoms industry<sup>94</sup>

$$(PT_{fixed}=0.20; PT_{mobile}=0.33; \epsilon_{fixed}=-0.30; \epsilon_{mobile}=-0.50)$$

	Baseline scenario (billion €)	Recommended approach (billion €)	Difference (billion €)
Change in termination revenues (cumulative)	-35	-66	-31
Change in voice revenues (cumulative)	-17	-33	-16
Change in total revenues (cumulative)	-52	-99	-47
Change in termination expenses (cumulative)	-35	-66	-31
Impact on Cash Flow / Profit (cumulative)	-17	-33	-16

<sup>93</sup> Although it is acknowledged that when applying the recommended approach to termination charges, the cost of call origination might differ from the costs of termination, we believe that for the purposes of the present calculations this approximation would not be misleading.

<sup>94</sup> The table above clearly shows that termination is indeed a zero-sum game, i.e. any termination revenue losses do not disappear but will be transferred to another operator.

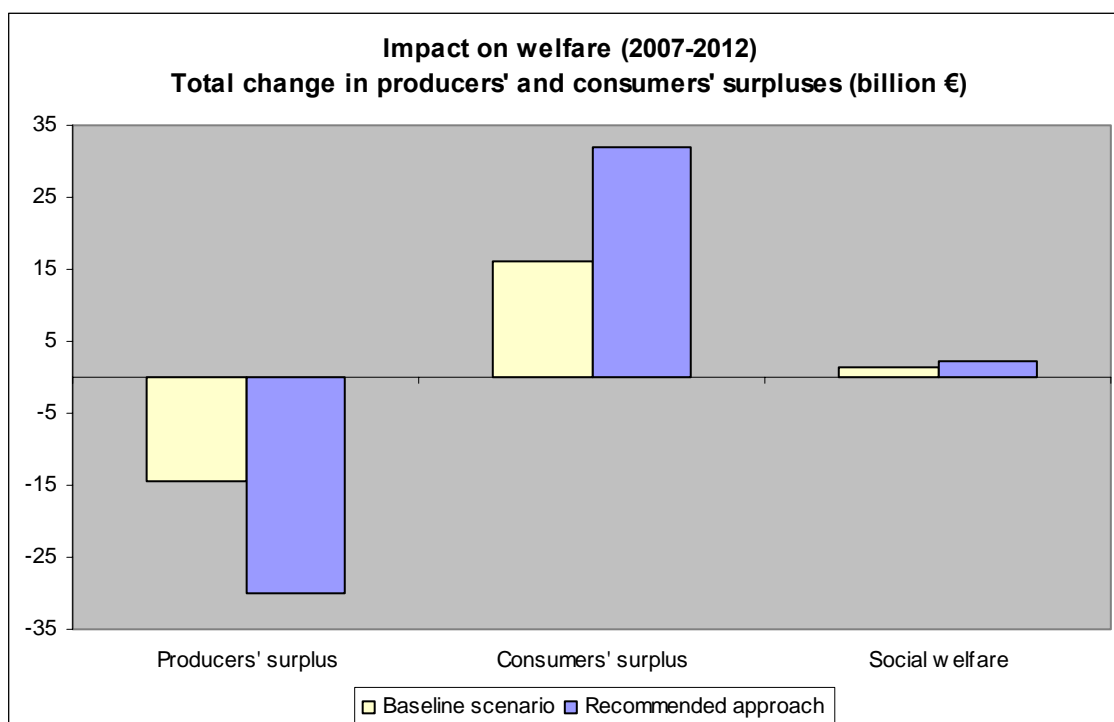
Table 10: Welfare implications

( $PT_{fixed}=0.20$ ;  $PT_{mobile}=0.33$ ;  $\epsilon_{fixed}=-0.30$ ;  $\epsilon_{mobile}=-0.50$ )

	Baseline scenario (billion €)	Recommended approach (billion €)	Difference (billion €)
Change in producers' surplus (cumulative)	-15	-30	-15
Change in consumers' surplus (cumulative)	16	32	16
Change in total / social welfare (cumulative)	2	2	1

Chart 16: Welfare implications

( $PT_{fixed}=0.20$ ;  $PT_{mobile}=0.33$ ;  $\epsilon_{fixed}=-0.30$ ;  $\epsilon_{mobile}=-0.50$ )



### The results of the computational model under the other scenarios / estimates considered (“Sensitivity analysis”)

It is clear that the higher the proportion of the decrease in termination charges which is passed on to consumers and/or the less elastic is the demand for the different services, the greater is the difference for the operators between the two scenarios, i.e. the recommended approach implies higher losses in producer welfare. On the other hand, compared to the situation outlined under the conservative scenario, the change in consumer surplus is even more intense under the recommended approach than when continuing with the current regulation if the demand is more elastic and/or a larger proportion of the wholesale price reductions is passed on to consumers. Similarly, the more elastic the demand and/or the higher the level of the pass-through, the larger is the difference between the recommended approach and the baseline scenario in terms of the increase in social welfare. However, in a less plausible case, if operators increase their prices at the retail level, total welfare would be reduced. In this case, the more interventionist the regulator is, the higher the negative impact on welfare. Past experience from regulating termination markets, however, suggests that competition at the retail level would induce operators to lower retail prices due to reductions in termination rates. The following charts show the results of the model, i.e. the impact on social welfare, at different elasticity levels and pass-through rates for the telecoms industry as a whole.

Charts 17, 18, 19: Joint welfare implications of decreases in fixed and mobile termination rates

