



Commission for  
**Communications Regulation**

# **Voice Termination Rates in Ireland**

## Non-confidential submissions received from respondents

### **Submissions to Consultation**

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**An Coimisiún um Rialáil Cumarsáide**

**Commission for Communications Regulation**

Abbey Court Irish Life Centre Lower Abbey Street Dublin 1 Ireland

Telephone +353 1 804 9600 Fax +353 1 804 9680 Email [info@comreg.ie](mailto:info@comreg.ie) Web [www.comreg.ie](http://www.comreg.ie)

## Submissions Received from Respondents

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**1: ALTO**

# alto

alternative operators in the communications market

**Response to Consultation - Voice Termination Rates in Ireland:  
Proposed Price Control for Fixed and Mobile Termination  
Rates Ref:12/67**

**Submission By ALTO**

**Date: September 4<sup>th</sup> 2012**

ALTO is pleased to respond to Consultation - Voice Termination Rates in Ireland: Proposed Price Control for Fixed and Mobile Termination Rates, Ref: 12/67.

## **Preliminary Comments**

ALTO makes the following key comments on ComReg's Consultation 12/67:

ALTO generally welcomes this Consultation but observes that one particular issue that requires addressing is the need for both fixed and mobile termination rates to be set at a flat rate. Where rates vary, for example by time of day, peak / off peak variations, etc., there is potential scope for providers to exploit flexibility in price controls.

An example of where variations in rates causes problems arose in the UK, where the market has seen situations where certain MNO providers were able to game price controls based on rate changes at different times and on different days. This meant that purchasers of mobile termination were forced to pay more, in aggregate, than the rates intended to be set as an upper limit.<sup>1</sup> Ultimately these increased costs were always likely to be passed through to the end-user, which is a situation we do not wish to see in Ireland.

In addition, if there is too much flexibility then this also forces competing operators to incur extra costs, as rates may be subject to frequent changes by significant amounts, requiring price notifications to be prepared and distributed to customers, in compliance with contractual obligations.

We would therefore argue for one flat rate across the piece for both MTRs and FTRs, which increases certainty and consistency, and removes the risk of competition being distorted by one or more providers.

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<sup>1</sup> This practice is commonly known as "flip-flopping".

## **Response to Consultation Questions:**

**Q. 1. Do you agree with the five regulatory approaches considered or are there any other approaches that respondents consider should be assessed in the context of this Consultation Document? Please explain the reasons for your answer, clearly indicating the relevant paragraph numbers to which your comments refer, along with all relevant factual or other evidence supporting your position.**

A. 1. ALTO agrees with the five regulatory approaches considered in this consultation are the most appropriate. The five approaches considered mean that all of the obvious potential regulatory options that are available to the regulator have been looked at and evaluated.

**Q. 2. Do you agree with the assessment criteria, as set out above, as being appropriate criteria to use to evaluate the five possible regulatory approaches identified in Chapter 4? Please explain the reasons for your answer, clearly indicating the relevant paragraph numbers to which your comments refer, along with all relevant factual or other evidence supporting your position.**

A. 2. ALTO believes that the grid set out in Figure 5.1 is comprehensive and takes into account all of ComReg's statutory criteria and off setting them with the criteria established by Analysys Mason when they are assessing the market for FVCT and MVCT in the Irish market in light of the requirement set down by the European Union.

**Q. 3. Do you agree that cost orientation by means of a pure LRIC methodology is the most appropriate approach to set Termination Rates in Ireland? Please explain the reasons for your answer, clearly indicating the relevant paragraph numbers to which your comments refer, along with all relevant factual or other**

**evidence supporting your position.**

A. 3. Having read this consultation and the comments of the EU with regards to how other countries have implemented changes to termination rates, ALTO members welcome it guardedly, and are not currently in unanimous agreement that pure LRIC is the most appropriate method to set termination rates.

**Q. 4. Do you believe that asymmetry should be allowed for any FSPs or MSPs going forward? Please explain the reasons for your answer, clearly indicating the relevant paragraph numbers to which your comments refer, along with all relevant factual or other evidence supporting your position.**

A. 4. ALTO members have concerns that smaller operators are at a disadvantage when analysing their unit costs, which invariably will be higher than larger operators.

ALTO's view is that the operation of a symmetrical rate in the market, may mean that smaller operators may be not be recovering their costs whilst the larger operator may be making a profit on the same rate, particularly in the fixed market. This was identified at Clause 4.47 of the Consultation.

ALTO members would be generally in favour of the asymmetry for FSP's, but only if there was evidence that such asymmetry is necessary to ensure FSPs are able to recover their efficient costs. In the fixed market, very few operators have a market share of over 10% and thus, having symmetrical rates based on the incumbent may be discriminatory and further foreclose the provision of voice services by these operators. We consider that ComReg needs to fully investigate whether it will be possible for all FSPs to fully recover their costs should it decide to impose a symmetric rate.

ALTO believes that all the mobile operators in Ireland have a level of market share at present, which may be sufficient to ensure that they would not be discriminated against if a symmetrical rate were imposed.



**Q. 5. Do you agree or disagree with the proposed benchmarking approach for MTRs set out above? Please explain the reasons for your answer, clearly indicating the relevant paragraph numbers to which your comments refer, along with all relevant factual or other evidence supporting your position.**

A. 5. ALTO agrees with ComReg's view outlined in Clause 7.47, that the pure LRIC model should be implemented using a benchmarking approach calculated against EU member states who have made a final and binding decision in relation to MTR.

**Q. 6. Do you consider that it is appropriate for ComReg to impose, with effect from 1 January 2013, a maximum weighted average symmetric MTR calculated on the basis of a benchmark approach which uses the MTRs imposed by NRAs in other EU Member States where there is a decision in force on MTRs based on a pure BU-LRIC model? Alternatively, do you consider that it would be appropriate for ComReg to apply that approach instead with effect from 1 July 2013 and to adopt the proposed glide path approach for the period from 31 December 2012 to 1 July 2013? Please explain the reasons for your answer, clearly indicating the relevant paragraph numbers to which your comments refer, along with all relevant factual or other evidence supporting your position.**

A. 6. It is ALTO's belief that the 1st January may be too soon considering the time that it will take for ComReg to publish its decision and leave sufficient time for appeal between the end date of this consultation i.e., the 4th September and 4 months until the 1st January 2013. This may leave insufficient time for operators to reorganise rate cards and new offers, etc.

Further, ALTO members believe that adopting the approach from 1st July 2013 leaves ComReg more time to wait and see if more EU countries adopt a binding decision and thus, give ComReg more countries against which they can benchmark the service.

However if ComReg considers that 1 January 2013 is achievable, then it should aim to put in place the proposed measures by that date. It is ALTO's view that, especially in relation to MTRs, these price controls are long overdue and should be implemented as soon as possible. Furthermore, glide paths have the disadvantage of increasing uncertainty and confusion over rates, so if this can be avoided it would be preferable.

**Q. 7. Do you agree with the proposed BU pure LRIC modelling approach for FTRs? Please provide reasons for your response. Please explain the reasons for your answer, clearly indicating the relevant paragraph numbers to which your comments refer, along with all relevant factual or other evidence supporting your position.**

A. 7. Despite reservations in relation to symmetry of rates, ALTO members do not object to ComReg's proposal for obtaining the rate by utilising BU pure LRIC based on the incumbent figures.

**Q. 8. Do you agree with the cost model inputs and assumptions proposed by ComReg in relation to the pure BU-LRIC model for FTRs? Please explain the reasons for your answer, clearly indicating the relevant paragraph numbers to which your comments refer, along with all relevant factual or other evidence supporting your position.**

A. 8. ALTO agrees with the cost model inputs and assumptions proposed by ComReg and outlined in Clause 7.3.3. ComReg have taken a comprehensive look at all the elements that influence rates such as OPEX, CAPEX, depreciation and network topology. ALTO commends ComReg for favouring a Bottom Up rather than a Top Down approach.

**Q. 9. Do you agree with ComReg's proposals in relation to the**

**implementation of its proposed pure BU-LRIC model for FTRs? Please provide reasons for your response. Please explain the reasons for your answer, clearly indicating the relevant paragraph numbers to which your comments refer, along with all relevant factual or other evidence supporting your position.**

A. 9. ALTO agrees with the proposals for implementing the BU LRIC model for FTR's as it's the most practical and reasonable proposal.

**Q. 10. Do you agree with ComRegs preliminary views as set out above regarding the treatment of common costs not recovered from pure LRIC for Eircom, the other SMP FSPs and the SMP MSPs? Please explain the reasons for your answer, clearly indicating the relevant paragraph numbers to which your comments refer, along with all relevant factual or other evidence supporting your position.**

A. 10. ALTO agrees with ComReg's views on the treatment of common costs that are not recovered via pure LRIC. ALTO further believes that it will ensure efficiencies across all networks and internal costs savings must be made.

**Q. 11 Do you believe that the draft text of the proposed Decision Instrument in relation to FTRs contained in Chapter 8 is from a legal, technical and practical perspective, sufficiently detailed, clear and precise with regards to the specifics proposed? Please explain the reasons for your answer, clearly indicating the relevant section numbers to which your comments refer, along with all relevant factual or other evidence supporting your position.**

A. 11. ALTO believes that the draft text of the proposed Decision Instrument in relation to FTR's is clear from a legal, technical and practical perspective. The Decision Instrument is sufficiently details, clear and precise when outlining the proposed specifics.

**Q. 12 Do you believe that the draft text of the proposed Decision Instrument in relation to MTRS in Chapter 9 is from a legal, technical and practical perspective, sufficiently detailed, clear and precise with regards to the specifics proposed? Please explain the reasons for your answer, clearly indicating the relevant section numbers to which your comments refer, along with all relevant factual or other evidence supporting your position.**

A. 12. ALTO believes that the draft text of the proposed Decision Instrument in relation to MTR's is clear from a legal, technical and practical perspective. The Decision Instrument is sufficiently details, clear and precise when outlining the proposed specifics.

**Q. 13 Do you have any views on the Regulatory Impact Assessment and are there other factors (if any) that ComReg should consider in completing its Regulatory Impact Assessment? Please explain the reasons for your answer, clearly indicating the relevant paragraph numbers to which your comments refer, along with all relevant factual or other evidence supporting your position.**

A. 13. ALTO always has reservations about the form and content of Regulatory Impact Assessments generally. To that end, we limited our remarks to those made at the introduction of this response and hope that ComReg pay attention to issues which may arise if that particular phenomenon is not dealt with at this juncture.

**Note: Some ALTO members do not indorse the cost modelling conclusions reached by ComReg and the EU Commission in the circumstances. Those members have submitted bilateral responses to ComReg.**

**ALTO**

**4<sup>th</sup> September 2012**

## **2: BT Communications Ireland Limited**



## BT Communications Ireland Limited (“BT”) Response to ComReg’s Consultation

### Voice termination Rates in Ireland

Issue 1- 5th September 2012

#### 1. General Comments

We would like to offer our response to the question below.

✂

#### 2. Detailed Comments

**Q. 8 Do you agree with the cost model inputs and assumptions proposed by ComReg in relation to the pure BU-LRIC model for FTRs? Please explain the reasons for your answer, clearly indicating the relevant paragraph numbers to which your comments refer, along with all relevant factual or other evidence supporting your position.**

A8.

A clear principle within the consultation is to accurately reflect costs. In clause 7.105 ComReg consider the network model on which to base the costs and consider both the NGN and hybrid solutions. Our view is that whilst there are growing pockets of VoIP based traffic in the industry, the majority of voice traffic is still carried over traditional TDM networks and it is therefore more realistic for ComReg to take a hybrid approach during the transition. We would like to provide the following supporting reasons:

- Industry discussion – There is no proposal within the industry to discuss NGN IP based voice interconnect or its commercial model. This will be a key indicator that mainstream industry is moving away from traditional voice services and once commenced it will probably take a year to conclude discussions for an appropriate commercial model.
- We note Eircom are now planning to support the traditional (SB-WLR) voice option with their NGA service suggesting a continuation of the traditional Eircom voice platform for some time to come. We are also aware that moving from traditional voice to VoIP solution in the home (not through a computer) is

problematic to install and requires an alteration of the internal telephone wiring in the home.

- Migrating large scale voice networks to VoIP is not trivial given such must be done in a live environment and the interoperability to numerous supporting systems is both complex and time consuming. For example integrating systems such as automating order handling, billing, and fault reporting all take time.
- Our view is during the transition there will be a requirement to parallel run the traditional and the new switch platforms as one of several migration strategies are adopted, For example migrate new customers first, or only launch new products on the new platform etc.

✂

In conclusion we consider additional operational costs will be experienced during the transition from the traditional platform to a new VoIP platform and these should be factored into the price for the duration of this review period, or until such a time that traditional voice is a minority service.

End

For enquiries to this submission please contact [john.odwyer@bt.com](mailto:john.odwyer@bt.com).

## **3: Eircom Ltd.**



**eircom Ltd.**

**Response on behalf of eircom Group to  
ComReg Consultation 12/67:**

**Voice Termination Rates in Ireland  
Proposed Price Control for Fixed and Mobile  
Termination Rates**



**4 September 2012**

**DOCUMENT CONTROL**

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## **EXECUTIVE SUMMARY**

eircom welcomes this consultation on the basis that it seeks to set the prices for call termination on all fixed and mobile networks on a consistent basis. It is also welcome in that it examines an appropriately broad range of possible price controls and costing methodologies before giving a preliminary view.

eircom also welcomes the proposal to set all termination charges on a symmetric and reciprocal basis and at a level set to recover the pure LRIC of an efficient fixed or mobile network. This fundamental change supports the trend in retail offers of bundles of call services sold to consumers. The reductions in cost-of-sale for service providers driven by the decision proposed by ComReg will allow more intense competition in the structure and range of such bundles to the increasing benefit of price sensitive consumers. They will also remove distortions that previously affected the viability of pricing for converged fixed and mobile telephony offers, and the ability of fixed and mobile operators to compete on an equal basis in the most price sensitive corporate voice markets.

However, eircom does not agree with the position taken by ComReg that fixed termination prices should be set at the level to recover the pure LRIC of call termination on the basis of an IP-enabled NGN. This is because the current TDM network using C7 signalling for interconnection services is likely to be providing the termination services at issue throughout the control period.

On the issue of fixed network costs that will no longer be recovered from termination revenues, eircom welcomes Analysys Mason's finding that such costs can legitimately be recovered from the prices charged from other wholesale services – even where the service is offered into a market where the provider has been designated with SMP. This outcome will maintain the appropriate signals to new entrants to invest in extending their own network reach.

The EU recommendation requires all termination rates to be set at pure LRIC from 1<sup>st</sup> January 2013. eircom recognises that for practical reasons of implementation it will not be feasible for this move to be completed before 1<sup>st</sup> July 2013. eircom accordingly agrees with ComReg's proposal that a glide path for MTRs should be put in place from 1<sup>st</sup> January 2013 to achieve suitable benchmarked pure LRIC rates on 1<sup>st</sup> July 2013. For the avoidance of doubt, having regard to ComReg's commitment to eircom that eircom will not be required to reduce its fixed termination rates to pure LRIC levels before mobile termination are reduced to that level, it is eircom's clear

understanding that fixed termination rates will not decrease before mobile termination rates, and were the reduction of mobile termination rates to pure LRIC delayed beyond 1<sup>st</sup> July 2013, so will the reductions of fixed termination rates to the same date as that for the reduction to mobile termination rates to pure LRIC.

## **Responses to Consultation Questions**

**Q.1 Do you agree with the five regulatory approaches considered or are there any other approaches that respondents consider should be assessed in the context of this Consultation Document? Please explain the reasons for your answer, clearly indicating the relevant paragraph numbers to which your comments refer, along with all relevant factual or other evidence supporting your position.**

ComReg puts forward five approaches in terms of potentially appropriate and/or practicable approaches to the price regulation of termination rates, as follows:

- (a) No price control
- (b) “Fair and reasonable” SMP remedy
- (c) Bill and Keep
- (d) Receiving party pays (R.P.P.)
- (e) Cost orientation

eircom broadly agrees with the discussion in the Analysis Mason paper (published as ComReg 12/67a) of these five options.

The option for no price control is not appropriate in the presence of bottleneck control by each network operator in call termination on customers directly connected to their own networks and the absence of competitive constraints in this market as the result of the operation of the “calling party pays” principle at the retail level. Having regard to the characteristics of the market concerned, eircom agrees that a “fair and reasonable SMP remedy” is unlikely to be sufficient to address the market failure that has been identified.

“Bill and keep” has many apparent attractions including, transparency, symmetry, and cost reduction through the removal of the requirement for billing. However, as has been demonstrated through studies across the industry, the regime introduces opportunities and incentives for arbitrage, with “hot-potato” or circuitous routing, that gives rise to quality of service problems. While single switch termination might give rise to no requirement for billing, transit and number translation services will still require the fixed cost of running an interconnect billing system.

A “receiving party pays” regime for interconnect pricing is fundamentally driven by a similar regime for retail pricing. With the exceptions of mobile roaming and number translation codes, the retail regime across all fixed and mobile networks in Ireland is firmly established on the basis of the calling party pays principle. The distortion that would be caused to all network operators in moving to receiving party pays for termination in the absence of similar retail pricing could only be justified if the regime was clearly superior to any of the alternatives. This superiority has not been demonstrated so receiving party pays should not be considered as a viable option.

These findings leave cost orientation as the most appropriate form of regulatory approach.(eircom notes however that the remedy of cost-orientation is the remedy that has been proposed by ComReg in relation to mobile termination rates and that it is difficult to see how another form of price control could be chosen in this context).

**Q.2 Do you agree with the assessment criteria, as set out above, as being appropriate criteria to use to evaluate the five possible regulatory approaches identified in Chapter 4? Please explain the reasons for your answer, clearly indicating the relevant paragraph numbers to which your comments refer, along with all relevant factual or other evidence supporting your position.**

Subject to eircom’s comments in response to Q1, eircom agrees that the six sets of assessment criteria put forward by ComReg include all the appropriate criteria.

- (a) Efficiency criteria
- (b) Impacts on competition
- (c) Equity criteria
- (d) Need to take utmost account of the EU recommendation/contribution to the Internal Market
- (e) Ease of decision and implementation of approach
- (f) Transparency and regulatory certainty

eircom agrees that all the efficiency criteria – allocative, productive, and dynamic – indicate that the controlled price for termination should be set to recover pure LRIC and that the basis determining the LRIC for Ireland should be a cost model.

eircom broadly agrees with the Analysys Mason finding that a price control based on pure LRIC is the approach that has the best practicable impact on competition across the three markets considered. Their analysis favoured “receiving party pays” as the

optimum but, given that retail pricing has developed in entirely the opposite direction, RPP is no longer feasible.

eircom also agrees that, among the options considered, the option to set termination charges at pure LRIC scores highest against the equity criterion. The EU Recommendation also clearly favours pure LRIC based on a national cost model.

Ease of implementation and transparency and regulatory certainty also favour setting a single cost oriented rate for fixed termination, and a single cost oriented rate for mobile termination, in Ireland. Against these criteria, and for other reasons discussed in the response to question 9 below, eircom finds that these rates should be implemented in full symmetry including in terms of time-of-day treatment which should be set the same across the industry.

**Q.3 Do you agree that cost orientation by means of a pure LRIC methodology is the most appropriate approach to set Termination Rates in Ireland? Please explain the reasons for your answer, clearly indicating the relevant paragraph numbers to which your comments refer, along with all relevant factual or other evidence supporting your position.**

eircom agrees that, as a matter of principle, cost orientation by means of pure LRIC is the most appropriate approach to set termination rates. Termination of calls on customers directly connected to an operator's network is a service over which each operator has enduring bottleneck control. Competitors who wish to route calls to such customers must consume the termination service offered by the operator serving that customer. The operator terminating that call is entitled to recover at least the efficient level of incremental cost from charges for call termination. For retail services, where the calling party pays their service provider for the provision of call services, the terminating operator is entitled to recover this cost from the originating operator – possibly via a third transit operator.

Market reviews are the appropriate way under the Regulatory Framework to assess and determine whether remedies previously imposed remain adequate or ought to be amended or removed. eircom, in this context, insofar as fixed voice call termination rates are concerned, welcomes ComReg's statement that the relevant market analysis is under way.



**Q.4 Do you believe that asymmetry should be allowed for any FSPs or MSPs going forward? Please explain the reasons for your answer, clearly indicating the relevant paragraph numbers to which your comments refer, along with all relevant factual or other evidence supporting your position.**

eircom believes that full symmetry between FSPs and full symmetry between MSPs should follow immediately from the implementation of the Decision. Any proposal to allow the operators of smaller networks to charge higher rates than the appropriate national symmetric rate simply supplies incentives to game the Decision by managing the criteria set below which symmetry would not apply.

At paragraph 7.87 ComReg argues that the revenue impact on the smaller FSPs in reducing their call termination prices will be minimal. Given this finding, eircom proposes that, for reasons of practicality, stability, and predictability of outpayments for fixed calling, eircom primary termination prices should be implemented across the industry as the “deemed to be” rates for fixed call termination in Ireland.

**Q.5 Do you agree or disagree with the proposed benchmarking approach for MTRs set out above? Please explain the reasons for your answer, clearly indicating the relevant paragraph numbers to which your comments refer, along with all relevant factual or other evidence supporting your position.**

Until such time as ComReg has established an appropriate pure BU-LRIC model for MTRs, eircom agrees that the benchmarking approach, based on a simple average, may be the most practical means of achieving MTR levels that are cost orientated and consistent with the Termination Rates Recommendation, on the understanding that such benchmarked rates represent a reasonable proxy for pure BU-LRIC rates. In particular, eircom does not expect that the pure LRIC of mobile call termination in Ireland will differ materially from the European average and, in this context, believes that ComReg’s proposal in terms of the use of benchmarked rates appears to meet the requirements of the Commission as set out in Article 7 letters, including in terms of the selection of the benchmarked countries.

**Q.6 Do you consider that it is appropriate for ComReg to impose, with effect from 1 January 2013, a maximum weighted average symmetric MTR calculated on the basis of a benchmark approach which uses the MTRs imposed by NRAs in other EU Member States where there is a decision in force on MTRs based on a pure BU-LRIC model? Alternatively, do you consider that it would be appropriate for ComReg to apply that approach instead with effect from 1 July 2013 and to adopt the proposed glide path approach for the period from 31 December 2012 to 1 July 2013? Please explain the reasons for your answer, clearly indicating the relevant paragraph numbers to which your comments refer, along with all relevant factual or other evidence supporting your position.**

eircom supports the alternative approach proposed by ComReg, that is, the use of benchmarked rates (calculated on the basis of the rates set in EU Member States where MTRs are set on the basis of a pure BU-LRIC model) from 1<sup>st</sup> July 2013, and the use of a glide path to apply from 31<sup>st</sup> December 2012 to 1<sup>st</sup> July 2013.

However, eircom does not understand the basis for ComReg's calculation of the rate that ComReg proposes as an extension to the glide path approach. ComReg calculates a median rate based on the current MTRs with '3' at 7.44c per minute. However '3' is already due to achieve symmetry by the 1<sup>st</sup> of January 2012<sup>1</sup>, therefore the average rate prior to 1<sup>st</sup> January 2013 should include '3' with an MTR of 3.68c, in which case the median rate would be 2.38c, as opposed to the rate of 2.42c proposed in the consultation document.

Furthermore, in respect of the achievement of symmetry, eircom welcomes ComReg's commitment in paragraph 7.69 to enforce symmetry by January 2013 between the MTRs of all six of the SMP MNOs. Given the extended period during which Tesco Mobile has enjoyed unregulated MTRs, and the significant asymmetry that has resulted, coupled with the fact that Lycamobile has only recently launched and would experience a negligible impact on current revenues, we consider the business impacts to be predictable and manageable in both cases. Therefore subsequent to the achievement of symmetry across all SMP MNOs by January 2013, a reduction to a rate reflecting the average EU pure BU-LRIC rate should be implemented by July 2013.

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<sup>1</sup> In ComReg document 09/34 ComReg states that '3' indicated to ComReg its intention to apply a symmetrical rate by January 2013.

**Q.7 Do you agree with the proposed BU pure LRIC modelling approach for FTRs? Please provide reasons for your response. Please explain the reasons for your answer, clearly indicating the relevant paragraph numbers to which your comments refer, along with all relevant factual or other evidence supporting your position.**

eircom agrees that BU-LRIC is the appropriate cost standard for setting FTRs. eircom also agrees with the ComReg finding that benchmarking with EU member states that have used BU-LRIC models to set FTR prices is not appropriate. There are three reasons why this form of benchmarking is not appropriate for setting FTRs in Ireland:

- (a) Only two EU member states have set FTRs based on a BU-LRIC to date so the sample size for a meaningful benchmark is not sufficient.
- (b) The two member states concerned that have set FTR based on BU-LRIC models have set rates that differ by over 350% so the calculation of a benchmark using a simple arithmetic average will be very unstable in the presence of further member states that implement BU-LRIC models. The use of such a benchmark would not give operators in Ireland the predictability of FTR cost-of-sale that is desirable to encourage sustainable competition in retail markets.
- (c) There is clearly no broad agreement among EU states as to the efficient implementation of next generation voice services using IP switching so BU-LRIC models for fixed NGNs have not had time to stabilise around a narrow range of unit costs for FTR services.

This leaves the option to use a BU-LRIC model for the eircom network to calculate the pure LRIC for call termination. eircom agrees with the conclusions of the discussion in paragraph 7.97 that there is unlikely to be robust data available from other FSPs as none of these has had any previous obligation to build models of their network costs. In any case the particular termination service at issue here is single switch – or primary – termination, and it is likely that all efficient operators in Ireland will have very similar unit costs for such termination. It is equally likely that the incremental portion of these costs will be closely aligned across operators. For these reasons eircom agrees that a BU-LRIC model for the eircom network is the appropriate basis for setting reciprocal and symmetric prices for primary call termination in Ireland.

**Q.8 Do you agree with the cost model inputs and assumptions proposed by ComReg in relation to the pure BU-LRIC model for FTRs? Please explain the reasons for your answer, clearly indicating the relevant paragraph numbers to which your comments refer, along with all relevant factual or other evidence supporting your position.**

eircom does not agree with the cost model inputs and assumptions proposed by ComReg in relation to the BU-LRIC model. ComReg has made an assumption around the Modern Equivalent Asset (MEA) technology that all operators in Ireland are moving to use Internet Protocol (IP) switching for fixed voice services. eircom and almost all other fixed voice network operators use TDM-C7 networks and are likely to continue to do so through the period of the price control that will be the outcome of this Consultation. The architecture and cost structure of a network using IP/NGN for voice switching will have a pure LRIC for call conveyance that is well below the pure LRIC for call conveyance on a TDM network. This is because the common transport layer of the IP network represents a far higher proportion of the total cost and these costs are largely excluded from the pure LRIC calculation as fixed, or common, costs. So, should ComReg persist with setting symmetric rates for fixed termination based on the pure LRIC of an IP network, most operators will find that their call termination revenues are insufficient to recover even the pure LRIC for termination on the network they actually operate during the period of the control. Even those operators in Ireland who currently use VoIP for fixed line voice services sold to consumers generally use a PSTN emulation implementation of VoIP – and all interconnect using C7 signalling. The cost structure of this solution more closely reflect those of a PSTN network than those of the MEA IP-NGN proposed by ComReg for fixed termination.

In summary ComReg has three possibilities as to the network inputs selected in modelling the pure LRIC for call termination:

- The existing TDM/C7 eircom network used to deliver call termination services to OAOs today
- A potential IMS implementation of VoIP on the eircom network to deliver call termination to OAOs using C7 interconnection
- A fully integrated NGN with all voice interconnection implemented using Internet Protocol

eircom believes that the MEA principle cannot be applied to select the last option as the target network configuration will only occur after two major changes in the technology that deliver voice services now. The first is the change from TDM to IP within those networks that provide voice services to directly connected customers.

Currently between 10% and 15% of fixed voice services are provided using VoIP but most will require to be upgraded to a solution like IMS to become “carrier class”. The second major change will only happen when substantially more than 50% of fixed voice services use a carrier class VoIP platform and there is a viable alternative to the costs of maintaining the C7 interconnect infrastructure.

The current indications are that even the first of these two changes may not occur during the period of the control. None of the preparatory work that will be required across industry to facilitate the second change has even been planned so the move to replace C7 interconnection with IP connection could not be completed within 5 years even if all operators agreed today to such a target.

ComReg proposes that the second option may be the most appropriate and it is likely that more operators and many more lines will move to carrier class IP delivery of fixed voice services. It is still likely that more than 50% of voice services will be implemented using TDM switching at the end of the control period.

eircom also notes that at paragraph 11.300 of the ComReg Consultation 12/27 on NGA remedies to apply to eircom ComReg effectively rejects VoIP as the MEA for POTS in Market 1. This position is not consistent with the ComReg finding at paragraph 7.105 in ComReg12/67 that an IP-enabled NGN is the MEA for the eircom PSTN network when setting remedies in Market 2.

For these reasons, eircom finds that the first option for the network input – the existing TDM/C7 network – is the most appropriate for the purposes of modelling the BU-LRIC for call termination in Ireland.

eircom notes further that imposing NGN based pricing would, in the circumstances proper to Ireland, be inconsistent with the requirement of efficiency set out in Directive 2002/19/EC. This is because otherwise the reasonable return of the capital employed would go up to an extremely high or unrealistic level. Recital 20 to the Directive clearly explains that - “When a national regulatory authority calculates costs incurred in establishing a service mandated under this Directive, it is appropriate to allow a *reasonable return on the capital* employed including appropriate labour and building costs, with the value of capital adjusted where necessary to reflect the current valuation of assets and *efficiency of operations*.” In addition, “The method of cost recovery should be appropriate to the circumstances taking account of the need to *promote efficiency* and sustainable competition and maximise consumer benefits.”

In relation to ComReg’s proposal at paragraph 7.116 to use a tilted annuity formula that links the eircom weighted average cost of capital, the asset life, the price trend for the

asset, and the investment value of the asset, in order to calculate the annual charge on that asset that eircom can recover from call termination revenues, eircom notes that the formula, although presented somewhat differently, is consistent with the annuity calculation for similar core network services such as terminating segments of leased lines. The full portfolio of such services, where strict cost justification of charges for the use of capital assets is required, should use a consistent approach to depreciation and return on capital so as to ensure that movements in capital inputs such as asset price trends are reflected into regulated price movements in an equitable manner across the eircom wholesale portfolio.

**Q.9 Do you agree with ComReg's proposals in relation to the implementation of its proposed pure BU-LRIC model for FTRs? Please provide reasons for your response. Please explain the reasons for your answer, clearly indicating the relevant paragraph numbers to which your comments refer, along with all relevant factual or other evidence supporting your position.**

eircom is in broad agreement with ComReg in relation to the implementation of FTRs set at the pure LRIC of the appropriate eircom network. This should not be taken to be agreement to the range of rates tabulated in Figure 7.12 of the consultation. This range has been derived from modelling the pure LRIC for call termination on a putative eircom implementation of VoIP on a next generation IP network. eircom believes that, given the control period and the current provision of fixed call services in Ireland, the LRIC of a TDM network is more appropriate input to fixed termination rates.

Two important issues of implementation arise here. The first is the separation of termination costs into costs that are driven by the numbers of calls and costs that are driven by the volume of call minutes. The second is the issue of a time-of-day gradient that may apply to the average unit cost to set the rates at different times.

For a number of years, modelling of networks used for call conveyance has demonstrated that significant differences are evident in the costs driven by the number of call events as opposed to the costs driven by the volume of call traffic. This difference persists in the pure LRIC for call termination – and should be maintained in the price structure. The effect of this will be that networks have a shorter average duration for calls terminated (i.e. a higher intensity of call events per call minute conveyed) and will charge a higher effective price per minute. This is as it should be

because that operator incurs a higher network cost to convey the same volume of traffic. This cost structure has only been demonstrated to date for fixed networks and is generally present in prices for fixed termination. As MTRs move to cost-oriented levels the requisite cost modelling may demonstrate a similar cost structure – and at that point the option to change the price structure from the current pure per minute charging for MTRs should be considered by ComReg.

On the issue of the appropriate treatment of a time-of-day gradient there are number of important implementation decisions that should be clarified by ComReg in the final Decision. Simply stated there are three options for correct implementation:

- (a) Use of a single 24 hour price.
- (b) Use of the eircom gradient for all operators to effectively set “deemed-to-be” rates across all fixed operators;
- (c) Operators to determine their own gradient and to set their rates to reflect the traffic/revenue mix on their own network.

A number of strong arguments support taking this opportunity to remove the time-of-day gradient from call termination pricing. First we should look at why the gradient was originally introduced. When call termination was first introduced as a regulated service, the price level represented a high percentage of the revenue available for retail call services. As fixed retail revenues per minute were substantially higher at daytime than at evening or weekend, new entrants charged for termination at a 24-hour rate would have found it difficult to compete for residential customers with substantial off-peak demand – and only business would have benefitted from increased competition. However, this rationale no longer applies: when termination prices are cost oriented at pure LRIC, termination revenues represent only a small fraction of retail revenues and a gradient is no longer necessary to ensure a spread of the benefits of competition.

Part of the justification of the time-of-day gradient is concerned with implementing a form of Ramsey Pricing that is said to maximise consumer welfare by recovering a higher proportion of fixed costs from customers with more demand that is more inelastic (to higher prices). When call termination prices are cost oriented at pure LRIC there are no fixed costs to be distributed as only pure incremental costs are recovered.

If however ComReg decides that a gradient is necessary, the second option has the clear advantages of transparency and avoiding operators gaming the selection of a gradient based on trends in traffic movements they anticipate, based on marketing

plans. It has the disadvantage that there may be winners and losers with an operator having a high proportion of off-peak traffic recovering less than the eircom LRIC for termination.

The third option would allow operators the flexibility to ensure that their cost recovery reflects the pattern of traffic on their own network but ComReg must be able to set some limits. For instance, can an operator with exclusively residential customers directly connected to their network reverse the “normal” gradient and charge more for evening and weekend termination than is charged for daytime? This option also has the disadvantage that it requires ComReg to collect traffic data by time-of-day from all fixed operators so as to ensure they are not using their own gradient to abuse the control.

On balance eircom believes that, in the interests of transparency, symmetry, and predictability, the move to set call termination prices to recover pure LRIC should be used to remove the time-of-day gradient from prices charged for both fixed termination and for mobile termination.

**Q.10 Do you agree with ComReg’s preliminary views as set out above regarding the treatment of common costs not recovered from pure LRIC for eircom, the other SMP FSPs and the SMP MSPs? Please explain the reasons for your answer, clearly indicating the relevant paragraph numbers to which your comments refer, along with all relevant factual or other evidence supporting your position.**

In summary ComReg’s position is that operators other than eircom are free to recover common costs not recovered from the pure LRIC for call termination where they will. This is on the basis that call termination is the only market where they have been found to have Significant Market Power.

However there is one aspect of origination services sold by mobile networks where a market failure arises that is clearly evident from prices that are set well above any reasonable estimate of cost. This is call origination to number translation codes (NTCs) such as 1800. eircom believes that ComReg should make it clear that it will not accept that MNOs increase such origination charges on the pretext of recovering fixed network costs no longer recovered from call termination revenues.

For eircom who has been designated with SMP in a number of wholesale markets – and one retail market - ComReg proposes to be more prescriptive.



In this response eircom finds that it is necessary to distinguish between two types of cost that are no longer recovered from call termination revenues when the move is made from setting prices at TD-LRIC+ to setting them at pure BU-LRIC. The first type of cost that must be described is the corporate common cost (where the typical example is given as the share of the CEO cost) that must be recovered across all retail and wholesale services. The second type of cost is the fixed element of the network cost that does not vary with service volume at the increment but must be recovered across all network services for the network operator to stay in business. ComReg must distinguish between these two types when considering regulatory intervention.

For the common costs – that are distributed across retail and wholesale services in the final stage of building separated accounts – the same arguments that favour pure LRIC for call termination price setting indicate that such costs should not simply move to being recovered from an adjacent wholesale service. However fixed network costs that are no longer recovered from call termination revenues after the movement to pure incremental cost orientation should reasonably be recovered from other network services provided to wholesale customers. This is particularly the case where the wholesale customer has the option to avoid consuming that wholesale service by further investment in their own network.

It is also interesting to note that Analysys Mason at section 3.4 of their paper “Fixed and mobile termination rates in Ireland” (published as ComReg 12/67a) strongly favour recovering all fixed and common costs stranded by the change of the cost basis for FTR pricing from TD-LRAIC+ to pure BU-LRIC from call origination. Given that the move to pure LRIC for eircom primary termination could lead to a price drop of 50% to 70%, and that call origination prices and volumes are currently broadly aligned with termination prices, this implementation would lead to an increase in call origination prices of the order of 50%.

There are a number of strong arguments in favour of this approach:

- (a) The total network cost for retail call services incurred by eircom – and by CPS operators - will remain stable.
- (b) The incentive for CPS operators to climb the ladder of investment and connect the fixed line customers to their own network (for instance by unbundling eircom’s local loops) is maintained.
- (c) The regulatory overhead of ensuring that the eircom fixed and common costs that are no longer recovered from call termination revenues are appropriately recovered across services in other markets subject to price control is

avoided. The analysis required where those wholesale price controls are retail minus, as in Markets 1 and 5, may be particularly challenging.

✂

**Q.11 Do you believe that the draft text of the proposed Decision Instrument in relation to FTRs contained in Chapter 8 is from a legal, technical and practical perspective, sufficiently detailed, clear and precise with regards to the specifics proposed? Please explain the reasons for your answer, clearly indicating the relevant section numbers to which your comments refer, along with all relevant factual or other evidence supporting your position.**

eircom has the following comments:

- ComReg proposes to rely on its Decision D06/07 of 2007. eircom notes that a significant period of time has elapsed and that the manner in which ComReg ensures that remedies remain adequate or require to be changed is through a market analysis, in accordance with the requirements of the Framework Regulations. eircom welcomes ComReg's statement that this analysis is underway.
- It is not necessary to define the term "Access". The services to which the proposed Decision will be relevant are the services regulated under decision of ComReg designating certain operators with SMP in relation to fixed call termination services. The Decision does not extend the scope of the access obligation that has been imposed and to define it in these circumstances is unnecessary and confusing.

In relation to the definition of Peak-Fixed Termination Rates, Off-Peak Fixed Termination rates and Weekend-Fixed Termination rates, eircom refers to its comments in response to Question 9. To the extent that ComReg decided to maintain gradients and not mandate the use of flat rates, then Peak, Off-Peak and Weekend should be defined in the Decision Instrument.

**Q.12 Do you believe that the draft text of the proposed Decision Instrument in relation to MTRS in Chapter 9 is from a legal, technical and practical perspective, sufficiently detailed, clear and precise with regards to the specifics proposed? Please explain the reasons for your answer, clearly indicating the relevant section numbers to which your comments refer, along with all relevant factual or other evidence supporting your position.**

eircom has the following comments:

- It is not necessary to define the term “Access”. The services to which the proposed Decision will be relevant are the services regulated under the forthcoming decision of ComReg designating MNOs with SMP and imposing on them an obligation of cost-orientation in relation to the provision of mobile termination services. The draft decision set out in ComReg 12/67 only concerns the price control relevant to these services. To define “access” in these circumstances is unnecessary and confusing.
- The same comments apply in relation to section 4.1 of the draft Decision Instrument. It is sufficient to refer to the obligation of cost-orientation imposed in the relevant decision. Having regard to draft section 3.3, section 4.1 is unnecessary and confusing.
- References to ComReg 12/46 and the draft Decision Instrument published in ComReg Doc 12/46 should be replaced by references to the final Decision Instrument and relevant ComReg Document.

**Q.13 Do you have any views on the Regulatory Impact Assessment and are there other factors (if any) that ComReg should consider in completing its Regulatory Impact Assessment? Please explain the reasons for your answer, clearly indicating the relevant paragraph numbers to which your comments refer, along with all relevant factual or other evidence supporting your position.**

Whilst we do not disagree with the broad conclusions set out in the regulatory impact assessment (RIA), we are disappointed by the approach adopted by ComReg. The approach is wrong because the RIA is little more than a qualitative discussion. No attempt has been made to quantifiably assess the efficiency or cost of ComReg’s proposals. Thus whilst on this occasion we do not disagree with the conclusions, we believe there is a clear need for the quantitative standard of RIAs to be raised.

## **4: Hutchison 3G Ireland Limited**



Ms Samantha Mooney  
Commission for Communications Regulation  
Abbey Court  
Irish Life Centre  
Lower Abbey Street  
Dublin 1

**BY COURIER AND EMAIL:** [wholesaleconsult@comreg.ie](mailto:wholesaleconsult@comreg.ie); [samantha.mooney@comreg.ie](mailto:samantha.mooney@comreg.ie)

3 September 2012

Dear Samantha

### **COMREG DOC. NO. 12/67**

I refer to: (i) ComReg Doc. No. 12/67, *"Voice Termination Rates in Ireland – Proposed Price Control for Fixed and Mobile Termination Rates"* (the "Consultation"); (ii) the letter from Mr Donal Leavy, Director Wholesale Division, Commission for Communications Regulation ("ComReg") dated 15 March 2012 in relation to the wholesale SMS termination market; and (iii) my response to Mr Leavy dated 5 April 2012. Hutchison 3G Ireland Limited ("H3GI") responds as follows.

### **The Consultation**

Without prejudice to its position in respect of ComReg Doc. No. 12/46, *"Market Review, Voice Call Termination on Individual Mobile Networks"* ("ComReg's First MTR Market Review Consultation"):

1. H3GI believes that 'Bill and Keep' is the most appropriate approach to set termination rates in Ireland. H3GI believes that ComReg has given disproportionate weight to the potential drawbacks of Bill and Keep.
2. In the absence of Bill and Keep, H3GI believes that a pure LRIC methodology is the most appropriate approach to set termination rates in Ireland.
3. H3GI believes that asymmetry should be allowed for any FSPs or MSPs that can demonstrate an objective justification for same in accordance with the European Commission termination rate recommendation.
4. Subject to the following comments and pending the implementation of a proper cost model, H3GI: (i) agrees with the proposed benchmarking approach for MTRs set out in the Consultation; and (ii) considers that it would be appropriate for ComReg to apply that approach with effect from 1 July 2013 and to adopt the proposed glide path approach (involving a maximum MTR of 2.42 c per minute) for the period from 31 December 2012 to 1 July 2013. The benchmark from 1 July 2013 should be the average maximum termination rate of those European countries that have implemented a pure LRIC cost model in accordance with the European Commission termination rate recommendation and this should be updated on a six monthly basis. This ensures that ComReg's decision remains up to date and does not involve a significant amount of resources.

Hutchison 3G Ireland Limited  
Registered office

3<sup>rd</sup> Floor  
One Clarendon Row,  
Dublin 2, Ireland

Registered Number: 316982  
Place of Registration: Republic of Ireland



H3GI responds to ComReg's specific consultation questions in an annex to this letter. H3GI's responses are without prejudice to its position in respect of ComReg's First MTR Market Review Consultation.

### **The wholesale SMS termination market**

ComReg's proposed approach to MTRs highlights the growing and unjustified disparity between the level of MTRs and SMS termination rates in Ireland:

1. Wholesale SMS termination rates (SMSTRs) in Ireland, which are symmetric across the industry, are 3.17 cent per SMS and have remained at this level since their introduction.
2. Some MSPs in Ireland have sought to negotiate reductions in SMSTRs with other MSPs, however, to ComReg's knowledge these attempted negotiations have not resulted in any agreed outcome.
3. The EU's Roaming III Regulation provided for a reduction of the previous EU wholesale roaming SMS price cap from 4 cent to 3 cent in July 2012 and provides for a further reduction to 2 cent in July 2013.

H3GI is supportive of a lower wholesale SMS termination rate. Given the demand for lower wholesale SMS termination rates, the incentives for net recipient operators to maintain the current level of wholesale SMS termination rates and the resulting harm for consumers (excessive wholesale pricing resulting in less competition and as a result, higher prices), H3GI submits that: (i) regulation of wholesale SMS termination is warranted; and (ii) ComReg should proceed to a market analysis and public consultation in respect of same.

Yours sincerely

**MARK HUGHES**  
Head of Regulatory

Directors  
Robert Finnegan: Irish  
Canning Fok: British  
Frank Sixt: Canadian  
Robert Eckert: U.S.A  
Edmond Ho: British  
David Dyson: British  
Richard Woodward: British

## ANNEX – CONSULTATION QUESTIONS

**Q. 1 Do you agree with the five regulatory approaches considered or are there any other approaches that respondents consider should be assessed in the context of this Consultation Document? Please explain the reasons for your answer, clearly indicating the relevant paragraph numbers to which your comments refer, along with all relevant factual or other evidence supporting your position.**

H3GI believes that ComReg has considered all relevant approaches.

**Q. 2 Do you agree with the assessment criteria, as set out above, as being appropriate criteria to use to evaluate the five possible regulatory approaches identified in Chapter 4? Please explain the reasons for your answer, clearly indicating the relevant paragraph numbers to which your comments refer, along with all relevant factual or other evidence supporting your position.**

H3GI agrees with the assessment criteria, as set out above, as being appropriate criteria to use to evaluate the five possible regulatory approaches identified in Chapter 4.

**Q. 3 Do you agree that cost orientation by means of a pure LRIC methodology is the most appropriate approach to set Termination Rates in Ireland? Please explain the reasons for your answer, clearly indicating the relevant paragraph numbers to which your comments refer, along with all relevant factual or other evidence supporting your position.**

H3GI believes that 'Bill and Keep' is the most appropriate approach to set termination rates in Ireland. In the absence of Bill and Keep, H3GI believes that a pure LRIC methodology is the most appropriate approach to set termination rates in Ireland. H3GI believes that ComReg has given disproportionate weight to the potential drawbacks of Bill and Keep.

**Q. 4 Do you believe that asymmetry should be allowed for any FSPs or MSPs going forward? Please explain the reasons for your answer, clearly indicating the relevant paragraph numbers to which your comments refer, along with all relevant factual or other evidence supporting your position.**

H3GI believes that asymmetry should be allowed for any FSPs or MSPs that can demonstrate an objective justification for same in accordance with the European Commission termination rate recommendation.

**Q. 5 Do you agree or disagree with the proposed benchmarking approach for MTRs set out above? Please explain the reasons for your answer, clearly indicating the relevant paragraph numbers to which your comments refer, along with all relevant factual or other evidence supporting your position.**

Please see the answer to question 6.



**Q. 6 Do you consider that it is appropriate for ComReg to impose, with effect from 1 January 2013, a maximum weighted average symmetric MTR calculated on the basis of a benchmark approach which uses the MTRs imposed by NRAs in other EU Member States where there is a decision in force on MTRs based on a pure BU LRIC model? Alternatively, do you consider that it would be appropriate for ComReg to apply that approach instead with effect from 1 July 2013 and to adopt the proposed glide path approach for the period from 31 December 2012 to 1 July 2013? Please explain the reasons for your answer, clearly indicating the relevant paragraph numbers to which your comments refer, along with all relevant factual or other evidence supporting your position.**

Subject to the following comments and pending the implementation of a proper cost model, H3GI: (i) agrees with the proposed benchmarking approach for MTRs set out in the Consultation; and (ii) considers that it would be appropriate for ComReg to apply that approach with effect from 1 July 2013 and to adopt the proposed glide path approach (involving a maximum MTR of 2.42 c per minute) for the period from 31 December 2012 to 1 July 2013. The benchmark from 1 July 2013 should be the average maximum termination rate of those European countries that have implemented a pure LRIC cost model in accordance with the European Commission termination rate recommendation and this should be updated on a six monthly basis. This ensures that ComReg's decision remains up to date and does not involve a significant amount of resources.

**Q. 7 Do you agree with the proposed BU pure LRIC modelling approach for FTRs? Please provide reasons for your response. Please explain the reasons for your answer, clearly indicating the relevant paragraph numbers to which your comments refer, along with all relevant factual or other evidence supporting your position.**

H3GI agrees with the proposed BU pure LRIC modelling approach for FTRs.

**Q. 8 Do you agree with the cost model inputs and assumptions proposed by ComReg in relation to the pure BU-LRIC model for FTRs? Please explain the reasons for your answer, clearly indicating the relevant paragraph numbers to which your comments refer, along with all relevant factual or other evidence supporting your position.**

H3GI reserves its position regarding the cost model inputs and assumptions proposed by ComReg in relation to the pure BU-LRIC model for FTRs pending the consultation by ComReg in respect of its proposed BU LRIC MTR model.

**Q. 9 Do you agree with ComReg's proposals in relation to the implementation of its proposed pure BU-LRIC model for FTRs? Please provide reasons for your response. Please explain the reasons for your answer, clearly indicating the relevant paragraph numbers to which your comments refer, along with all relevant factual or other evidence supporting your position.**

H3GI agrees with ComReg's proposals in relation to the implementation of its proposed pure BU-LRIC model for FTRs.



**Q. 10 Do you agree with ComReg’s preliminary views as set out above regarding the treatment of common costs not recovered from pure LRIC for Eircom, the other SMP FSPs and the SMP MSPs? Please explain the reasons for your answer, clearly indicating the relevant paragraph numbers to which your comments refer, along with all relevant factual or other evidence supporting your position.**

H3GI agrees with ComReg’s preliminary views as set out above regarding the treatment of common costs not recovered from pure LRIC for SMP FSPs other than eircom and SMP MSPs. H3GI reserves its position regarding ComReg’s preliminary views as set out above regarding the treatment of common costs not recovered from pure LRIC for eircom pending the consultation by ComReg in respect of its proposed BU LRIC MTR model.

**Q. 11 Do you believe that the draft text of the proposed Decision Instrument in relation to FTRs contained in Chapter 8 is from a legal, technical and practical perspective, sufficiently detailed, clear and precise with regards to the specifics proposed? Please explain the reasons for your answer, clearly indicating the relevant section numbers to which your comments refer, along with all relevant factual or other evidence supporting your position.**

H3GI does not have any comments in respect of the proposed Decision Instrument in relation to FTRs contained in Chapter 8.

**Q. 12 Do you believe that the draft text of the proposed Decision Instrument in relation to MTRS in Chapter 9 is from a legal, technical and practical perspective, sufficiently detailed, clear and precise with regards to the specifics proposed? Please explain the reasons for your answer, clearly indicating the relevant section numbers to which your comments refer, along with all relevant factual or other evidence supporting your position.**

In relation to the definition of “H3GI”, H3GI is Hutchison 3G Ireland Limited and not Hutchinson 3G Ireland Limited. The decision instrument should make provision for the interim rate of 2.42c per minute. It should also revoke ComReg Decision Notice D05/08.

**Q. 13 Do you have any views on the Regulatory Impact Assessment and are there other factors (if any) that ComReg should consider in completing its Regulatory Impact Assessment? Please explain the reasons for your answer, clearly indicating the relevant paragraph numbers to which your comments refer, along with all relevant factual or other evidence supporting your position.**

Please see H3GI’s responses above. In relation to question 7 on page 4 of Annex K to the Consultation (Confidential), [Confidential].

# 5: Magnet Networks

Magnet Networks welcomes this consultation as it brings clarity to mobile termination rates and their glide path that the EU has set out over the last two years. The reduction in price will also help the consumer to make cheaper mobile calls from landlines and vice versa, overall, this is a positive consultation where all interested parties will benefit. However, the price should be a flat rate and not all operations have price exploit variations for day, evening and weekend's rates. It is just necessary to look at the UK where Operators engage in gaming price controls based on rate changes for day, evening and weekends. This in effects forces mobile termination purchasers to pay more in aggregate than the intended rates. A flat rate would ensure consistency and certainty and remove competition distortion.

**Q. 1 Do you agree with the five regulatory approaches considered or are there any other approaches that respondents consider should be assessed in the context of this Consultation Document? Please explain the reasons for your answer, clearly indicating the relevant paragraph numbers to which your comments refer, along with all relevant factual or other evidence supporting your position.**

Magnet Networks agrees with the five regulatory approaches considered in this consultation are the most appropriate. Each of the five approaches considered looked at and evaluated all the potential regulatory options that are available to the regulator.

**Q. 2 Do you agree with the assessment criteria, as set out above, as being appropriate criteria to use to evaluate the five possible regulatory approaches identified in Chapter 4? Please explain the reasons for your answer, clearly indicating the relevant paragraph numbers to which your comments refer, along with all relevant factual or other evidence supporting your position.**

Magnet Networks believes that the grid set out in Figure 5.1 is comprehensive and takes into account all of ComReg's statutory criteria and off setting them with the criteria established by Analysys Mason when they are assessing the market for FVCT and MVCT in the Irish market in light of the requirement set down by the European Union.

**Q. 3 Do you agree that cost orientation by means of a pure LRIC methodology is the most appropriate approach to set Termination Rates in Ireland? Please explain the reasons for your answer, clearly indicating the relevant paragraph numbers to which your comments refer, along with all relevant factual or other evidence supporting your position.**

Magnet Networks is more used to a LRAIC+ model in Irish regulation, and thus, initially were not in favour of a pure LRIC model. However, after reading this consultation and the comments of the EU with regards to how other countries have implemented changes to termination rates, Magnet are in agreement that pure LRIC is the most appropriate method to set termination rates.

**Q. 4 Do you believe that asymmetry should be allowed for any FSPs or MSPs going forward? Please explain the reasons for your answer, clearly indicating the relevant paragraph numbers to which your comments refer, along with all relevant factual or other evidence supporting your position.**

Magnet Networks concern is that smaller operators are at a disadvantages as their unit cost may be higher than larger operators. Thus, at a symmetrical rate that smaller operator may be not be

recovering their costs whilst the larger operator may be making a profit on the same rate. This was identified at Clause 4.47. Thus, Magnet would be in favour of the asymmetry for FSP's. Magnet believes that the mobile operators all have a sufficient market share and are all sufficient to not be discriminated against if a symmetrical rate is imposed. Also, as the MVNO piggybacking on the mobile operators and thus, are able to take advantages of those operators efficiencies.

Whilst, in the fixed market, very few operators have a market share of over 10% and thus, having symmetrical rates based on the incumbent may be discriminatory and further foreclose the provision of voice services by these operators.

**Q. 5 Do you agree or disagree with the proposed benchmarking approach for MTRs set out above? Please explain the reasons for your answer, clearly indicating the relevant paragraph numbers to which your comments refer, along with all relevant factual or other evidence supporting your position.**

Magnet Networks agrees with ComReg's view outlined in Clause 7.47, that the pure LRIC model should be implemented using a benchmarking approach calculated against EU member states who have made a final and binding decision in relation to MTR.

**Q. 6 Do you consider that it is appropriate for ComReg to impose, with effect from 1 January 2013, a maximum weighted average symmetric MTR calculated on the basis of a benchmark approach which uses the MTRs imposed by NRAs in other EU Member States where there is a decision in force on MTRs based on a pure BU-LRIC model? Alternatively, do you consider that it would be appropriate for ComReg to apply that approach instead with effect from 1 July 2013 and to adopt the proposed glide path approach for the period from 31 December 2012 to 1 July 2013? Please explain the reasons for your answer, clearly indicating the relevant paragraph numbers to which your comments refer, along with all relevant factual or other evidence supporting your position.**

Magnet believe that the 1<sup>st</sup> January is too soon considering the time that it will take for ComReg to publish its decision and leave sufficient time for appeal between the end date of this consultation i.e. the 4<sup>th</sup> September and 4 months until the 1<sup>st</sup> January 2013. This will leave insufficient time for operators to redo rate cards and new offers etc.

Also, Magnet believe that adopting the approach from 1<sup>st</sup> July 2013 leaves ComReg more time to wait and see if more EU countries adopt a binding decision and thus, give ComReg more countries against which they can benchmark the service. Whilst also giving operators sufficient time to change their rate cards and retail offering.

**Q. 7 Do you agree with the proposed BU pure LRIC modelling approach for FTRs? Please provide reasons for your response. Please explain the reasons for your answer, clearly indicating the relevant paragraph numbers to which your comments refer, along with all relevant factual or other evidence supporting your position.**

Magnet Networks despite reservations in relation to symmetry of rates, does not object to ComReg's proposal for obtaining the rate by utilising BU pure LRIC based on the incumbent figures.

**Q. 8 Do you agree with the cost model inputs and assumptions proposed by ComReg in relation to the pure BU-LRIC model for FTRs? Please explain the reasons for your answer,**

**clearly indicating the relevant paragraph numbers to which your comments refer, along with all relevant factual or other evidence supporting your position.**

Magnet Networks agrees with the cost model inputs and assumptions proposed by ComReg and outlined in Clause 7.3.3. ComReg have taken a comprehensive look at all the elements that influence rates such as OPEX, CAPEX, depreciation and network topology. Magnet is glad that ComReg are favouring a BU rather than a TD approach.

**Q. 9 Do you agree with ComReg's proposals in relation to the implementation of its proposed pure BU-LRIC model for FTRs? Please provide reasons for your response. Please explain the reasons for your answer, clearly indicating the relevant paragraph numbers to which your comments refer, along with all relevant factual or other evidence supporting your position.**

Magnet Networks agrees with the proposals for implementing the BU LRIC model for FTR's as it's the most practical and reasonable proposal.

**Q. 10 Do you agree with ComReg's preliminary views as set out above regarding the treatment of common costs not recovered from pure LRIC for Eircom, the other SMP FSPs and the SMP MSPs? Please explain the reasons for your answer, clearly indicating the relevant paragraph numbers to which your comments refer, along with all relevant factual or other evidence supporting your position.**

Magnet Networks agrees with ComReg's views on the treatment of common costs that are not recovered via pure LRIC. Magnet believes that it will ensure efficiencies across all networks and internal costs savings must be made.

**Q. 11 Do you believe that the draft text of the proposed Decision Instrument in relation to FTRs contained in Chapter 8 is from a legal, technical and practical perspective, sufficiently detailed, clear and precise with regards to the specifics proposed? Please explain the reasons for your answer, clearly indicating the relevant section numbers to which your comments refer, along with all relevant factual or other evidence supporting your position.**

Magnet Networks believes that the draft text of the proposed Decision Instrument in relation to FTR's is clear from a legal, technical and practical perspective. The Decision Instrument is sufficiently detailed, clear and precise when outlining the proposed specifics.

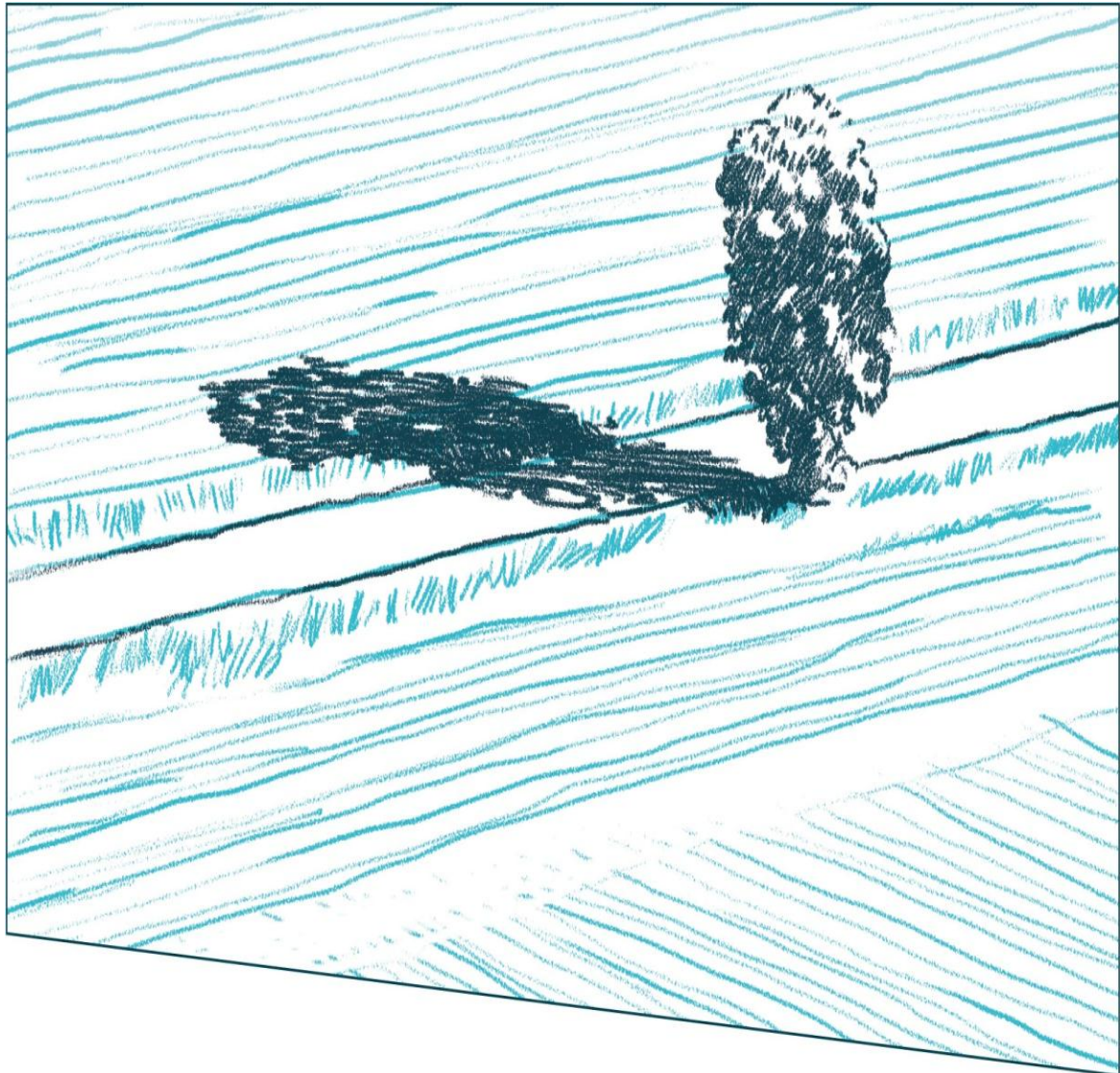
**Q. 12 Do you believe that the draft text of the proposed Decision Instrument in relation to MTRs in Chapter 9 is from a legal, technical and practical perspective, sufficiently detailed, clear and precise with regards to the specifics proposed? Please explain the reasons for your answer, clearly indicating the relevant section numbers to which your comments refer, along with all relevant factual or other evidence supporting your position.**

Magnet Networks believes that the draft text of the proposed Decision Instrument in relation to MTR's is clear from a legal, technical and practical perspective. The Decision Instrument is sufficiently detailed, clear and precise when outlining the proposed specifics.

**Q. 13 Do you have any views on the Regulatory Impact Assessment and are there other factors (if any) that ComReg should consider in completing its Regulatory Impact Assessment? Please explain the reasons for your answer, clearly indicating the relevant paragraph numbers to which your comments refer, along with all relevant factual or other evidence supporting your position.**

Magnet has reservations about same and refers to the issue highlighted at our introduction in relation to varying rates depending on day, evening and weekend calls.

## **6: Telefonica**



**Response to Consultation on voice termination  
rates in Ireland: proposed price control**

**Comments on Document 12/67**

*Telefonica*

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## ***Introduction***

Telefonica welcomes ComReg's consultation on the proposed price control for fixed and mobile termination rates. Telefonica notes that at the time of this consultation there is still an ongoing consultation in relation to the market review for voice call termination and issues raised in that consultation in relation to SMP. It would be Telefonica's view that such consultation and any proposed remedies need to be fully addressed and completed before issues raised in this consultation are fully addressed by ComReg.

Telefonica would therefore expect a further consultation on the price control mechanism following the conclusion of the market review before ComReg would make any final decisions in relation to the issues raised in this consultation.

Telefonica are concerned that ComReg are at this stage seeking to introduce onerous cost models and increasing the cost of regulation at a time when the mobile industry is in decline. The regulatory regime around voice termination for mobile calls has been in place for almost 10 years, the MTRs in Ireland are benchmarked to EU average rates, consumers are enjoying lower prices in a more competitive market and the voluntary arrangements put in place by Industry to reduce the MTRs have been implemented successfully. It is of great concern, given the positive developments in the past 10 years, that ComReg is seeking to change what is working and at the same time add costs to industry.

## ***General Comments***

As the National Regulatory Authority, ComReg is the responsible body for assessing and introducing any price controls on fixed and mobile termination rates. In doing so, ComReg is bound by a number of legislative objectives and responsibilities, set out under a variety of legislation, including the Communications Regulation Act 2002. Whilst Telefonica appreciates that it would not be the intention of ComReg to do so, it believes that the manner of this consultation and proposition put forward gives rise to significant concerns as to the proportionality and reasonableness of the intervention, doubts as to whether correct and due process has been afforded, and whether ComReg's obligations to promote competition and to encourage investment in infrastructure are compromised.

Without prejudice to the more specific issues noted through our responses, Telefonica would hold broad reservations as to the process being adopted by ComReg, whereby the measures in question appear to be being raised and implemented with undue haste. This seems to us to be triggered by a failure of ComReg to consider and apply this matter until recently, notwithstanding a significant period of time having been granted, and now seeking to implement within a limited and narrow period of time without sufficient and appropriate market analysis and assessment having been completed. This late and condensed treatment causes undue and improper disruptive impact to operators and their

businesses, potentially exacerbated by a limited timeframe to implement such new regime or to duly appeal and challenge the mechanism through appropriate channels (as has occurred in all EU states to date). We reiterate our observations above that there is a need for the due completion of the consultation on market review for voice call termination and SMP issues before these matters can be addressed. It also cannot be the position that operators are prejudiced by the inappropriate combination of multiple matters which should be separately assessed into one consultation. Operators are now being asked to submit observations on both the apparently pre-determined cost methodology (pure LRIC), as well as the exact methodology of implementation, as one combined consultation.

It would therefore be our general observation and submission (in addition to the specific points noted throughout) that the process adopted herein is fundamentally flawed as it, *inter alia*:

- (a) fails to properly assess and carry out all market analysis in advance of the consultations and recommendations being issued;
- (b) fails to duly segregate and conclude each section of consideration individually before progressing to the next element – for example (i) Determination of SMP; (ii) Determination of relevant cost methodology and whether underpinned by symmetry or asymmetry and (iii) Methodology of Implementation;
- (c) fails to provide due and measured consideration of MTRs in a conducive and timely fashion, resulting in such unduly hasty consideration and implementation in an unfair and burdensome manner upon operators; and
- (d) fundamentally discloses a bias and pre-determination in favour of the European Commission Recommendation on the Regulatory Treatment of Fixed and Mobile Termination Rates in the EU (2009/396/EC) (hereafter “**the EC Recommendation**”)

On the last point, whilst Telefonica acknowledges ComReg’s obligation to take ‘upmost account’ of the EC Recommendation (clause 3.27 of consultation), Telefonica is of the view that ComReg has far greater freedom to consider alternative structures and propositions than the slavish following of the EC Recommendation as proposed. Telefonica would also observe that ComReg must ensure, in any price control mechanism implementation that such decision is not pre-judged, is proportionate and supports the remainder of ComReg’s legislative obligations. The structuring of a consultation which is designed to result in the adoption of a pre-determined proposal is not appropriate, nor a correct reflection of due process.

**Reservation of Rights:** With the foregoing concerns as to validity of the process and the lack of analysis carried out, as well as the more specific grounds of concern noted through our responses, Telefonica fully reserves its rights to continue to raise all concerns and objections raised in all of its responses, including in the event of O2 objecting to any ultimate Decision adopted by ComReg. O2

must also fully reserve its rights to seek an indemnity against losses caused by ComReg or by the State as a result of it proceeding with any aspect of this proposal that is unlawful.

Telefonica fully reserves its rights to comment on such issues in the next stage of consultation and any failure to comment on specific aspects of this document 12/67 should not be taken as implicit acceptance of specific assertions in the document. Furthermore, any response of 'no comment' to questions posed should not be taken as any type of implicit support or endorsement of the approach of ComReg on such matter. Telefonica also fully reserves its rights to raise further concerns, including ones similar to those that may be raised by such other operators in their responses which equally impact upon the position of Telefonica and the industry more generally, including in the event of Telefonica objecting to any ultimate Decision adopted by ComReg.

Telefonica must also fully reserve its position with regard to the limited amount of time that has been provided to Telefonica and the industry, to deal with ComReg's latest proposal and the consultation process as a whole – particularly mindful that earlier stages have not allowed sufficient time for the due collation and provision of information to ComReg. We must therefore fully reserve the right to supplement this response with further comments.

Telefonica notes ComReg's request under all questions to provide "*...all factual or other evidence supporting your position...*". Further to the flaws and issues indicated throughout our response, we believe that it is impossible to provide all such items at this present time, as much of this consultation is affected by the lack of evidential material, applicable justification or other information which should have been provided by ComReg in support of its' proposition and conclusions. Telefonica should not be prejudiced by this failure, or inferred to be incapable of providing further support of its position, and thus entirely reserves its position to supply further evidential materials behind our position at a later stage.

## Response to Consultation Questions

**Q. 1** Do you agree with the five regulatory approaches considered or are there any other approaches that respondents consider should be assessed in the context of this Consultation Document? Please explain the reasons for your answer, clearly indicating the relevant paragraph numbers to which your comments refer, along with all relevant factual or other evidence supporting your position.

Telefonica agrees with the regulatory approaches however a number of these approaches are predicated on the outcome of the market review. Specifically ComReg cannot decide in this consultation to have no price control if the market review concludes that a price control remedy is appropriate.

**Q. 2** Do you agree with the assessment criteria, as set out above, as being appropriate criteria to use to evaluate the five possible regulatory approaches identified in Chapter 4? Please explain the reasons for your answer, clearly indicating the relevant paragraph numbers to which your comments refer, along with all relevant factual or other evidence supporting your position.

Telefonica agrees broadly with the framework adopted by Analysys Mason and it is a useful exercise to consider the appropriateness of the regulatory approaches in the context of legislative and operational objectives. However, Telefonica believe there are a number of flaws in the model which lead to biases and predetermination of the regulatory approach adopted which undermine the framework.

Firstly ComReg does not have the discretion to decide not to apply price control. It is not a realistic approach if ComReg, through the market review, decide that price control is a remedy to be imposed. As discussed above and in response to Q.1 above it is still uncertain what views ComReg will take on remedies and therefore this approach is rather premature at this stage. Accordingly, we reiterate our general observation that this consultation is flawed in being progressed without prior resolution of the market review and SMP consultation.

It would also appear that the overriding criterion, which all other criteria and approaches must follow, is the perceived need to take utmost account of the 2009 EC Recommendation. There are, for example, BEREC and ERG guidance on termination rates which are not given the same importance as the 2009 EC Recommendation. ComReg have objectives to protect consumers and promote competition and to promote investment, but none of these criteria are assessed in the framework.

Telefonica would also note, per clause 2.6 of your consultation, that previous assessments of price control obligations in this field have acknowledged the requirement to realise a reasonable rate of return of investment. It is submitted that not only are such considerations appropriate with regard to ComReg's general objectives to promote competition and encouraging efficient investment in infrastructure and promoting innovation (Communications Regulation Act 2002), but any deviation from such principle amounts to the distortion of the reasonable expectation held by operators that they would retain the possibility of recovering returns on current investment in this arena and this would actively lead to an impact on ongoing investment in infrastructure as noted in the following response.

ComReg is placing too heavy an emphasis on the EC Recommendation and there is a risk that the exercise in chapter 6 is only a preamble to the full implementation of the EC Recommendation. Similar recommendations from the EU, for example on accounting separation, have not been given such prominence in the past. In fact, the analysis of article 7 notifications, numbers of appeals pending and court findings which are contrary to the EC Recommendation suggest that ComReg should approach the implementation of the recommendation with some considerable caution.

Telefonica would also note that there is no scoring or ranking in the framework and rather scant consideration of some approaches, for example, the ease of decision and implementation of the approach, leading to the inescapable view that the outcome is predefined by ComReg to follow the EC Recommendation.

Whilst we note ComReg's assertion that it is to take 'utmost account' of the EC Recommendation, we must emphasise that such requirement does not extend to an obligation to adopt such EC Recommendation<sup>1</sup>. ComReg continues to have a discretion and an obligation to take account of the specific needs of the electronic communications sector in the State. Telefonica submits that this is particularly crucial here where implementation as proposed would, in our view, conflict with ComReg's overriding functions and objectives and be in such a manner which involves a flawed process and disproportionate implementation.

**Q. 3** Do you agree that cost orientation by means of a pure LRIC methodology is the most appropriate approach to set Termination Rates in Ireland? Please explain the reasons for your answer, clearly indicating the relevant paragraph numbers to which your comments refer, along with all relevant factual or other evidence supporting your position.

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<sup>1</sup> It is noted that following comparable Irish authorities (see generally *McEvoy –v- Meath County Council* and *Glencar Exploration –v- Mayo County Council*) in the absence of clear language obliging compliance, ComReg is not bound to follow and adopt such mere 'recommendations'.

Telefonica fundamentally disagrees with the argumentation and presentation of the paragraphs examining the approaches to cost orientation. ComReg are proposing a methodology not followed in Ireland before and provide no empirical evidence why pure LRIC is appropriate for Ireland when to date other methodologies have been preferred. The only argumentation provided is based on the European commission view and their serious doubts letters. As ComReg detail in Figure 4.2 and 4.3 pure LRIC is not the model adopted in the vast majority of countries. It is a model rejected, as ComReg point out in para 3.44, by the Dutch courts and is subject to appeal in a number of other jurisdictions. It appears ComReg's decision to adopt pure LRIC has been prejudged to avoid a serious doubts opinion from the EU Commission and it would be Telefonica's expectation that even if a majority of respondents disagree with ComReg on Pure LRIC, ComReg will still pursue the methodology based on a perceived need to follow the EC 2009 Recommendation.

Telefonica would further note that in the discussion on appropriate methodologies there is no mention of investment and the need to ensure there is sufficient return on investment. Specifically in relation to mobile there is an expectation that operators will roll out LTE networks in the next few years. This investment will be severely curtailed by the introduction of pure LRIC. It is a function of ComReg to promote investment yet there is no discussion of investment in setting these wholesale prices.

It is also suggested at section 3.29 and 5.57 of the consultation (referring to the Recommendation at section 3.4, page 15) that "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". We would fundamentally disagree with this contention. Implementation through the disproportionate mechanism and calculation proposed would not only undermine any expectation of realising a reasonable return on investment, but would directly lead to a reduction in future investment or innovation in the marketplace, as the potential for recovery of such investment would be practically restricted.

**Q. 4** Do you believe that asymmetry should be allowed for any FSPs or MSPs going forward? Please explain the reasons for your answer, clearly indicating the relevant paragraph numbers to which your comments refer, along with all relevant factual or other evidence supporting your position.

Telefonica believe asymmetry in MTRs has been beneficial in the market to date and would support asymmetry for a short period of time to allow new entrants and those operators establishing in the market to compete. If clear guidance is given by ComReg in relation to the policy on MTRs and asymmetry then the issues raised in para 6.95 would not be encountered.

**Q. 5** Do you agree or disagree with the proposed benchmarking approach for MTRs set out above? Please explain the reasons for your answer, clearly indicating the relevant paragraph numbers to which your comments refer, along with all relevant factual or other evidence supporting your position.

Telefonica would agree that a benchmarking approach is preferable to the introduction of expensive cost models, subject to the comments below. ComReg have an obligation to consider the most cost effective, more proportionate implementation of a remedy. It is not only ComReg's resources which are constrained. Many operators have limited resources and limited funds available to develop and implement a cost model with the objective of reducing wholesale revenue. The implementation of the wholesale access of the roaming regulation will also impact on resources and cost in MNOs in 2013 and the cost and delays of introducing such a model should not be underestimated.

Although Telefonica would support a benchmarking approach in principle ComReg would need to ensure any benchmarking is robust and objectively suitable to a small market such as Ireland. Such a benchmark would adjust for network size, topology and purchasing parity factors. Telefonica's view therefore is that this proposal involves an entirely disproportionate assessment (as it would compel the mirroring of treatment to one of the largest countries, customer bases and economies in the EU) and impact (in rapidly reducing MTR's in Ireland far below current standings and current EU averages). When one further considers the precarious state of the Irish economy and the reduced viability of operators recovering any further investment, we question the validity of such proposition. Accordingly, Telefonica would not support a benchmark based only on those markets where pure LRIC is in place. For the reasons outlined above Telefonica would not support the introduction of pure LRIC and the evidence from the EU is that a majority of NRAs are not implementing pure LRIC. Telefonica believes it is reasonable to continue to benchmark to the BEREK average. MTRs are continuing to reduce and will continue to reduce if the current trends are forecasted into the future.

**Q. 6** Do you consider that it is appropriate for ComReg to impose, with effect from 1 January 2013, a maximum weighted average symmetric MTR calculated on the basis of a benchmark approach which uses the MTRs imposed by NRAs in other EU Member States where there is a decision in force on MTRs based on a pure BU-LRIC model? Alternatively, do you consider that it would be appropriate for ComReg to apply that approach instead with effect from 1 July 2013 and to adopt the proposed glide path approach for the period from 31 December 2012 to 1 July 2013? Please explain the reasons for your answer, clearly indicating the relevant paragraph numbers to which your comments refer, along with all relevant factual or other evidence supporting your position.

Telefonica, as stated above, disagrees strongly that any benchmarking should be based only on Pure LRIC MTRs. ComReg's analysis of the current status of decisions on PURE LRIC reinforces the view that the methodology is not appropriate and is only being implemented by NRAs on the basis of the EC 2009 recommendation. By way of example, if we are to adopt option 1 on the 1<sup>st</sup> January 2013 it is quite possible we will set the French MTR for Ireland as the only Pure LRIC decision in the EU. This

is patently ridiculous. For a benchmark to be a benchmark it needs more than a handful of countries and certainly needs more than 1.

We further suggest that it is inappropriate to couch the benchmark and proposed final decision based on an underlying 'assumption' that other countries will adopt a similar pure LRIC approach and further figures for benchmarking would be available<sup>2</sup>. This leads to significant confusion and uncertainty as to what the exact pricing that would apply will be and may lead to substantial variation in the short to medium term, likely in an upward direction, following such a substantial reduction below EU average. Telefonica, subject to reservations above would have a preference for option 2 simply because the landscape on MTRs would be much clearer, however, Telefonica would disagree with the interim step to 2.42c as it is based on a benchmark of pure LRIC and of countries where the decisions are under appeal and have been annulled. ComReg should continue with the existing benchmarking arrangements which have delivered reductions of 50% in the past two years until such time as the methodology to be adopted by ComReg has been agreed. ComReg have yet to decide on SMP issues and remedy issues and this question presumes decisions on the market review and the appropriate cost methodology. Telefonica believe that following decisions on SMP and the appropriate cost methodology, ComReg should consult further in the New Year on the appropriate implementation of the cost methodology and the benchmarking timetable and approach at that time.

Telefonica would strongly resist any attempt by ComReg to circumvent the consultation process by trying to fast track measures which have fundamental impacts on the operations of Telefonica in Ireland.

**Q. 7** Do you agree with the proposed BU pure LRIC modelling approach for FTRs? Please provide reasons for your response. Please explain the reasons for your answer, clearly indicating the relevant paragraph numbers to which your comments refer, along with all relevant factual or other evidence supporting your position.

No Comments

**Q. 8** Do you agree with the cost model inputs and assumptions proposed by ComReg in relation to the pure BU-LRIC model for FTRs? Please explain the reasons for your answer, clearly indicating the relevant paragraph numbers to which your comments refer, along with all relevant factual or other evidence supporting your position.

No Comments

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<sup>2</sup> Clause 7.58 (".....it is anticipated that, given the deadlines set out in the 2009 Termination Rate Recommendation, the number of EU Member States that will have pure BU-LRIC MTRs in place may in fact increase by the time ComReg makes its final decision.").



**Q. 9** Do you agree with ComReg's proposals in relation to the implementation of its proposed pure BU-LRIC model for FTRs? Please provide reasons for your response. Please explain the reasons for your answer, clearly indicating the relevant paragraph numbers to which your comments refer, along with all relevant factual or other evidence supporting your position.

No Comments

**Q. 10** Do you agree with ComReg's preliminary views as set out above regarding the treatment of common costs not recovered from pure LRIC for Eircom, the other SMP FSPs and SMP MSPs? Please explain the reasons for your answer, clearly indicating the relevant paragraph numbers to which your comments refer, along with all relevant factual or other evidence supporting your position.

The structure of the pure LRIC approach in not providing a direct mechanism of recovery for unavoidable common costs is flawed and gives rise to the potential of further damage to the competitive landscape and a detrimental effect of future investment and innovation in the Irish marketplace. In the existing challenging economic environment, with vast reductions in ARPU and various strategic alterations by Irish operators to their business models with cost-cutting initiatives and voluntary redundancies of staff across the board, it is simply unsupportable to suggest that MSPs can simply cover these common costs in other methods. The rationale provided is based on wide-ranging assumptions, without evidential support or assessment, as to the capability of MSPs to simply absorb or otherwise account for these additional costs. This is therefore completely without proper consideration of the ability to do so (as we believe the examples of recovery proffered are flawed and unsupportable as a full market analysis would be needed as to the costs and realisable benefits), or the actual impact of such financial imposition and obligation on such MSPs. This is again contrary to ComReg's over-arching obligations and responsibilities in carrying out an appropriate regulatory assessment and determination.

**Q. 11** Do you believe that the draft text of the proposed Decision Instrument in relation to FTRs contained in Chapter 8 is from a legal, technical and practical perspective, sufficiently detailed, clear and precise with regards to the specifics proposed? Please explain the reasons for your answer, clearly indicating the relevant paragraph numbers to which your comments refer, along with all relevant factual or other evidence supporting your position.

No Comments

**Q. 12** Do you believe that the draft text of the proposed Decision Instrument in relation to MTRS in Chapter 9 is from a legal, technical and practical perspective, sufficiently detailed, clear and precise with regards to the specifics proposed? Please explain the reasons for your answer, clearly indicating the relevant paragraph numbers to which your comments refer, along with all relevant factual or other evidence supporting your position.

All prior observations and comments as to the unsuitability of the mechanism and calculation used are reiterated. Specifically, it is noted that the definition of '*Benchmark of BU Pure LRIC Mobile Termination Rates*' fails to incorporate a minimum quantity of member states to create a realistic benchmark.

**Q. 13** Do you have any views on the Regulatory Impact Assessment and are there other factors (if any) that ComReg should consider in completing its Regulatory Impact Assessment? Please explain the reasons for your answer, clearly indicating the relevant paragraph numbers to which your comments refer, along with all relevant factual or other evidence supporting your position.

A regulatory impact assessment should be more than text justifying a course of action. A RIA should be evidenced based and not a speculative narrative of how a market or an operator, incumbent or new entrant, may behave in a given scenario. ComReg's RIA should not be littered with opinions and speculation without evidence or supporting argument. In other member states market assessments are conducted as a source of supporting evidence for RIA's. ComReg have not taken or concluded, in advance of this consultation, sufficient market assessments or independent reviews of the mobile market, the impact of this variation on that market or the impact on competition. It is incredible given the importance of this modelling on termination rates to the future of Ireland's mobile services that ComReg have not appropriately carried out a market assessment to support its viewpoint.

It also appears from parts of the consultation paper (e.g. section 5.38) and analysis that one support for the disproportionate reduction in MTRs is based on a perception that such rates are unduly high when compared to FTRs, potentially leaving FSPs at an investment and competitive disadvantage. We submit that such determination is fundamentally flawed and incorrect and cannot be justified without such full and complete market analysis as should be carried out in this matter. Indeed, it is noted that "*...the predominant trend still appears to be towards complementary fixed line and mobile ownership...*". Telefonica would submit that justifications based on such insufficiently supported analysis are actually likely to cause greater disruption and harm, in that an artificial and disproportionate reduction in MTRs would unfairly impact the competitive bias in the telecommunications market – not merely between FSPs and MSPs, but potentially also in the MSP

market where certain parties with dual services might disproportionately benefit from the greater impact on their competitors acting only in the mobile market.

## **7: Tesco Mobile Ireland**

NON-CONFIDENTIAL VERSION

**Voice Termination Rates in Ireland**  
**Proposed Price Control for Fixed and Mobile**  
**Termination Rates**

**ComReg Consultation Document No. 12/67**

**Submission by Tesco Mobile Ireland ("TMI")**

31<sup>st</sup> August 2012

## Response to ComReg 12/67 – Voice Termination Rates in Ireland

### A. Introduction

1. This is the Tesco Mobile Ireland (TMI)'s response to ComReg's consultation document 12/67 entitled "Voice Termination Rates in Ireland: Proposed Price Control for Fixed and Mobile Termination Rates".
2. This response must be read in the context of, and in combination with, TMI's earlier response to ComReg's Consultation and Draft Decision 12/46 (the Market Review), in which ComReg indicated its *preliminary* view was that TMI had significant market power (SMP) "in its Relevant MVCT Market". Of critical importance is whether TMI should be designated with SMP in any aspect of its activities, and therefore whether the consultation at hand should apply to TMI at all.
3. A determination in respect of the Market Review has not yet been made. TMI's response to the Market Review, dated 19 July 2012, made it abundantly clear that that SMP should not be applied at this time. In light of the impact that ComReg's decision in respect of the Market Review will have on TMI, the consultation at hand should not in fact have been commenced until that decision was taken; the current consultation should either be terminated or restarted at a later date, or TMI should be excluded from the scope of pricing regulation. Otherwise, ComReg would be making a premature decision without possession of all of the facts and market participants such as TMI would be forced to make submissions on one consultation (this one) without knowing the outcome of another interconnected consultation (i.e., the Market Review). In essence, ComReg has purportedly not decided whether TMI should be designated as having SMP but is already consulting on what should be the appropriate pricing. Put in lay person's term, no decision has apparently been made on whether the accused is guilty or not, but the consultation has already commenced on sentencing. This is clearly a situation where this consultation should be, at the very least, suspended.
4. TMI has appealed to ComReg to allow a reasonable period of time to respond to this consultation, especially given the tight timeframes since the submission date of ComReg 12/46. As stated in TMI's letter to ComReg of 3 August 2012, due to the publication on 23 May 2012 of the Market Review, TMI was not in a position, until the submission of its response on 19 July 2012, to assess the implications of this consultation and to set about preparing a response. TMI is an MVNO which, unlike MNOs operating in the market, has not previously been subject to price regulation of this nature before. The principle of equality of treatment would dictate that TMI ought to be given more time to respond fully and properly.
5. As expressed in TMI's response to the Market Review, it is a principle of good administration that timelines granted by administrative agencies are appropriate and that a party who is invited to make a submission is provided with the "complete picture" to enable to make an appropriate submission. However, due to the fact that a connected consultation process was underway for part of the consultation period, TMI has not been given the full picture in order to respond adequately to this consultation.
6. In the consultation, ComReg recalls, quite rightly, that in "accordance with the Communications Regulation Acts 2002 to 20114, ComReg has a number of regulatory objectives including, to

promote competition, to contribute to the development of the internal market and to promote the interests of users within the Community.”<sup>1</sup> What is being proposed in this consultation runs counter to each of those *statutorily binding obligations*: (a) if the proposals in the consultation paper were implemented then competition would be reduced not promoted with larger incumbents benefitting to the prejudice of smaller operators; (b) the internal market would not be developed; and (c) the interests of users (particularly, those on pre-pay plans (who are often the more economically challenged members of society) ) would be prejudiced and not enhanced.

7. TMI requests that its submissions in regard to the Market Review are read in conjunction with this submission and that the arguments are adopted and apply in this context *mutatis mutandis*. It is clear that ComReg may not and should not apply the EC Recommendation in an unquestioning manner – it is plainly a non-binding recommendation and not a binding legal measure. It should only apply the regime in so far as it is necessary to do so in the interests of competition and subject to the principles of proportionality and good administration. ComReg, as an emanation of the State, has certain obligations under EU law including the promotion of competition and consumer welfare and the contemplated course of action in this consultation would clearly run counter to those objectives. ComReg has failed to demonstrate that a price control obligation is appropriate (which is clearly a necessary prerogative<sup>2</sup>).
8. ComReg will recall the Taoiseach’s White Paper on Regulating Better identified the six principles of good regulation as necessity, effectiveness, proportionality, transparency, accountability and consistency. With respect, the course of action proposed in the consultation satisfies none of those criteria not to mind all of them.
9. The proposed course of action would not only damage competition but consumer welfare. The Supreme Court has “[t]he entire aim and object of competition law is consumer welfare. Competitive markets must serve the consumer. That is their sole purpose.”<sup>3</sup> The same could well be said for communications regulation law in that competition law and regulation law are so interconnected and the proposed course of action would damage consumer welfare for the reasons set out in this submission.
10. ComReg will also recall that it is seeking to comply with an EC recommendation and that, as the measure is an EU one, ComReg must be guided by the jurisprudence of the Court of Justice including cases law such as *R v Ministry of Agriculture, Fisheries and Food, ex parte FEDESA* where the court stated that by virtue of the principle of proportionality, “the lawfulness of the prohibition of [or, TMI would submit, interference with] an economic activity is subject to the condition that the prohibitory measures are appropriate and necessary in order to achieve the objective legitimately pursued by the legislation in question; when there is a choice between

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1 Consultation document 12/67, para.2.1.

2 E.g, the comments of the EC in regard to Spain where the Commission said: “The Commission agrees with CMT that *based on the competition problem identified by CMT*, consisting of the risk of excessive pricing for fixed to mobile calls and the potential price-discrimination of off-net mobile calls, a price control remedy is *appropriate*” (emphasis added) but not competition problem has been identified by ComReg therefore no remedy can be appropriate.

3 *Irish League of Credit Unions v Competition Authority*, [2007] IESC 22 (2007), Fennelly J (speaking for the entire Supreme Court).

several appropriate measures recourse must be had to the least onerous, and the disadvantages caused must not be disproportionate to the aims pursued.”<sup>4</sup> It is manifestly clear that the proposed measure does not meet that standard.

## **B. Cost models**

11. TMI is a small mobile virtual network operator with its services hosted on the radio network run by O2. TMI is therefore not in a position, nor been allowed adequate time by ComReg, to supply detailed cost data across the whole of its network operations, as TMI does not have access to O2 network data or the finances and resource required to build such complex cost models.<sup>5</sup>
12. TMI notes that ComReg proposes to use a benchmarking approach in setting the initial MTR levels.
13. TMI has had inadequate time to respond to this consultation and has not been able to produce its own cost model due to it being the first time it has been regulated and the insufficiency of time. TMI reserves the right to make a cost model submission at a later date should this methodology be used in further determinations.

## **C. Impact of rapid imposition of MTR reductions**

14. TMI reiterates its position that SMP need not and should not apply to its operations.
15. Without prejudice to this position, TMI considers that ComReg has not given sufficient consideration to the implications of its proposals particularly with regard to the rapid imposition of drastic mobile termination rate (MTR) reductions at very short notice. ComReg proposes that TMI should reduce its MTR from a current average of 11.15 cents to a price of 2.42 cents with effect from 1 January 2013 which will be followed by a further reduction to 0.8 cents from 1 July 2013. This is a dramatic reduction of 94% over the space of six months.
16. ComReg will not formally announce its decision on the Market Review until at least November 2012 which gives TMI a matter of but a few weeks in which to implement ComReg’s decision. As the discussions are currently ongoing, TMI cannot make commercial adjustments in the interim on the basis of what may or may not be imposed. These timescales are in themselves unacceptable and unreasonable. ComReg’s proposal is the first time that TMI has been regulated on its termination rates. There is significant unpredictability in both the application of the SMP determination and this pricing regulation. Substantially more time is required to accommodate the changes.
17. At many points in its consultation document, ComReg uses the phrase that customers should ‘ultimately’ benefit (i.e., at some indeterminate time in the future), but has not provided any solid evidence to substantiate this claim or indication as to when such a benefit might (if ever) materialise. Whether or not such benefits will eventually accrue is a matter of discussion, but it

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<sup>4</sup> Case C-331/88 [1990] ECR I-4023, para.13.

<sup>5</sup> In making its submission, TMI is not seeking favouritism or protection for itself but it is seeking to ensure that it may continue to be an important bulwark and force for competition and thereby for the benefit of the consumer.



is immediately clear that the transition from the current system of MTR regulation to the proposed arrangement is of significance. If too rapid a change is forced upon the mobile operators there could well be serious detriment to the Irish market, the nature of competition between the mobile operators which in the short to medium term will have adverse consequences for Irish customers even if 'ultimately' the market will adjust with perhaps fewer mobile service providers.

18. TMI believes that the size, scale and pace of reductions in TMI's MTRs proposed by ComReg would be out of line with all established precedent throughout Europe. This creates real risks around whether and how customer benefits will be realised, and the future of competition in the Irish mobile market.

19.

[REDACTED]

[REDACTED] TMI's presence as a new and innovative small player has accelerated customer benefits, with Pay Monthly SIM only deals for less than €20 per month, and international outbound call charges at 1c per minute, rather than 20-40c per minute.

20. ComReg must spell out how exactly Irish customers will benefit. The existing MTR arrangements allow new competition to come into the marketplace which drives down prices for all customers. The current arrangements where new operators are allowed a higher MTR until such time as they reach a market threshold and then decline gradually to the standard MTR rate has encouraged competition and benefited customers. Changing this policy will have adverse consequences for both competition and the Irish consumer, but certainly risks stifling existing and new competition.

21. Reducing MTRs drastically will have the effect of reducing handset subsidies as seen in the UK and Spain, where MTRs are proposed to be reduced to the level proposed by the EC.<sup>6</sup> Prepaid customers are likely to be persuaded to move on to post-paid schemes which give consumers with low levels of disposable income less control over their expenditure and may mean that overall they pay more, by committing to far more minute, text and data than they need. There is a likelihood that ComReg's proposal means that post-pay customers will benefit at the expense of pre-pay customers, which will be a perverse regulatory outcome.

22. With rapid changes in MTR levels it is likely that the major operators will be in a stronger position to maintain their market shares and possibly to grow their share at the expense of the smaller operators. This is particularly the case where the larger operators will have a much smaller reduction in their MTR prices, both as a percentage difference in the actual MTRs and the percentage reduction that this will represent as part of the total revenue stream.

23. ComReg proposes that TMI will be required to make a 94% reduction in its mobile termination rates within a matter of six months, with only one month's notice of the initial reduction of 78%. In the same six month period, the major operators will be required to reduce by 67%.

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<sup>6</sup> <http://www.ecnmag.com/articles/2012/06/elimination-handset-subsidies-would-represent-tectonic-shift>. Also see footnote below regarding Carphone Warehouse in the UK.

[REDACTED]

[REDACTED]

[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]

- 26. ComReg acknowledges that there will need to be a rebalancing of revenue streams or what has been called the waterbed effect. It is inconceivable that this rebalancing could take place in 6 months, let alone 1 month. Such adjustments need to be made over time to make sure that there is a smooth transition from one price structure to another. Consumers will be confused by rapid price changes with insufficient warning. ComReg's proposed requirement to make substantial changes to MTRs on just one month's notice, and with a formal requirement timescale of perhaps two or three months, is wholly inappropriate to make changes of this scale. There is likely to be a disruptive change to the Irish market which is most unlikely to work to the benefit of the Irish consumer or competition.
- 27. As outlined in the response to the Market Review, ComReg's proposed transition must reflect the obvious differences as between TMI and the major MNOs, not least their high retail market shares, complex and advanced infrastructure and cost base. ComReg must take account of the fact that the MNOs have been subject to previous consultations and determination in relation to SMP and price control and have been afforded adequate time to adjust to their implications.
- 28. TMI is a small operator with pared down costs of its own. There are no large costs to be removed to balance the proposed significant drop in revenue. With retail prices largely set by the market in what is universally acknowledged to be a competitive retail market, there is little scope for a small operator such as TMI to make substantial upwards changes to its retail offerings. TMI could increase its retail prices or reduce handset subsidies in order to attempt to net off the major revenue decrease from termination rates but at the major cost of customers deserting its network. This is not a tenable situation for TMI nor aligned with the Tesco values.
- 29. The rapid adjustment to its MTRs will leave TMI in the invidious position of having its wholesale revenues dramatically reduced without in the short term being able to increase its retail revenues or to reduce its costs. ComReg's proposal on reducing MTRs will lead to the perverse outcome of the reduction in competition if smaller operators such as TMI are forced to constrain

their activities or indeed to consider their position in the Irish market. The result will be that the larger operators will be strengthened in their market position which is only likely over time to lead to a diminution of competition.

30. At paragraph 5.48 ComReg states 'Such enhanced inter-network competition should ultimately benefit all mobile subscribers in terms of price and service innovation over time.' But this can only be true where competition between mobile service providers can be maintained and indeed strengthened by the growing position of the smaller operators. It is the smaller operators that are most likely to introduce innovative new retail products which will be harmed if these operators are the ones that feel themselves squeezed in the transition to the new pricing structure. Rather than having a wishful statement, ComReg must demonstrate tangible benefits to the Irish consumer. At paragraph 7.65, ComReg states that it 'has to consider whether it is proportionate to introduce fully compliant pure LRIC cost-oriented rates from 1 January 2013, in circumstances where a final decision is only likely to be taken by ComReg towards the end of 2012. ComReg is very conscious of striking a balance between protecting consumer welfare, on the one hand, and considering the least disruptive impact any final decision may have on MSPs, on the other.' TMI considers that the proposed changes will be significantly disruptive and it is not proportionate to make the changes in such an unreasonably short timeframe.

[REDACTED]

[REDACTED]

[REDACTED] It is not feasible for TMI to absorb this degree of lost revenue and expect to remain in the market.

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

38. It is clear that making rapid changes to MTRs with large revenue reductions will have a disruptive impact on the market, consumer welfare and the level of competition. The smaller operators are the ones which are most likely to suffer the most and yet it is these mobile providers who are offering the lowest prices to consumers in order to gain market share from the more established operators. ComReg at the very least needs to allow significantly more time for its proposals to be implemented (assuming that they are appropriate at all) in order to minimise the disruption to consumers which ComReg itself recognises to be a key concern.

**D. Impact of traffic flows**

39. ComReg appears to assume that traffic flows to and from a smaller mobile provider are net outwards i.e. that the smaller operator generates more cross-network traffic than it receives. This may be true for mobile operators who have concentrated on post-pay high end business and other consumers, but is not a useful assumption for all mobile operators.

[Redacted]

41. ComReg states that the new MTR pricing structure will help smaller mobile service providers including new entrants by reducing financial imbalances. '6.76 A pure LRIC approach would result in reduced Termination Rates as it only considers relevant incremental costs. This would facilitate mobile-to-mobile competition in Ireland, in that smaller Service Providers would have a more level playing field due to the reduced impact of financial imbalances.'

[Redacted]

43. Paragraph 5.23 reads 'Termination Rates set at an efficient level of cost would thus lower the financial barriers to entry/expansion faced by late entrants with large off-net traffic outflows.' This is true for the specific type of late entrant mentioned with large off-net traffic flows, but not all late entrants have this traffic pattern. TMI is an example where the traffic balance is largely neutral. ComReg must ensure that it does not adjust the competitive landscape to ensure that only one niche of the marketplace can be addressed by new or developing entrants.

44. Rather than encouraging competitive entry into all parts of the market, ComReg is ensuring that the existing operators have their position protected. The existing operators will be the operators who have their reduction in termination rates counterbalanced by reducing out payments to the smaller operators.

**E. Regulatory impact assessment**

45. ComReg includes a regulatory impact assessment for both mobile service providers and for consumers. However, ComReg has not sufficiently considered the impact that its proposals will have on the smaller MSPs, consumers or competition. ComReg has written its view of the ultimate benefits that may pertain without considering the essential implications in the short to medium term.

46. TMI provides below its views on ComReg's RIA provided at section 10.5 of its consultation document.

Impact on Small Mobile Service Providers	Comment
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<p>1. Initial reduction in call termination revenues. Mitigation by increased volumes of incoming calls and increased volumes of outgoing calls.</p>	<p>[REDACTED]</p> <p>[REDACTED]</p> <p>[REDACTED]</p> <p>Any price elasticity of incoming volumes is likely to be small given that other mobile operators do not differentiate between calls to other mobile operators.<sup>12</sup></p> <p>For incoming calls, there would have to be a 17 fold increase in volumes to compensate for the reduced revenues. This is completely unlikely. For outgoing calls there would need to be an increase in volumes of 2.5 times to compensate for this reduced revenue. It is not easy to see why customers would make such increased numbers of calls when it has presumably suddenly become cheaper for others to ring them from fixed lines.</p>
<p>2. Reduction in costs</p>	<p>[REDACTED]</p> <p>[REDACTED]</p> <p>[REDACTED]</p> <p>[REDACTED]</p>
<p>3. Recovering common costs from customers</p>	<p>[REDACTED]</p> <p>[REDACTED]</p> <p>[REDACTED]</p> <p>[REDACTED]</p> <p>[REDACTED]</p> <p>[REDACTED]</p>
<p>4. Innovative and flexible retail tariffs</p>	<p>TMI already offers a flat rate for calls to other networks whether mobile or fixed.<sup>13</sup> A reduction in the MTR of other mobile networks by 2 cents will give some room for change but will not provide a great deal of flexibility, particularly as outgoing calls will in future have to cover more of the network costs.</p>
<p>5. Cost reduction</p>	<p>As a MVNO, TMI is dependent upon its commercial relationship with O2. It might be possible for TMI to renegotiate its contracts with O2 but, when O2 is itself losing revenue from reducing call termination, this will not be a straightforward agreement. Any such negotiations are likely to be protracted.</p>
<p>6. Converged fixed - mobile prices</p>	<p>TMI already offers such a plan. Such innovation is already in place.</p>

<sup>12</sup> <http://www.vodafone.ie/planscosts/prepay/pricing/talk-text/>

<sup>13</sup> <http://www.tescomobile.ie/other-call-charges.aspx>

7. Investment incentives	TMI will face additional competitive pressures. Rather than providing an incentive to invest, the dramatically reduced revenue may provide a strong disincentive to invest. If TMI were to come under severe financial pressure it may have to consider its position in the market altogether. Given that it is offering amongst the cheapest prices in the mobile market at present, such a move would be unlikely to be to the benefit of customers.
8. Inefficiently incurred costs	TMI is run on a very cost efficient manner already. Drastic reductions in revenues in the short term will lead to a difficulty in continuing to invest as the opportunity for cost reduction is very limited as discussed at paragraph 28 above.

**Impacts on consumers**

<b>Mobile network low spend</b>	<b>Comments</b>
1. Attracting retail customer groups that generate more direct retail revenue	TMI agrees that different customer groups will be impacted in different ways. ComReg imply strongly that mobile service providers will be incentivised to move away from serving low spending customers in order to seek customer groups who spend more. This is a perverse outcome for a regulatory requirement which should be seeking to benefit all customers, not just the more affluent.
2. Lower MTRs due to a pure LRIC approach should also facilitate lower off-net retail charges for outgoing calls.	It is clear that by reducing MTRs in a substantial manner, that there will need to be some rebalancing of retail revenues. However, it does not then follow that retail prices will reduce because of lower MTR costs. This is one of the areas where MSPs will seek to rebalance prices by keeping prices at a constant level, [REDACTED] [REDACTED] [REDACTED] [REDACTED]
3. Generate more overall revenue	With mobile consumer user penetration at more than 100% it is not obvious where all of these high spending additional customers are going to come from. Moreover, given declining consumer expenditure given the state of the Irish economy currently and for the foreseeable future, any suggestion of more overall revenue does not withstand scrutiny. ComReg has not made a persuasive argument that the market will grow as a result of these proposed measures. With costs of mobile networks much the same, and revenues reducing, other prices will need to increase. [REDACTED]

	<p>[REDACTED]</p> <p>[REDACTED]</p> <p>[REDACTED]</p> <p>[REDACTED]</p> <p>[REDACTED]</p>
<p>4. SIM only packages</p>	<p>SIM only packages are already available. It is not clear that the reduction of MTRs will have any impact on existing marketing approaches. Low spending customers currently benefit from having some of the cost of reaching them on a mobile paid by the caller. [REDACTED]</p> <p>[REDACTED]</p> <p>[REDACTED]</p> <p>[REDACTED]</p>
<p>5. The waterbed effect</p>	<p>There will be a need for some rebalancing of customer tariffs. [REDACTED]</p> <p>[REDACTED]</p> <p>ComReg states at para. 6.82 'If low usage mobile customers reduce further the number of calls that they make but they remain on the network, the Analysys Mason Report indicates that the network externality benefits of being able to contact those subscribers would persist, and it would be efficient for other customers to subsidise this benefit not through the wholesale Termination Rates that they pay to other operators, but directly through the (higher) retail prices they pay to their own operator.'</p> <p>Although it is not entirely clear in this sentence which customers are paying the higher retail prices TMI reads that it [REDACTED]</p> <p>[REDACTED]</p> <p>[REDACTED]</p> <p>[REDACTED]</p> <p>[REDACTED]</p> <p>[REDACTED]</p> <p>[REDACTED]</p> <p>[REDACTED]</p> <p>[REDACTED]</p>
<p>6. Innovative product offerings</p>	<p>Heavy users may well benefit more from the MTR reductions leading through to innovative product offerings aimed at these customer groups. The benefits to low spending users are not so clear.</p>



7. Reduced tariff mediated network effects	<p>ComReg has not substantiated how the rebalancing or waterbed effect will also lead to lower retail tariffs. The outgoing variable cost payable to another operator will be reduced but in this new environment the majority of the network costs need to be recovered from outgoing calls. [REDACTED]</p> <p>[REDACTED]</p> <p>[REDACTED]</p>
8. Handset subsidies	<p>[REDACTED]</p> <p>[REDACTED]</p> <p>[REDACTED]</p> <p>[REDACTED]</p> <p>[REDACTED]</p> <p>Experience from other European markets is instructive. Carphone Warehouse announced on 27 July 2012 that its retail revenues declined year on year. The reason given for this decline was the reduction in network subsidies to prepaid customers from mobile operators and the reduction in mobile termination rates.<sup>14</sup> There is a clear link between the reduction of MTRs and the reduction of network subsidies on handsets.</p>
9. Equity effects	<p>The Analysys Mason report is not clear on where mobile only households are to be found. On page 49 the report states – ‘All of C1, C2 and DEF have between 24% and 26% mobile only households, compared to 15% for AB households.’ This statement would appear to contradict the conclusion that is made that lower socioeconomic customers will not be adversely affected.</p> <p>Similarly, it can be expected that mobile only customers are more likely to have a medium spend given that they have no fixed line on which to make calls.</p> <p>ComReg’s data conversely indicate that the lower socioeconomic groups will be adversely affected by the MTR changes.</p>

14 The retailer blamed the sales slide on the struggling prepaid mobile phone market, which has been dented by the lack of relatively cheap pay-as-you-go smartphones, prompting more consumers to opt for contract-based phones. The problem has been exacerbated by network operators cutting subsidies to the prepaid market, as well as the impact of regulated cuts to wholesale charges paid to rival providers for connecting calls, known as mobile termination rates. The issues were highlighted by an 18 per cent fall in CPW Europe’s customer connection numbers, which declined to 1.9m year on year. At Virgin Mobile France, the mobile phone operator in which CPW owns 47 per cent stake, Connections fell 3 per cent to 1.9m, dragged down by prepay connections shrinking by almost one-quarter. Financial Times 27 July 2012.

10. European Commission impact assessment	The EC report was written in 2009 before the large reductions in MTR were introduced. It was a forward looking assessment of what might happen, not a review of what transpired in practice. ComReg should determine what the impact of the MTR reduction actually was in countries where the reductions have been already implemented. Relying on an a priori assessment when the EC regulations have been implemented elsewhere is not a satisfactory regulatory approach.
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ComReg have just rolled out a list of items that competition is meant to drive, without supporting competition, not providing any foundation for these claims, or providing examples of what these innovations might be. Without this, these reasons should be removed from the analysis of whether this is good for competition.

#### F. Transition Period

47. Consumer welfare and competition will be damaged and this will involve, for example, TMI being put in a significantly more difficult commercial situation if it is required to introduce the rapid reductions in MTR that are being proposed by ComReg. Adjustments of this magnitude will require time to absorb particularly for a smaller operator still establishing itself in the marketplace.
48. If ComReg were to impose SMP on TMI, despite TMI's strong arguments against such a designation, it would be vital to ensure that TMI had a fair and reasonable time to make changes to its commercial position in order to be able to survive the changes. As previously stated, TMI has little room for manoeuvre on its retail prices which are set in the competitive retail market, or on its own cost base which is slim. A negotiation will need to be held with TMI's host network to determine what reduction in costs can be achieved, if any. TMI does not expect this to be a straightforward contractual alteration given that O2 is facing its own reduction in wholesale revenues. At the very least it will take over a year to conclude once ComReg has promulgated its final decision.
49. ComReg notes and highlights the EC's concern about the transition period and its impact upon service providers. '.....the Commission appreciates that regulators are confronted with the need to strike a balance between protecting consumer welfare and avoiding a disruptive impact on the operators. To that end, the Commission acknowledges that NRAs have a certain margin of discretion, which could allow them to delay to a degree the introduction of fully cost-oriented rates.' Para. 7.40 Unfortunately, ComReg does not cite the following sentence in which the EC state: 'Against this background, and based on the information available to the Commission, a delay – if very limited - in the implementation of the cost-oriented rates is acceptable, taking account of the need to minimise business and regulatory uncertainty in the Spanish markets flowing from an important decrease in MTRs.' (Emphasis added)
50. To ensure a workable transition to the new pricing structures, ComReg must build in more time to the change of MTRs. A longer glide path is required as a minimum to ensure that competition

continues to thrive to the long term benefit of consumers – in itself protecting consumer welfare through maintaining competition. Given the circumstances of the Irish market, this glide path should be over the next two or three years. To irresponsibly mismanage the transition period is only likely to delay the benefits to consumers.

51. In ComReg's own words at Para. 7.65 'ComReg also has to consider whether it is proportionate to introduce fully compliant pure LRIC cost-oriented rates from 1 January 2013, in circumstances where a final decision is only likely to be taken by ComReg towards the end of 2012. ComReg is very conscious of striking a balance between protecting consumer welfare, on the one hand, and considering the least disruptive impact any final decision may have on MSPs, on the other.'
52. TMI is firmly of the view that ComReg has not found the appropriate balance between consumer welfare and the disruptive impact on MSPs as the significant disruption caused by ComReg's proposals will not assist consumer welfare in the medium term to long term i.e. over a period of a few years. Reducing the incentives to invest and to innovate for the late entrant MSPs will not encourage competition to find the maximal level of consumer welfare. Rather the market will be stifled and consumer welfare is likely to be harmed. ComReg will recall that the Irish Supreme Court has placed great emphasis on consumer welfare in the area of competition law<sup>15</sup> and the same pre-eminence could well be given to consumer welfare in this context and the proposed moves by ComReg would do nothing but harm to consumer welfare.
53. TMI cannot find any precedent anywhere in the EU for the size and pace of MTR reductions that ComReg is proposing. BEREC has published data on the average MTRs over the period July 2005 to July 2011 in each country in Europe, which is summarised in annex 1. This shows that average MTRs have typically fallen gradually over a period of several years. Only six (out of 31) countries have ever reduced average MTRs by more than 4c per minute in a single year, and only Slovenia and Estonia by more than 5c per minute. Comreg is proposing a nearly 12c per minute reduction for TMI within 7 months of its decision.
54. While BEREC has not published more recent data, TMI's understanding is that more recent regulatory determinations in other countries continue to imply smaller reductions in MTRs than ComReg is proposing. TMI has reviewed the most recent regulatory determinations in six countries (Belgium, France, Spain, Italy, UK and Portugal) referred to by ComReg<sup>16</sup>. These show that the largest reductions have been in Belgium, and even there were limited to a 4.6c per minute reduction over a 29 month period<sup>17</sup>.
55. Moreover, regulators have chosen to extend transition periods where there have been concerns over the impact on competition. For example, CMT, the Spanish Telecoms Regulator, proposed a glide path to reduce MTRs for all mobile operators between July 2012 and January 2014, while eliminating the asymmetry in favour of Yoigo (the only full MVNO in the market) by October 2013. This was nine months after the time recommended by the European Commission.

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<sup>15</sup> In *Irish League of Credit Unions v Competition Authority*, [2007] IESC 22 (2007), Fennelly J (speaking for the entire Supreme Court) stated: "The entire aim and object of competition law is consumer welfare. Competitive markets must serve the consumer. That is their sole purpose."

<sup>16</sup> See ComReg consultation Figure 7.2.

<sup>17</sup> Reflects change in rate for KPN/Base August 2010 to January 2013. Source: BIPT Decision 29 June 2010 - <http://www.bipt.be/ShowDoc.aspx?levelID=70&objectID=3293&lang=nl>

Following a “serious concerns” letter from the EC, CMT did bring forward the date to eliminate the asymmetry to July 2013, but the EC then agreed that retaining a six month extension of the glide path to eliminate the asymmetry represented an appropriate balance between consumer welfare and the risk of negative effects on the sector from an unduly steep glide path.

56. The arguments recognised by CMT as applying to Yoigo apply even more strongly to TMI. In particular, CMT acknowledged Yoigo’s competitive position as a relatively new entrant and MVNO, recognising that Yoigo had benefitted from asymmetric MTRs for just 6.4 years, compared to an EU average of 8.8 years. TMI launched at the end of 2007 and has thus had less than five years benefit from asymmetric MTRs. It is also important to note that the final glide path proposed for CMT was published in May 2012, allowing more than 12 months for Yoigo to adjust, and that was for a much smaller reduction in MTRs from 4.07c pm to 1.09c pm.<sup>18</sup>
57. ComReg needs to reconsider its proposals particularly in the context of the timescales over which it proposes to introduce the European Commission’s recommendations. In addition to the actual dates, ComReg should actively consider whether an effective one-off reduction in MTRs will advance competition. A graduated reduction or glide path over a period of several years is much more likely to realise the benefits to consumers that ComReg posits. Such an approach will enable the mobile market to adjust to the new MTR pricing structures in a seamless manner without large scale disruption. ComReg will not have assisted the market if in reducing MTRs it reduces the amount of competition in the marketplace.
58. In this context, the administrative law arguments that TMI put forward in its response on ComReg’s SMP finding dated 19 July 2012 must be considered, as they apply the same, if not more to the current proposition.
59. TMI agrees that in the long term all consumers need to benefit from positive competitive effects. ComReg is legally obliged, both at Irish and the European level, to ensure that its proposals enable this desired outcome.

## **G. Conclusion**

60. ComReg, in implementing the recommendations of the European Commission, is in danger of seriously damaging the mobile market which is working well to the benefit of consumers. Competition is already delivering benefits to customers through lower prices and extended services which is the very objective which ComReg seeks to obtain. ComReg’s proposals actually militate against maintaining the benefits of competition and enhanced consumer welfare.
61. Voice traffic is starting to decline in proportion as text and new data services becoming increasingly used by mobile smartphone users. New handsets are required by customers in order to avail themselves of these new services. Affluent customers already have these new devices or can easily afford to pay for new smartphones as required. Unfortunately ComReg’s proposals will make it more difficult for many prepay customers to be part of the next stage of the development of mobile services which is contrary to the Irish Government’s policy on rolling

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<sup>18</sup> See CMT Final Decision of 10 May 2012 - [http://www.cmt.es/c/document\\_library/get\\_file?uuid=a3967e78-254a-4fc6-a789-5c0f784f0680&groupId=10138](http://www.cmt.es/c/document_library/get_file?uuid=a3967e78-254a-4fc6-a789-5c0f784f0680&groupId=10138).

out smart technology in Irish society as a whole. As handset subsidies are likely to decline as a consequence of ComReg's proposals many customers will be excluded from the newest facilities.

62. In this sense, ComReg is regulating for the issues of yesterday around voice traffic predominance without being too concerned to ensure that all consumers are able to participate effectively in the new mobile data world. Voice revenues will continue to decline as a proportion of overall mobile expenditure. The perceived problems that ComReg is proposing to regulate are likely to diminish as a proportion of all revenue as time proceeds.
63. ComReg must ensure that their proposals on mobile termination rates enable a smooth transition into the changing world. Requiring sudden large scale and unwarranted changes is only going to disrupt the market to the disadvantage of customers both in the short term and in the longer term as competition is reduced.
64. It is submitted that ComReg needs firstly to reconsider its position on significant market power as applied to TMI and then should reconsider the rate of change of mobile termination rates both in scope and in time. Reducing MTRs at a more gradual pace with a higher concluding rate will be of benefit to consumers, more consistent with the principles of competition and in line with the principles of good regulation and legal certainty.

## Annex 1

### Evolution of MTRs.

The following graphs show changes in regulated MTRs in Europe between July 2005 and July 2011 using data published by BEREC. The graphs show:

- The average annual percentage reduction in MTRs in each country. As can be seen, the average reduction in MTRs is typically less than 10-15%, compared to a 94% proposed reduction for TMI.
- The maximum annual percentage decline in each country. Again, the proposed reductions for TMI are significantly greater than the average reduction proposed in a single year by any other regulator in Europe.
- The maximum annual actual decline (in euros) in any one year in each country. The proposed reductions for TMI are almost double the largest average reduction imposed in any other European country.

The graphs in this section are all based on BEREC and IRG data. They show the countries' average MTR, weighted by operators' market shares. All MTRs are given in Euros. Hence, those countries not belonging to the Eurozone might show variations in their MTRs which do not fully reflect the glide path imposed by the NRA but are due to oscillations in exchange rates

**Figure 1.** Average annual reduction 2005 - 2012 (%) in MTRs

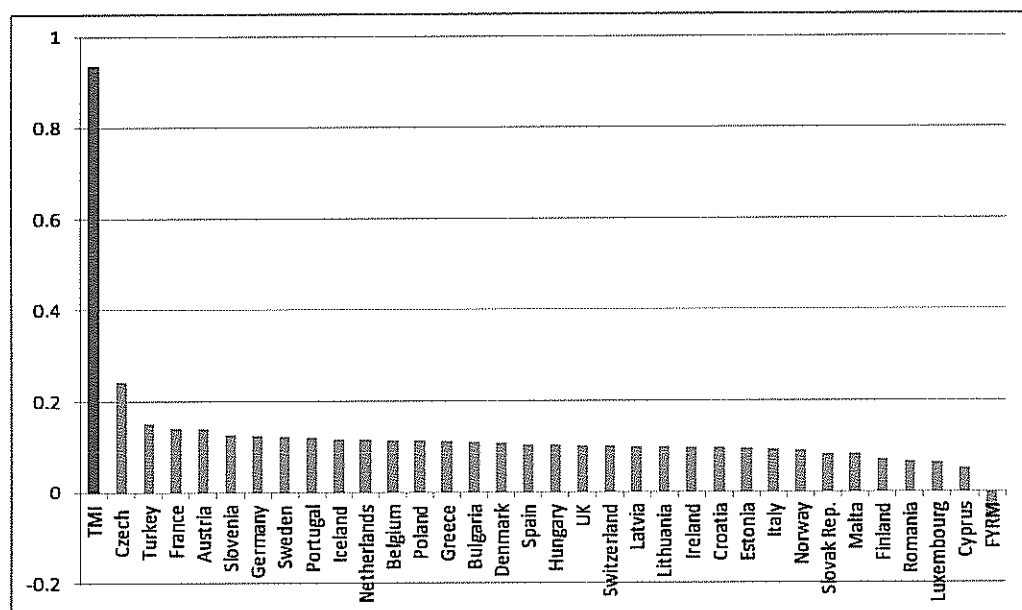


Figure 2. Maximum annual decline 2005 - 2012 (%) in MTRs

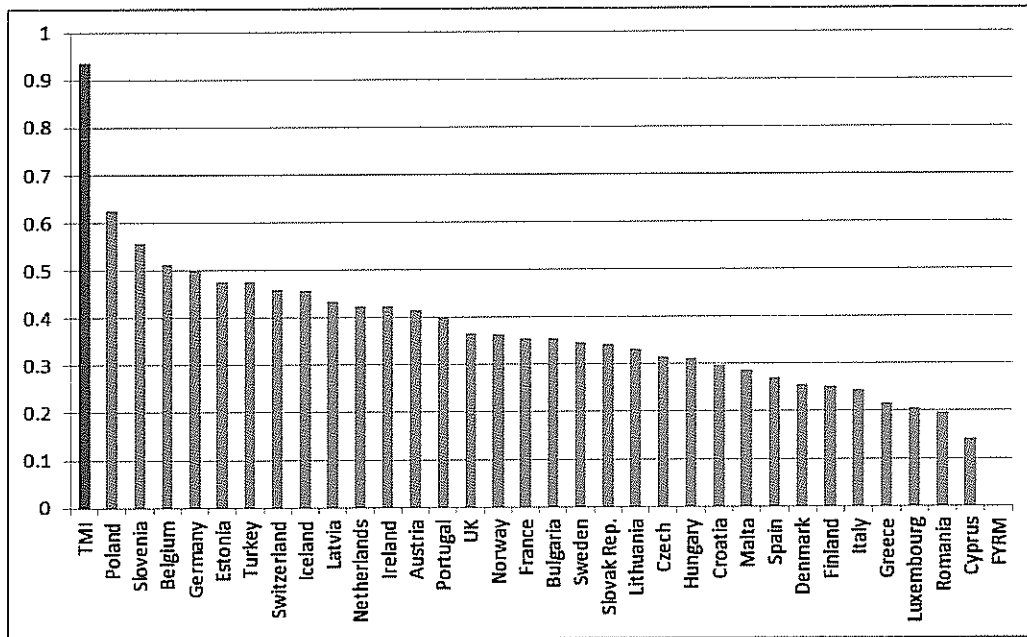
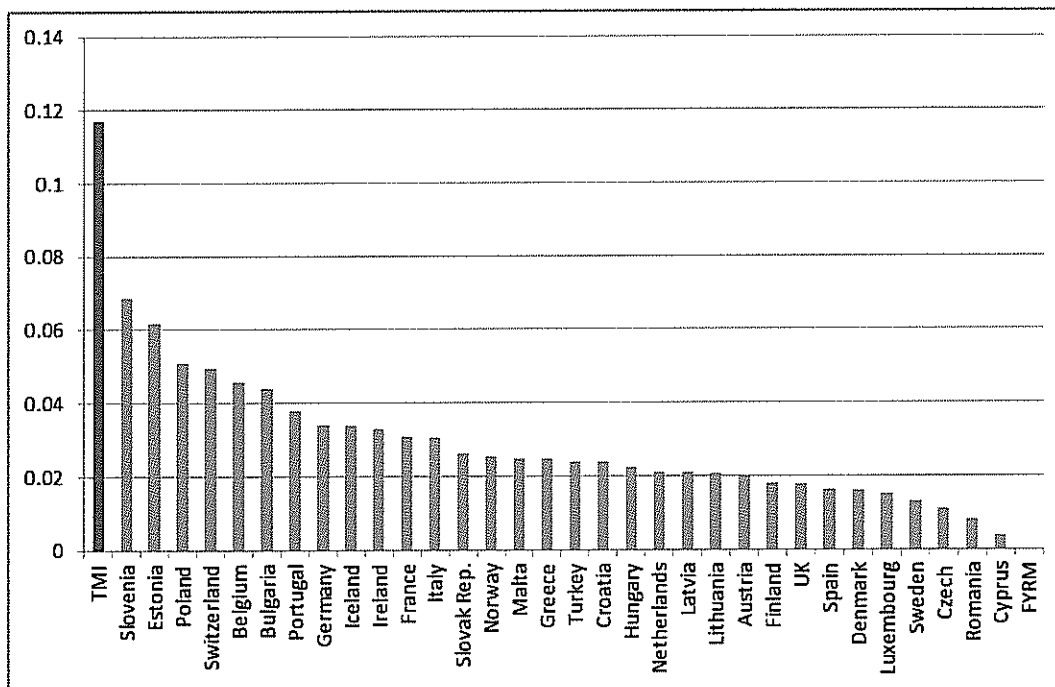


Figure 3. Maximum annual decline (euros) in MTRs



## **8: Vodafone**





**Vodafone Non-Confidential Response to ComReg Consultation  
on Voice Termination Rates in Ireland: Proposed Price Control  
for Fixed and Mobile Termination Rates**

## 1 Introduction

Vodafone takes the opportunity to respond to this ComReg consultation on the Proposed Price Control for Fixed and Mobile Termination Rates in Ireland. It is our intention to provide additional information in relation to the detail of an adjusted benchmark approach to the cost oriented price control of mobile termination rates, which it was not possible to obtain by the current submission deadline, at a later date.

Our position in relation to ComReg's current proposed regulatory approach is set out in the subsequent sections of this document, and in response to the specific consultation questions provided by ComReg. However Vodafone also reserves its right to provide additional submissions in relation to the present consultation as appropriate.

## 2 Executive Summary

Termination rates in Ireland are currently in line with the European average and have declined by 58% over the last 3 years. ComReg is now proposing, within a 10 month period, to cut termination rates by as much as 80%, making them the lowest in Europe.

This will impose very substantial revenue reductions on all Irish operators. Vodafone has calculated that its revenues will be reduced by almost **[Redacted]** and its operating profit by over **[Redacted]**.

Vodafone believes that it is entirely inappropriate for ComReg to impose cuts of such magnitude on the basis of the limited and flawed analysis contained in its consultation. Vodafone wish to highlight that both the magnitude of the proposed cuts, the weakness of the supporting evidence and analysis and the manner in which this regulatory process has been conducted, raise very significant challenges for Vodafone Ireland **[Redacted]**.

Vodafone disagrees entirely with ComReg's proposed remedy for mobile termination rates:

1. **ComReg has presented no evidence that the current remedy is ineffective or giving rise to concerns:** The current voluntary glide path for MTRs has seen MTRs decline in Ireland by 58% over the last 3 years. MTRs in Ireland are in line with the European average, and are likely to continue to decline in line with overall trends in Europe. ComReg has presented no evidence to suggest that the remedy currently in place is ineffective or that it is having any negative outcomes on efficiency or competition in the Irish market. Mobile penetration and usage in Ireland is amongst the highest in Europe. Competition in the market place remains robust, with new entry, in the form of Lycamobile and e-mobile, and expansion of smaller operators such as Tesco mobile. Competition between the larger operators continues to be intense, and consumers have reaped the benefits in terms of lower prices. ComReg has provided absolutely no evidence, therefore to suggest that the current MTR remedy has had any negative impacts on outcomes for consumers.
2. **ComReg's interpretation of the Commission's recommendation is wrong:** ComReg, throughout the consultation document, appear to indicate that the Commission's 2009 Recommendation is binding, and that its hands are tied in terms of implementing any remedy other than a BU pure LRIC. This is simply incorrect. The Recommendation is non-binding and does not

take precedence over ComReg's statutory responsibilities under the Directives. It is incumbent upon ComReg to properly analyse and assess all the available regulatory options.

3. **ComReg has failed to assess all appropriate remedies:** We believe that there are two critical cost-oriented options which ComReg has not assessed. The first is a continuation of the current voluntary glidepath based on the BEREK benchmark. The second is LRIC+. With respect to the continuation of the current voluntary glidepath based on BEREK benchmarks, Vodafone is deeply surprised that ComReg has not even given consideration to this option. As we note above, ComReg has provided no evidence to suggest that the current remedy has been ineffective. Vodafone therefore believes that ComReg has erred considerably by not considering a continuation of the current remedy. It is unclear why ComReg has considered only LRIC and LRAIC+. Vodafone believes that LRIC+ represents a credible alternative cost-oriented remedy that ComReg should have had regard to in its analysis.
4. **ComReg's analysis of LRIC is flawed:** ComReg has not carried out the level of detailed empirical analysis that would be necessary to properly assess the impact of a move to LRIC. It has not carried out any competition assessment (or simulation analysis), it has carried out no analysis of consumer price elasticities or externalities, and it has not carried out any welfare analysis. In the absence of such detailed appraisal, ComReg therefore has no basis on which to claim that a move to LRIC is appropriate.
5. **ComReg's implementation of LRIC is likely to impose losses on operators:** ComReg is proposing an exceptionally small sample of countries against which to benchmark. As things stand, the only country against which we are benchmarked is France. ComReg has carried out no analysis to suggest that this is appropriate. Moreover, Vodafone believes there are compelling reasons to suggest that this rate is likely to be below the LRIC cost for Ireland. In consequence, ComReg will be imposing a remedy that imposes losses on Vodafone, and other operators, for every minute received. We believe that this cannot be considered to be a proportionate remedy. Even if a small number of additional decisions become binding in other countries (e.g. Belgium, Italy, Spain, the UK and Portugal), ComReg has carried out no analysis to assure itself that prices will be above the Irish LRIC that would have been derived from a LRIC model for Ireland. A benchmark LRIC that has a substantial probability of resulting in operators incurring losses is clearly inconsistent with European law, and ComReg's duties.
6. **ComReg's approach will have a material negative impact on Vodafone:** ComReg have noted that the rates in the benchmarked countries do not differ materially from each other, and so *"ComReg would expect that the model result of an efficient pure LRIC rate for MTRs in Ireland would be in the same range as the results for other EU member states."* However, there is a very substantial variance in the rates, with rates varying by almost .5c from 0.8c for France to 1.27c for Portugal. In revenue terms, the impact of a .5c variation **[Redacted]**, which Vodafone considers to be material.
7. **ComReg's proposed approach gives rise to an unreasonable degree of regulatory uncertainty:** ComReg has noted that as more countries arrive at binding decisions, it will vary the benchmark. Given the small number of countries in the sample this could have a substantial impact on the benchmark and hence on Vodafone's remedies. Not knowing what one of its key revenue drivers will be, whether its fixed costs will be recoverable, or potentially, whether it will be forced to make a loss on every minute it receives is simply not acceptable.

Vodafone believes that ComReg must fundamentally reassess its proposed remedies and take proper account of all the potential regulatory options, including a continuation of the voluntary glidepath based on BEREC benchmarks and LRIC+.

### 3 Legal Background

#### *Summary*

If ComReg were to proceed to adopt its proposed approach to the regulation of wholesale mobile voice call termination (“MVCT”) in the form of a final decision, that decision would be vitiated through:

- (i) its failure to demonstrate that its decision is compliant with its primary statutory duties to ensure that its actions promote the interests of competition and consumers;
- (ii) its failure to comply with its statutory duty to ensure that its actions are proportionate and in accordance with the principles of best regulatory practice.

The proposed charge controls for MVCT have been generated through the use of a Long Run Incremental Cost (“LRIC”) methodology. Vodafone has been unable to discern any justification for the use of such a methodology other than the fact that the European Commission has, through a non-binding Recommendation<sup>6</sup>, proposed that such a methodology should be used by National Regulatory Authorities (“NRAs”) in the regulation of mobile call termination.

As is explained in further detail below, ComReg has been unable to demonstrate in its consultation document that its decision to adopt the LRIC methodology in deriving charge controls is consistent with its primary duties set out in the pan-European Common Regulatory Framework (“CRF”) governing the telecommunications industry. Specifically, ComReg’s current approach is not compatible with Article 8 of the Framework Directive<sup>7</sup> and Article 13 of the Access Directive (which govern the setting of price controls to be imposed on operators in a position of Significant Market Power)<sup>8</sup>.

Article 8 of the Framework Directive lays down objectives to be pursued by NRAs in the discharge of functions under the Community Regulatory Framework. So far as presently relevant, Article 8 provides as follows:

“(1) Member States shall ensure that in carrying out the regulatory tasks specified in this Directive and the Specific Directives, the national regulatory authorities take all reasonable measures which are aimed at achieving the objectives set out in paragraphs 2, 3 and 4. Such measures shall be proportionate to those objectives.

Member States shall ensure that in carrying out the regulatory tasks specified in this Directive and the Specific Directives, in particular those designed to ensure effective competition, national regulatory authorities take the utmost account of the desirability of making regulations technology neutral.

.....

(2) The national regulatory authorities shall promote competition in the provision of electronic communications networks, electronic communications services and associated facilities and services by inter alia –

<sup>6</sup> Commission Recommendation of 7 May 2009 on the Regulatory Treatment of Fixed and Mobile Termination Rates in the EU (the “Commission Recommendation”) [2009] OJ L 124/67

<sup>7</sup> Directive 2002/21/EC on a common regulatory framework for electronic communications networks and services (the “Framework Directive”) [2002] OJ L 108/33 3

<sup>8</sup> Directive 2002/19/EC on access to, and interconnection of, electronic communications networks and associated facilities (the “Access Directive”)

- (a) ensuring that users, including disabled users, derive maximum benefit in terms of choice, price and quality;
- (b) ensuring that there is no distortion or restriction of competition in the electronic communications sector;
- (c) encouraging efficient investment in infrastructure, and promoting innovation;
- (d) encouraging efficient use and ensuring the effective management of radio frequency and numbering resources.
- (3) The national regulatory authorities shall contribute to the development of the internal market by inter alia –
  - (a) removing remaining obstacles to the provision of electronic communications networks, associated facilities and services and electronic communications services at European level;
  - (b) encouraging the establishment and development of trans-European networks and the interoperability of pan-European services, and end-to-end connectivity;
  - (c) ensuring that, in similar circumstances, there is no discrimination in the treatment of undertakings providing electronic communications networks and services;
  - (d) cooperating with each other and with the Commission in a transparent manner to ensure the development of consistent regulatory practice and the consistent application of this Directive and the Specific Directives.
- (4) The national regulatory authorities shall promote the interests of the citizens of the European Union by inter alia -
  - .....
  - (e) addressing the needs of specific social groups, in particular disabled users; ...”

Section 4 CA03 gives effect to the provisions of Article 8 of the Framework Directive.

Article 13 of the Access Directive imposes obligations as to the imposition by NRAs of wholesale price controls. So far as presently relevant, Article 13 provides as follows<sup>9</sup>:

“Price control and cost accounting obligations

- (1) A national regulatory authority may, in accordance with the provisions of Article 8, impose obligations relating to cost recovery and price controls, including obligations for cost orientation of prices and obligations concerning cost accounting systems, for the provision of specific types of interconnection and/or access, in situations where a market analysis indicates that a lack of effective competition means that the operator concerned might sustain prices at an excessively high level, or apply a price squeeze, to the detriment of end-users. National regulatory authorities shall take into account the investment made by the operator and allow him a reasonable rate of return on adequate capital employed, taking into account the risks involved.
- (2) National regulatory authorities shall ensure that any cost recovery mechanism or pricing methodology that is mandated serves to promote efficiency and sustainable

<sup>9</sup> Article 13 of the Access Directive has been amended by Article 2(9) of Directive of the European Parliament and of the Council of 25 November 2009 (2009/140/EC), but the obligation on Member States to comply with the revised provisions of the Directive only applies as of 26 May 2011.

competition and maximise consumer benefits. In this regard national regulatory authorities may also take account of prices available in comparable competitive markets.

(3) Where an operator has an obligation regarding the cost orientation of its prices, the burden of proof that charges are derived from costs including a reasonable rate of return on investment shall lie with the operator concerned. For the purpose of calculating the cost of efficient provision of services, national regulatory authorities may use cost accounting methods independent of those used by the undertaking. National regulatory authorities may require an operator to provide full justification for its prices and may, where appropriate, require prices to be adjusted.

(4) National regulatory authorities shall ensure that, where implementation of a cost accounting obligation is mandated in order to support price controls, a description of the cost accounting system is made publicly available, showing at least the main categories under which costs are grouped and the rules used for the allocation of costs. Compliance with the cost accounting system shall be verified by a qualified independent body. A statement concerning compliance shall be published annually.”

Article 13 of the Access Directive lays down the price control and cost accounting obligations which an NRA may impose as remedies where a market analysis indicates a lack of effective competition. So far as presently relevant, Article 13 provides as follows:

#### Price control and cost accounting obligations

1. A national regulatory authority may, in accordance with the provisions of Article 8, impose obligations relating to cost recovery and price controls, including obligations for cost orientation of prices and obligations concerning cost accounting systems, for the provision of specific types of interconnection and/or access, in situations where a market analysis indicates that a lack of effective competition means that the operator concerned may sustain prices at an excessively high level, or may apply a price squeeze, to the detriment of end-users. To encourage investments by the operator, including in next generation networks, national regulatory authorities shall take into account the investment made by the operator, and allow him a reasonable rate of return on adequate capital employed, taking into account any risks specific to a particular new investment network project.

2. National regulatory authorities shall ensure that any cost recovery mechanism or pricing methodology that is mandated serves to promote efficiency and sustainable competition and maximise consumer benefits. In this regard national regulatory authorities may also take account of prices available in comparable competitive markets.

3. Where an operator has an obligation regarding the cost orientation of its prices, the burden of proof that charges are derived from costs including a reasonable rate of return on investment shall lie with the operator concerned. For the purpose of calculating the cost of efficient provision of services, national regulatory authorities may use cost accounting methods independent of those used by the undertaking. National regulatory authorities may require an operator to provide full justification for its prices, and may, where appropriate, require prices to be adjusted.

4. National regulatory authorities shall ensure that, where implementation of a cost accounting system is mandated in order to support price controls, a description of the cost accounting system is made publicly available, showing at least the main categories under which costs are grouped and the rules used for the allocation of costs. Compliance with the cost accounting system shall be verified by a qualified independent body. A statement concerning compliance shall be published annually.

In light of the fact that the obligations imposed upon ComReg by the Directives ultimately take precedence over non-binding guidance from the Commission about the adoption of a particular cost methodology, ComReg must be satisfied that its proposed course of action is compatible with these primary duties. ComReg's simple reliance on an erroneous assumption that it must follow the approach proposed by the Recommendation does not constitute a credible justification for its current course of action, particularly when the approach proposed by the Recommendation is inconsistent with ComReg's obligations when setting price controls. Accordingly, any decision to move to a final statement on the current basis will be flawed and invalid.

### **No justification for the use of a LRIC approach to setting MTRs**

As a regulator, ComReg is obliged, pursuant to well established principles of administrative law, to provide clear reasons for the decisions that it adopts. But, as well as being clear, ComReg's reasoning must be credible and robust. This obligation is further reinforced by Article 5 of the Access Directive, governing the setting of access conditions, requiring ComReg to ensure that:

*"obligations and conditions imposed [in respect of access and interconnection] shall be objective, transparent, proportionate and non-discriminatory..." [Vodafone emphasis added]*

In the context of the regulation of wholesale MVCT, Ofcom in the UK has acknowledged the need for a compelling justification for a change to the methodology that it has used previously when setting charge controls: *"it is important that any such reductions [in termination rates] are achieved on the basis of evidence-based regulation, including proper assessment of the impact of any change in methodology, both on market players and consumers."*<sup>10</sup> Vodafone endorses this statement. However, as is considered below, ComReg has clearly failed to demonstrate that it has discharged its responsibilities in this respect.

The proposed charge controls set out in ComReg's consultation document flow from its assumption that it must not only take into account but *also* follow the Commission Recommendation in respect of the methodology to be used by NRAs when setting price controls for operators in a position of SMP for the termination of calls on fixed or mobile networks. As far as can be discerned from the consultation document, this is the sole reason cited for the use of a LRIC cost standard<sup>11</sup>. As we explain in further detail below, the Commission Recommendation does not in its own right provide ComReg with the justification for its proposed course of action. This is because ComReg must first be satisfied that its actions in respect of setting price controls (including the adoption of the LRIC approach proposed in the

<sup>10</sup> Joint response of the Department for Business, Enterprise and Regulatory Reform and OFCOM of 2009 to the Draft European Commission Recommendation on the Regulatory Treatment of Fixed and Mobile Termination Rates in the EU

<sup>11</sup> "In this Consultation Document, ComReg provides its preliminary view that there is no reason for Ireland to diverge from the methodology recommended by the European Commission, i.e. (i) the appropriate price control is a cost orientation obligation, and (ii) the cost orientation obligation should be implemented for all Service Providers designated with SMP in the FVCT and MVCT markets by means of the pure LRIC cost recovery methodology" (emphasis added).



Recommendation) is compatible with its primary obligations under the Framework Directive and the Access Directive. Critically, as can be seen in the analysis below, the approach proposed by the Recommendation and currently espoused by ComReg is in fact highly likely to be inconsistent with ComReg's primary obligations.

### **The Commission Recommendation is not binding**

The Commission Recommendation has been issued pursuant to Article 19(1) of the Framework Directive enabling the Commission to promulgate measures designed to encourage the harmonised application of the provisions of the CRF. ComReg has stated that it is required to take "utmost account" of the Recommendation (paragraph 2.11) and in this case, importance must be attached to the harmonising objective of the Recommendation. In the first instance, it is worth noting that any Recommendation issued by Community institutions does not bind Member States. This is clear on the face of Article 288 (ex Article 249) of the Treaty on the Functioning of the European Union ("TFEU"). *"To exercise the Union's competences, the institutions shall adopt regulations, directives, decisions, recommendations and opinions... Recommendations and opinions shall have no binding force. [emphasis added]"* 2.5 Thus, it is clear that the Commission Recommendation cannot require ComReg to adopt the methodology that is proposed in the Recommendation. Whilst ComReg places reliance on the fact that Article 19(1) of the Framework Directive requires it to take "utmost account" of Recommendations issued by the Commission, that term does not deny ComReg the flexibility to adopt the regulatory remedy that it considers to be most appropriate in the context of its market review. This has been clearly confirmed by the Court of First Instance ("CFI") in the context of Article 7(5) of the Framework Directive, which also requires NRAs to take "utmost account" of the views of the Commission and other NRAs when conducting a review of relevant markets and imposing regulatory remedies on an ex ante basis. The CFI stated, when providing guidance, as to the meaning of this term: *"in a case where the comments of an NRA and of the Commission are contradictory, the notifying NRA would not infringe Article 7(5) by following, after careful review of the various comments, the approach proposed by the other NRA and not that proposed by the Commission...Even though, in accordance with Article 7(5), the CMT [the Spanish NRA] must take 'the utmost account of comments of other [NRAs] and the Commission', it has some leeway to determine the content of the final measure...it is for that [national regulatory] authority alone to adopt that measure and to determine its content."*<sup>12</sup> [emphasis added].

Such an interpretation of the status of the Recommendation is clearly consistent with the ethos and the objectives of the CRF, which seeks to remove divergences in the approaches of national regulators in respect of when regulatory intervention is justifiable, whilst crucially leaving the form and the method of any regulatory remedy to be imposed to the discretion of the NRAs. There is accordingly a clear distinction to be drawn between the harmonisation of approaches to identifying where markets are not effectively competitive and the uniform adoption of specific remedies across the EU. This principle is given effect by the provisions of Article 15(4) of the Framework Directive.

As is discussed at footnote 6, the Commission can only bind the conduct of the NRA in respect of its definition of the relevant market and its assessment of whether the relevant market is or is not effectively competitive. *"Where a national regulatory authority determines that a relevant market is not effectively competitive, it shall identify undertakings with significant market power on that market...and*

<sup>12</sup> Case T-106/09, Vodafone Espana and Vodafone Group plc v Commission, paragraphs 93 and 160-161.

*the national regulatory authority shall on such undertakings impose appropriate [emphasis added] specific regulatory obligations referred to in paragraph 2 of this Article or maintain or amend such obligations where they already exist.”<sup>13</sup>*

The fact that NRAs active in different markets may each adopt different remedies or set charge controls that vary across the EU is entirely consistent with the CRF which clearly recognises that there are national markets and it is appropriate for NRAs to adopt the regulatory measure that is suitable for these national markets<sup>14</sup>. Vodafone notes Ofcom’s view on the weight to be attached to the Commission Recommendation in 2009: “*The fact that the Commission has recommended a particular approach does not of itself provide sufficient justification for adopting it, especially in the absence of adequate supporting analysis of rationale and impact*”<sup>15</sup>. Indeed, Ofcom went further when it advised the Commission that: “*the draft Recommendation embraces a prescriptive solution for the termination regime beyond 2011. If followed, it would make it difficult for NRAs such as ComReg to consider the advantages and disadvantages of a range of options for addressing the consumer and competition issues specific to their national markets.*”

Accordingly, to the extent that the Recommendation were actually construed to be a measure capable of producing binding effects<sup>16</sup>, that measure would be inconsistent with the principles of the CRF since it would, at a stroke, remove the ability of NRAs to determine the remedies to be adopted in a situation where a relevant market has been found not to be effectively competitive.

Moreover, for reasons that are explained below, if the Recommendation were a measure capable of producing binding effects, that measure would potentially be at odds with the provisions of Article 8 of the Framework Directive and Article 13 of the Access Directive.

Article 19(1) of the Framework Directive makes clear that ComReg has the freedom not to follow the approach by a Recommendation provided that it gives reasons for so doing. It does not, as ComReg appears to believe, require ComReg to be able to demonstrate that there is a particular characteristic of the UK market that justifies a departure from the approach proposed by the Recommendation. This is plainly wrong based on an interpretation of the wording of Article 19(1) of the Framework Directive<sup>17</sup>.

In fact, as is outlined below, there are compelling reasons why the approach proposed by the Commission Recommendation is inappropriate for determining the charge controls and therefore inconsistent with the CRF. Thus, the mere existence of the Recommendation does not provide ComReg with a reason for the adoption of the LRIC standard, as it now appears to contemplate.

<sup>13</sup> 10 Article 7 of the Framework Directive makes clear that the Commission’s ability to ensure harmonised approaches to regulation across the EU is limited to the definition of the relevant market and the finding of SMP (or absence thereof) in respect of one or more undertakings by an NRA where it may open an investigation and exercise a veto where appropriate. By contrast, NRAs are afforded more latitude in the remedies that they adopt in so far as the Commission has no power to exercise any veto over the remedies adopted by the NRA.

<sup>14</sup> Once again, it is worth noting the view of the CFI in respect of Article 7 of the Framework Directive, which provides for the Commission to provide guidance to NRAs in the context of the imposition of regulatory remedies (following an ex ante market review) for the purpose of ensuring “the harmonised application of the regulatory framework throughout the Community”. The CFI noted, “that does not mean that the Commission’s comments under Article 7(3) of Directive 2002/21 produce binding legal effects.” See Case T-109/06, Vodafone v Commission, paragraph 91.

<sup>15</sup> Technical Annex to the Joint response of the Department for Business, Enterprise and Regulatory Reform and Ofcom of 2009 to the Draft European Commission Recommendation on the Regulatory Treatment of Fixed and Mobile Termination Rates in the EU, paragraphs 3.13-3.14

<sup>16</sup> Case C-322/88, Salvatore Grimaldi v Fonds des maladies professionnelles, paragraph 14 notes that it is necessary to determine whether “the content of a measure is wholly consistent with the form attributed to it”.

<sup>17</sup> Article 19(1) simply states “where a national regulatory authority chooses not to follow a recommendation, it shall inform the Commission, giving the reasoning for its position.”

Accordingly, until and unless the concerns identified by Vodafone in connection with the use of a LRIC methodology are fully addressed by ComReg, any decision to adopt the proposed approach in the consultation document would be deficient in terms of its reasoning and therefore flawed.

### **ComReg’s failure to demonstrate that it has fulfilled its primary duties**

Whilst the Commission Recommendation is non-binding, ComReg is subject to a number of formal and binding obligations pursuant to the provisions of the Framework Directive and the Access Directive when adopting access remedies, and in particular, setting price controls. Article 8(2) of the Framework Directive requires ComReg to promote competition in electronic communications markets by:

*“(a) ensuring that users, including disabled users, derive maximum benefit in terms of choice, price and quality; (b) ensuring that there is no distortion or restriction of competition in the electronic communications sector; (c) encouraging efficient investment in infrastructure, and promoting innovation; and (d) encouraging efficient use and ensuring the effective management of radio frequencies and numbering resources.”* Article 13(2) and (3) of the Access Directive, which stipulates the way in which price controls should be determined in respect of operators with SMP, elaborates on how the objectives described above are to be achieved and requires that NRAs must: *“take into account the investment made by the operator and allow him a reasonable rate of return on adequate capital employed, taking into account the risks involved...[and] shall ensure that any cost recovery mechanism or pricing methodology that is mandated serves to promote efficiency and sustainable competition and maximise consumer benefits.”*

The above obligations have been transposed into Irish law through the enactment of sections 2 and 3 of S. I. No. 305 of 2003. To the extent that ComReg considers that under the TFEU it has a duty to fulfil its obligations under the Treaty or those determined by Community institutions, the obligations set out above are those to which ComReg must, in the first instance, seek to give effect. It is far from clear that the use of a LRIC cost standard by ComReg in deriving charge controls would be consistent with the obligations that are set out above.

Having expressed its support for the LRIC methodology proposed by the Commission and the resulting dramatic reductions on the MVCT revenues which MSPs will accrue going forward, it was incumbent upon ComReg to thoroughly investigate the ensuing market effects before subsequently adopting it. Indeed, given that the setting of SMP conditions is done on an ex ante or prospective basis, there is a clear burden upon ComReg to conduct a rigorous assessment when deriving the proposed charge control that will apply on a forward-looking basis. This is a proposition that has previously been endorsed by the UK Competition Appeal Tribunal and the Irish Electronic Communications Panel in cases involving ex ante analysis carried out pursuant to the CRF<sup>18</sup>. In the case of the analysis conducted by ComReg as part of this consultation, there is no credible evidence to demonstrate that the forward-looking analysis required to justify the use of LRIC (let alone pure LRIC, “PLRIC”) has been sufficiently robust. Vodafone observes the following examples of evidential failures:

- Specifically, when considering the impact of the adoption of a LRIC methodology on levels of mobile subscriptions and ownership by consumers based, in part, on the claim that the majority of consumers terminating their subscriptions would be those who currently use more than one

<sup>18</sup> Hutchison 3G Ltd v Ofcom [2005] CAT 39 citing Case C-12/03 Tetra Laval; Decision of the Irish Electronic Communications Panel 02/05

SIM for the provision of mobile telephony services. Yet ComReg has provided no evidence to substantiate its claim.

- Limited fixed fees for low usage customers will result in lower revenue streams for mobile operators that will need to be recovered in the form of price rises. In a competitive market it is simply not possible for revenues from more profitable customers to be used to fund lower receipts obtained from low-use customers.
- Fixed- to-mobile competition and the level of pass-through

#### 4 Vodafone comments on the possible regulatory approaches

Q1. Do you agree with the five regulatory approaches considered or are there any other approaches that respondents consider should be assessed in the context of this Consultation Document? Please explain the reasons for your answer, clearly indicating the relevant paragraph numbers to which your comments refer, along with all relevant factual or other evidence supporting your position.

##### *Summary of position*

1. We believe that ComReg has not assessed the full set of regulatory approaches available to it. In particular, with respect to the options available to ComReg with respect to a cost oriented solution, we believe ComReg, by focusing only on LRIC and LRAIC+ ComReg has focused on too narrow a set of remedies. We believe that there are two critical cost-oriented options which ComReg has not assessed:
  - Continuation of the current voluntary glidepath based on the BEREC benchmark; and
  - LRIC+ based on a cost model
2. With respect to the continuation of the current voluntary glidepath based on BEREC benchmarks, Vodafone is deeply surprised that ComReg has not even given consideration to this option. ComReg has provided no evidence to suggest that the current remedy has been ineffective, resulted in inefficiencies or impeded competition in the market place. Indeed, as ComReg itself has recognised, competition in the mobile communications sector in Ireland is strong, entry and expansion have both been observed, prices have declined and penetration rates are amongst the highest in Europe. Against this background Vodafone believes that ComReg has erred considerably by not considering a continuation of the current remedy.
3. As we note in the sections below, ComReg's reasoning with respect to the Commission's recommendation is flawed – the recommendation is non-binding, and does not take precedence over ComReg's statutory obligations under the Directives. ComReg has therefore provided no objective justification to move away from the existing remedy.

4. Even if ComReg were minded to consider other cost-oriented approaches, it is unclear why ComReg has considered only LRIC and LRAIC+. Vodafone believes that LRIC+ represents a credible alternative cost-oriented remedy that ComReg should have had regard to in its analysis.
5. We agree with ComReg's views in relation to the options of no remedy, RPP, and Bill and Keep

Regarding the functions of the Regulator in relation to access and interconnection, Section 6(1) of S.I. No. 334 of 2011<sup>19</sup> states the following;

The Regulator shall, acting in pursuit of its objectives set out in section 2 of the Act of 2002 and Regulation 16 of the Framework Regulations, encourage and, where appropriate, ensure, in accordance with these Regulations, adequate access, interconnection and the interoperability of services in such a way as to—

- (a) promote efficiency,
- (b) promote sustainable competition,
- (c) promote efficient investment and innovation, and
- (d) give the maximum benefit to end-users.

In summary, these are the relevant objectives, against which the interests of the regulated parties must be weighed up.

Section 8(6) of the S.I. states the following;

Any obligations imposed in accordance with this Regulation shall—

- (a) be based on the nature of the problem identified,
- (b) be proportionate and justified in the light of the objectives laid down in section 12 of the Act of 2002 and Regulation 16 of the Framework Regulations.

Regarding the imposition of price controls, Section 13 of the same SI states that;

(1) The Regulator may in accordance with Regulation 8 impose on an operator obligations relating to cost recovery and price controls, including obligations for cost orientation of prices and obligations concerning cost accounting systems, for the provision of specific types of access or interconnection in situations where a market analysis indicates that a lack of effective competition means that the operator concerned may sustain prices at an excessively high level or may apply a price squeeze to the detriment of end-users.

(2) To encourage investments by the operator, including in next generation networks, the Regulator shall, when considering the imposition of obligations under paragraph (1), take into account the investment made by the operator which the Regulator considers relevant and allow the operator a reasonable rate of return on adequate capital employed, taking into account any risks involved specific to a particular new investment network project.

(3) The Regulator shall ensure that any cost recovery mechanism or pricing methodology that it imposes under this Regulation serves to promote efficiency and sustainable competition and

<sup>19</sup> EUROPEAN COMMUNITIES (ELECTRONIC COMMUNICATIONS NETWORKS AND SERVICES) (ACCESS) REGULATIONS 2011

maximise consumer benefits. In this regard, the Regulator may also take account of prices available in comparable competitive markets.

In summary, any measure including price controls can be deemed to be appropriate if it is based on the nature of the problem identified on the market concerned and is proportionate and justified in the light of the above objectives.

In the recent appeal by Vodafone NL (and other Dutch operators) against OPTA's<sup>20</sup> proposed mobile termination charges, the Tribunal commented on OPTA's apparent position regarding the primacy of consumer welfare maximization versus other regulatory objectives. In support of its position, OPTA quoted the following extract from the legislative history of Section 6a.7 Tw<sup>21</sup> (House of Representatives, 2002–2003, 28 851, No. 3, p. 119), which agreed with OPTA as regards its interpretation of Article 13(2) of the Access Directive:

“When considering imposition of a price measure, the board [of OPTA; addition by Tribunal] shall take account of the investments made by the enterprise concerned. The board must also take account of the interests of consumers. *Ultimately, the measures must be aimed at promoting the development of sustainable competition and maximising benefits* for the consumer. [italics and underlining by OPTA].”

In response, the Tribunal commented that it “...*sees the italicised passage as giving a more specific definition of the objectives to be pursued by OPTA but does not take that passage to mean that OPTA is required to impose the price measure that maximises consumer benefits regardless of the consequences for the regulated parties. The fact that the various interests must be weighed up is also shown by the portion of the citation that OPTA has not italicised*”.

In proposing any particular regulatory measure in the current context, ComReg is likewise equally obliged to weigh up the various interests and cannot simply impose remedies that purport to maximise consumer benefits regardless of the consequences to MSPs. To be clear, it is not sufficient for ComReg to merely state that it has taken such considerations into account. ComReg must show that it has carried out evidence based and rigorous analysis which, to the best extent possible, shows that the societal welfare benefits accruing from its proposal to drastically reduce MVCT rates outweigh the costs. ComReg must also provide evidence based analysis as to why some lighter form of regulation would not have been proportionate and justified.

Vodafone's comments on the possible regulatory measures are as follows.

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<sup>20</sup> Independent Post and Telecommunications Authority of the Netherlands

<sup>21</sup> Telecommunications Act [Telecommunicatiewet, Tw].

## No price control

Vodafone agree that this approach would not be consistent with a finding of SMP. As the Recommendation is not binding, failure to align with it cannot be deemed a sufficient condition against which any proposed approach should be rejected or accepted. What is relevant is whether the measure is justified and proportionate and if it is the lightest regulatory obligation possible to address an identified market failure, the latter having been identified on evidence-based analysis.

## Fair and reasonable

In 12/67, section 4.3.2, ComReg examines 'fair and reasonable' as a possible regulatory approach. ComReg references the Access Regulations 12 (1) and 12 (2) which allows an NRA to attach obligations covering fairness, reasonableness and timeliness. According to the Regulations, an NRA may specify conditions covering fairness, reasonableness and timeliness when imposing SMP obligations or may consider the application of such conditions when exercising its dispute resolution powers under Regulation 31 of the Framework Regulations.

Vodafone disagree with ComReg that a 'fair and reasonable approach' should be excluded from consideration merely because it is in ComReg's view (as set out in paragraph 4.21) a deviation from the 2009 Termination Rate Recommendation. However we consider that a 'fair and reasonable' approach would not be appropriate to adopt on the basis of some of the grounds set out by Analysys Mason in section 3.1.2 of its report, namely the absence of any link to detailed data on costs, the inefficiency of case-by-case intervention, and the scope for significant regulatory uncertainty. Accordingly Vodafone does not consider this approach further in this response.

## Receiving Party Pays (RPP)

In general, Vodafone agrees with ComReg's conclusions as to why RPP is not appropriate in the context of the current review. There is no legal basis on which such a change could be implemented at present and absolutely no evidence offered to suggest that customers would want such a regime or would be better off as a result of it. Its introduction would cause serious disruption in both the retail and wholesale markets.

Referring to Bill and Keep (but with implications for a zero rated service such as RPP), the European Commission points out in section 6.1.2, page 30 of the Explanatory Note<sup>22</sup> that: "...setting the price of any service at zero may cause distortionary behaviour, bring arbitrage opportunities, lead to inefficient traffic routing and inefficient network utilisation." The risks of such adverse outcomes are just as likely with RPP where there is no payment from the interconnecting operator. Accordingly Vodafone does not consider this approach further in this response.

While noting some of the drawbacks with RPP, ComReg nevertheless states in section 6.46 that '*this approach has similar positive competitive effects to Bill and Keep for fixed-fixed competition and*

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<sup>22</sup>Explanatory Note to the 2009 Termination Rate Recommendation

*mobile-mobile competition and ultimately makes it easier for FSPs to compete on a more level playing field contributing to a more neutral competitive and investment framework between fixed and mobile networks'. ComReg goes on to state that "It also benefits all consumers who would pay lower prices, such as fixed only consumers. As also noted in the Explanatory Note in section 6.1.4: "Under RPP (receiving party pays) the receiving network terminates calls without charging the originating operator the full cost of that termination service, leading the operator to potentially recover part of the termination costs from their own retail customers. Since this charge is now noticeable to the consumer, there is an incentive for the consumer to respond to that charge where more competitive alternatives exist."*

In this consultation, no objective evidence is offered to support either ComReg's contention on the pro-competitive effects of RPP or the European Commission's theory that RPP will somehow increase switching behaviour above levels currently experienced in Ireland under the Calling Party Pays (CPP) system. The basic assumption of the above regulatory positions appears to be that the closer termination rates get to zero (though not too close as that might require a whole new set of regulations to counter possible adverse effects), the better for consumers and competition. Vodafone would argue that such positions are not supported by the facts. In this regard we have attached a report produced by Frontier Economics in July 2008<sup>23</sup> which looks specifically at the impacts of lower mobile termination rates (the full report is at Annex A).

### **Bill and Keep (B&K)**

It is clear from both ComReg's consultation paper and the Analysys Mason (AM) report that there are serious issues associated with both RPP and B&K as possible regulatory approaches in the current context. The principal issue is that they may both be illegal under the current directives. In 12/67a, AM state that "*The 'bill and keep' and 'receiving party pays' approaches, although obtaining more favourable assessments [than the No Price Control or Fair and Reasonable approaches], were also rejected because while not excluded by the EC Recommendation, they may not be consistent with the EC directives (and in the case of receiving party pays, which is a retail tariffing method, ComReg may not have the power to create it)*".

Notwithstanding, the legal issues in relation to use of B&K as a regulatory tool, there is considerable debate in the economic literature and amongst practitioners on the appropriate level of mobile termination rates (MTRs). This literature often examines the relative merits of setting zero MTRs (i.e. Bill and Keep - 'B&K). In this context, Vodafone commissioned Frontier Economics Europe to undertake a review of the academic literature relating to the efficient setting of MTRs, with specific reference to the efficiency of B&K<sup>24</sup>. The conclusions of that report were summarised in the following points (the full report is attached at Annex B);

- In the *basic model*: the efficient MTR is cost oriented but a high MTR will intensify competition as long as operators price discriminate among on-net and off-net calls. And a below cost MTR may dampen retail competition and damage the consumers' welfare.

<sup>23</sup> Assessing the impact of lowering mobile termination rates: A REPORT PREPARED FOR DEUTSCHE TELEKOM, ORANGE, TELECOM ITALIA, TELEFONICA, AND VODAFONE

<sup>24</sup> A literature review of papers on MTRs with relevance to B&K: A REPORT PREPARED FOR VODAFONE (August 2009)



- The introduction of *call and or network externalities* make the efficient MTR depart from costs. Network externalities increase the efficient MTR whereas call externalities ask for a reduction in the access charge. In this context, B&K is efficient only under very specific conditions that require detailed information about the size of call externalities.
- It is important to consider only call externalities that are not internalized through *reciprocal communication patterns*. Otherwise, estimated call externalities will be biased upwards.
- Recently, a number of papers have emerged analyzing the use of *on-net/off-net price differentials* as a way to distort competition in an asymmetric context. These papers show that such differentials may exist even if there are no interconnection payments (B&K). The evidence of the USA, where off-net/on-net price differentials are observed in a B&K context, supports this result.
- There are also some contributions focused on the *potential role of MTRs as an instrument for entry deterrence*. Nevertheless, these models do not show that B&K is efficient. They also present an inconsistency problem: high MTRs are not commercially possible unless they guarantee exclusion. If entry took place, incumbent operators would have incentives to re-negotiate the access charge.

In light of the above issues arising from a Bill and Keep approach, it is not considered further in this response.

### Cost Orientation

The current voluntary glidepath regime has seen consistently falling termination rates, it has kept the Irish average MTR in line with the European average and has, in its current iteration, seen Meteor voluntarily agree to end its asymmetry with Vodafone and O2. A new voluntary glidepath tracking the BEREC benchmark could see rates continue to fall and could be designed to include a voluntary agreement by other MSPs to eliminate asymmetries. Vodafone is therefore deeply surprised that ComReg has entirely failed to assess the continuation of the voluntary glidepath approach based on BEREC benchmarks as a potential regulatory approach in its assessment and RIA.

In section 7.13, ComReg 12/67, ComReg states; “ *The benchmark voluntary glide-path approach for the current SMP MSPs in Ireland has to date resulted in reductions every six months, where the Irish MTRs would approximate to the European average MTR. While this approach was appropriate up to now, the 2009 Termination Rate Recommendation and indeed correspondence to date from the European Commission to other NRAs, have made it clear that such an approach would not be consistent with the 2009 Termination Rate Recommendation after 31 December 2012*”(emphasis added).

In other words, in the absence of the Recommendation, a continuation of the current voluntary glidepath regime could fulfil all other regulatory objectives. While ComReg is obliged to take utmost account of the Recommendation, the latter is not binding and does not negate ComReg’s legal responsibilities under the Directives.

ComReg has not provided any objective evidence as to what new competitive failure or consumer harm has arisen in the market since 2010 (the start of the current voluntary agreement) such that a continuation of the voluntary glide-path agreement or a similar arrangement, would not permit ComReg to fulfil all its legal obligations and regulatory objectives. In all aspects (other than implementing the remedies contained in the Recommendations), the continued use of the voluntary glidepath approach permits ComReg to fulfil its objectives. Clearly, imposing MVCT pricing - based on PLRIC cost recovery and in the timelines proposed by ComReg - is significantly more onerous on MSPs than continuing to track the BEREK benchmark which, as ComReg has stated in this consultation, was appropriate until now. In the absence of any Irish specific cost models, deriving efficient cost-oriented MVCT rates, it is incumbent on ComReg to facilitate a further voluntary agreement tracking the BEREK MTR benchmark.

Notwithstanding Vodafone's view above that a further voluntary glidepath agreement based on the BEREK MTR benchmark is the most appropriate and proportionate approach we consider that, in the scenario where a price control remedy other than a voluntary glide-path is found to be proportionate and part of the minimum suite of obligations necessary to address a demonstrated competition problem, an alternative price control based on cost orientation would be appropriate. However given the variety of possible approaches to cost orientation that can be adopted, and the varying interpretations of what is an appropriate cost oriented price, the details of a proposed cost oriented price control are key.

We consider that an appropriate cost oriented price control for MTRs must not only cover the efficient variable/incremental costs of providing mobile termination, but must also allow for the effective recovery of an appropriate contribution towards the fixed and common costs of an efficient provider of the service (including network costs and business overhead costs). This approach to cost orientation strikes the appropriate balance in terms of jointly optimising allocative, productive and dynamic efficiency in consistency with ComReg's statutory regulatory objectives.

Only some of the possible approaches to cost orientation allow for the effective recovery of the variable, fixed and common costs of the provision of mobile termination on an efficient operator basis. Vodafone notes in particular that the pure-LRIC approach currently proposed to be adopted by ComReg for the setting of the regulated MTR allows only for the recovery of the incremental costs of the service, precluding regulated MTRs from making an efficient contribution to the fixed and common costs of the network. A pure-LRIC approach would therefore not only distort consumption by shifting the burden of fixed and common cost recovery entirely on to other services such as origination, requiring charges for these services to be raised above the efficient level, but would undermine the ability of operators to earn their risk-adjusted cost of capital to the detriment of efficient investment and innovation over the longer term.

In addition to considering regulatory approaches that do not allow for the recovery of the efficient total costs of provision of mobile termination in the MTR charged, ComReg has also omitted to consider feasible alternative approaches to cost orientation. Specifically Vodafone notes that while LRIC+ is mentioned in passing by ComReg in paragraph 4.37 of the consultation document, it is not assessed in detail as a discrete alternative regulatory option as is the case for BU-LRAIC+. Nor does ComReg or Analysys Mason provide any objective justification for the decision not to include LRIC+ as one of the regulatory options to be analysed. This is despite the fact that LRIC+ could potentially lead to a materially different outcome in terms of the level of the regulated MTR from that which would arise

from implementation of either the BU-LRAIC+ or the pure LRIC methodologies, and would appear likely to score differently on ComReg’s assessment criteria relative to the other two approaches.

The failure of ComReg to consider LRIC+ as a distinct regulatory option in its assessment of regulatory options is a serious omission that fundamentally undermines the validity of ComReg’s preliminary conclusions on an optimal regulatory price control remedy for MTRs. Vodafone considers that it is imperative that ComReg revisit its assessment, by including LRIC+ as a separate regulatory option to be considered against ComReg’s assessment criteria, and relative to other potential approaches, if its conclusions are to be robust.

In relation to the issue of whether a cost model approach or a benchmarking approach would be the most appropriate to adopt when implementing a cost orientation price control, Vodafone believes that a benchmarking approach would be optimal only where the benchmark is against a sufficiently large number of jurisdictions where a cost oriented price control has been implemented, and only where the benchmark has been properly adjusted to take account of specific cost conditions in Ireland. We consider that even if a pure-LRIC model were used to determine the regulated level of MTRs (which would not be optimal for the reasons outlined elsewhere in this response), a benchmark based on a simple average of only a small number of jurisdictions where MTRs based on pure LRIC have actually been implemented, would be inappropriate and likely unrepresentative of cost conditions in Ireland. In the event that a robust adjusted benchmark cannot be implemented then Vodafone believes that use of a BU pure LRIC cost model to determine the regulated MTR would be superior to use of a volatile and questionable benchmark approach based on an insufficient number of data points from other markets. In these circumstances a cost model would at least have the merit of being grounded in reasonable estimates of the actual incremental costs faced by an efficient operator under Irish cost conditions, and would mitigate the otherwise significant risk of MTRs being set below the level of even efficient incremental costs. This advantage would outweigh the cost of additional complexity associated with developing a cost model.

Q2. Do you agree with the assessment criteria, as set out above, as being appropriate criteria to use to evaluate the five possible regulatory approaches identified in Chapter 4? Please explain the reasons for your answer, clearly indicating the relevant paragraph numbers to which your comments refer, along with all relevant factual or other evidence supporting your position.

### *Summary response*

Vodafone agrees that the headings against which the regulatory options are assessed appear reasonable. However, we have two substantial concerns with respect to the assessment criteria:

1. ComReg has provided no indication of the weighting given to the different assessment criteria. In the absence of ComReg providing a clear view on the weight to be attached to different assessment criteria, it is impossible to comment on the overall reasonableness of ComReg’s assessment framework. For example, from the tone adopted in the document it would appear that ComReg has given substantial weighting to the need to take account of the EC recommendation. Vodafone believes that this is fundamentally wrong, given that the

recommendation is non-binding, and should therefore receive considerably less weight than competition and efficiency considerations, for example.

2. Vodafone disagrees with the analysis presented by ComReg under a number of the headings. For example:

- Network externalities: Vodafone believes it is inappropriate for ComReg to dismiss concerns regarding network externalities. The extent to which network externalities exist, and would be impacted by significant numbers of consumers choosing to exit the market in the event of an increase in fixed subscription costs is an empirical question which requires detailed market analysis. In particular, it requires an understanding of price elasticities for different consumer groups and the measurement of network externalities in the Irish market. In the absence of such analysis ComReg cannot be in a position in which it is satisfied that network externalities are unlikely to be of significance
- Competition effects: ComReg has argued that high MTRs may re-enforce barriers to entry/expansion and disadvantage late entrants. However, ComReg ignore the economics literature which demonstrates that high MTRs may increase competition between operators. This literature argues that high termination rates may strengthen network effects thereby making firms tougher rivals. By lowering MTRs this effect is reduced and competition in the market will be weakened. Ultimately, the impact of lowering termination rates on competition is ambiguous and can only be properly assessed through empirical analysis. However, ComReg has ignored these potential countervailing effects in its assessment.
- Dynamic efficiency: ComReg has ignored the potential impact that setting a cost orientation remedy below cost will have on operator incentives. ComReg assumes that operators will be able to recover their fixed and common costs through higher charges for other services. However, this depends critically on the level of competition in the retail market. If competition is intense, such that operators are not able to recover their fixed and common costs, this will substantially reduce investment incentives.

Q3. Do you agree that cost orientation by means of a pure LRIC methodology is the most appropriate approach to set Termination Rates in Ireland? Please explain the reasons for your answer, clearly indicating the relevant paragraph numbers to which your comments refer, along with all relevant factual or other evidence supporting your position.

### *Summary response*

Vodafone fundamentally disagrees with this approach for the following reasons:

1. ComReg has failed to demonstrate that the current voluntary glide path is giving rise to any inefficiencies or distortions. ComReg, by failing to consider the retention of this approach in its analysis, has therefore clearly failed to demonstrate that a move to LRIC is superior.

2. ComReg has failed to consider LRIC+ as an alternative to LRIC. Conceptually, it is quite possible that LRIC+ could produce superior outcomes in terms of efficiency and competition, and ultimately, consumer welfare.
3. ComReg has not carried out the level of detailed empirical analysis that would be necessary to properly assess the impact of a move to LRIC. It has not carried out any competition assessment (or simulation analysis), it has carried out no analysis of consumer price elasticities or externalities, and it has not carried out any welfare analysis. In the absence of such detailed appraisal, ComReg therefore has no basis on which to claim that a move to LRIC is appropriate.
4. There is very limited empirical evidence, from Ireland or other markets, to suggest that the reduction in MTRs has led to either efficiency or competition benefits.
5. ComReg has ignored entirely that its approach to implementation may lead to prices that are significantly below even the true LRIC cost for the Irish market. ComReg is proposing a benchmarking approach based only on those countries that have in place a final and binding LRIC control. Currently the only country that meets this criteria is France, and the illustrative glide path included in ComReg's paper is based on the French MRT. ComReg has carried out no analysis as to whether this is an appropriate level of termination rate for Ireland, or whether it is above or below the actual LRIC for Ireland. If it is below the Irish LRIC, and Vodafone suggests it is likely to be so, then ComReg's proposed remedy will have clear detrimental impacts and is incompatible with the Directives. Essentially, ComReg's proposed remedy would result in an operator incurring losses for each minute received, which could not be considered proportionate and would therefore be inconsistent with European law.

## Introduction

ComReg's own analysis shows that the benefits it anticipates that LRIC will give rise to compared to LRAIC+ are small. In particular, in relation to the two most areas, competition and efficiency, ComReg asserts that LRIC will produce only marginally better outcomes:

- Allocative efficiency
- Dynamic efficiency/competition:

On this basis, ComReg is proposing to move away from a remedy that has seen the industry voluntarily reduce MTRs by 58% to a remedy that will result in operators making losses on every minute of calls they receive. Vodafone strongly disagrees with ComReg's assessment and the conclusions it draws. In the sections that follow we highlight a number of serious errors in ComReg's approach and analysis that, in Vodafone's view, substantially undermine ComReg's conclusions, and suggest that ComReg must fundamentally re-assess the remedies it is proposing for this market.

In particular, we highlight:

- ComReg's failure to consider alternative appropriate remedies;
- ComReg's failure to carry out the empirical analysis necessary to properly assess LRIC against alternative cost options

- ComReg’s failure to consider whether there is any empirical support for the benefits it asserts that a move to LRIC will give rise to
- ComReg’s failure to taken into consideration the impact that a benchmarking rather than a BU LRIC approach may have on the benefits case and market outcomes, and
- ComReg’s failure to assess appropriately the transparency, regulatory risk and regulatory uncertainty issues that its proposed approach gives rise to.

### **ComReg’s failure to consider appropriate alternatives**

Vodafone believes that ComReg has carried out an overly narrow assessment of the alternative cost orientation remedies available to it. While the consultation document recognises that there are a number of different cost standards that could be applied to MTRs, it has assessed only 2 of these – LRAIC+ and pure LRIC. Vodafone believes that there are at least two credible alternative remedies that ComReg should have considered as part of its analysis. These are:

- A continuation of the current voluntary glidepath based on the BEREC benchmark; and
- LRIC+

We discuss each below.

#### *Continuing the current voluntary approach*

Termination rates in Ireland are currently subject to a voluntary glidepath based on the BEREC benchmarks. Normally, if a regulator has already imposed a regulatory remedy in a market, when the market remedies are re-assessed one would expect that the continuation of the existing remedy would be one of the options considered. Moreover, one would expect that a regulator would only deviate from an existing remedy in the case where there was clear evidence that the remedy was not working and that it was giving rise to adverse market outcomes. Any other approach creates substantial regulatory risk and uncertainty for operators.

In this case not only has ComReg deviated from the existing remedy, but it has not even given consideration to the retention of that remedy as part of the options it considered. Moreover, an examination of the current remedy would clearly show that:

- The remedy has resulted in significant declines in MTRs in Ireland
- There is no evidence of adverse market outcomes for consumers.

Termination rates in Ireland are currently subject to a voluntary glidepath based on the BEREC benchmarks. The current voluntary glide path for MTRs has seen MTRs decline in Ireland by 58% over the last 3 years. MTRs in Ireland are in line with the European average, and are likely to continue to decline in line with overall trends in Europe.

In terms of market outcomes, ComReg’s regular market reports show that:

- Mobile subscriptions have continued to grow: Subscriptions, excluding mobile broadband, have grown by 6% in the last two years. When mobile broadband is included growth has been over 7%.
- Retail voice traffic, SMS messages and MMS messages have all increased
- Total mobile revenues have been declining
- The share of the largest two operators has declined over recent years, and the market has seen entry by Tesco Mobile and Lycamobile, while 3 has seen a 60% increase in its market share
- Almost 800,000 numbers have been ported since Q1 2010
- Prices have continued to decline, and Ireland ranks below the European average for all post paid mobile baskets.

This clearly shows that the mobile market in Ireland continues to be characterised by strong competition, and that the existing voluntary glidepath is reducing MTRs substantially. Against this background it is hard to conceive why ComReg has not even considered the continuation of the existing remedy.

#### *Failure to consider LRIC+*

ComReg's assessment considered only two options, pure LRIC and LRAIC+. However, as ComReg note in their consultation, an alternative common cost standard is LRIC+. Vodafone is surprised that ComReg did not include LRIC+ in its analysis, or provide any reason for its exclusion.

Vodafone believes that there are important differences between the two measures of cost, and that ComReg should have considered a remedy based on LRIC+ as part of its option assessment.

#### *ComReg's failure to carry out the empirical analysis necessary to properly assess LRIC against alternative cost options*

ComReg's assessment of LRIC and LRAIC+ is that LRIC performs marginally better in relation to both allocative efficiency and dynamic efficiency/competition. Vodafone strongly disagrees with this conclusion. We believe that:

- ComReg has not carried out the level of analysis necessary to determine which is the most appropriate cost standard
- The analysis it has carried out is simplistic, flawed and not robust enough to support a finding in favour of LRIC
- ComReg has failed entirely to consider potential countervailing competition impacts associated with reducing MTRs

In the following we set out our concerns in relation to ComReg's assessment of both allocative and dynamic efficiency.

#### *Allocative efficiency*

There has been considerable controversy over the issue of welfare-maximising termination charges. However, there is generally consensus that the relationship between the welfare maximising rate and average incremental cost is critically determined by the existence and size of the network externality and the call externality.

Economic theory suggests that, in the presence of a network externality, the welfare maximising termination charge is above cost, which suggests that a LRIC+ or LRAIC+ cost standard is more appropriate. Essentially, higher termination rates increase welfare by subsidising the acquisition and retention of mobile subscribers. However, it is recognised that where calling externalities exist the welfare maximising level of the MTR falls back towards cost.

Ultimately, therefore, the question of which cost standard is most appropriate in terms of efficiency properties (both allocative and dynamic) is an empirical one, which may vary from market to market. Ultimately, the key issue is the presence and relative size of the two externalities. Because these go in opposite directions to each other – an appropriate policy choice can only be made on the basis of empirical assessment.

ComReg has not carried out the necessary quantitative assessment. Rather, it has carried out a partial qualitative assessment that cannot be relied upon to arrive at a robust answer. In particular, Vodafone disagrees strongly with ComReg's assessment of the network externalities, and believes it has overstated call externalities.

### *Network externalities*

In the presence of network externalities, raising MTRs above cost in order to subsidise access can be efficient. Essentially, a network externality arises because when an individual joins a communication network they typically do not consider the benefits that may arise to other members of the network. In consequence, the social value of a connection may be above the price of connection, but the private value of the connection is below the price of connection. From a social welfare perspective, overall welfare is increased by subsidising the cost of access such that the individual joins the network. In the presence of network externalities, but no call externalities, the welfare maximising level of termination charges is above the cost of termination.

ComReg have suggested that network externalities (or the need to subsidise access) are unlikely to be of significance in the Irish market. Vodafone strongly disagrees with ComReg's assessment of network externalities and its conclusions. In Vodafone's view ComReg has not carried out the analysis necessary to fully understand the likely magnitude of network externalities in the Irish market. In order to assess network externalities, ComReg would need to:

- Assess the current level of subsidy to customers (subscribers and non-subscribers), to understand the extent to which customers' access is currently being subsidised;
- Assess the potential impact of reduced MTRs on the access subsidy – this is potentially very substantial, given that ComReg's proposed remedy will, within a year, reduce Vodafone's termination revenues by up to 80%;
- Assess the number of marginal customers (both existing subscribers and non-subscribers) – i.e. the number of customers who might either disconnect or choose not to connect in the absence of the subsidy;
- Assessed the level of the social value of marginal customers.



ComReg have carried out none of the above analysis. Rather they have carried out a limited and highly simplistic qualitative analysis, which in reality, provides absolutely no insight into the likely impact on network externalities as a result of a reduction in MTRs.

ComReg and AM have argued that the argument regarding subsidised access is only valid if the market is unsaturated (AM pp.32) or where the costs of maintaining a subscription to the network are heavily subsidised and a large proportion of the user base would disconnect without this ongoing subsidy.

ComReg and AM then argue that:

- The market is heavily saturated:
- The network cost of keeping a user on the network is low: they argue that network costs are low because of the combination of cheaper SIM-only packages and the development of a second-hand market for handsets.

AM conclude that:

*“High penetration and the corresponding high number of subscribers make it difficult to support any argument that mobile services are unaffordable”.*

First, the issue is not affordability, it is marginality – the key issue is not whether there are customers who cannot afford a mobile phone, but rather whether there are customers who, in the face of a substantial increase in handset costs, would choose to disconnect. ComReg’s analysis simply does not address this issue at all.

Second, there is no reason to assume that social value declines as saturation increases. ComReg are presuming that as mobile networks grow, social externalities decrease. This is incorrect. The size of the network externality can be expressed as the ratio of social benefit to private benefit when the marginal subscriber joins (or leaves) the network. As saturation increases it is reasonable to assume that the marginal private valuation declines as later joiners presumably have lower valuations of being able to connect with other subscribers. While the social benefit may also decline (the addition of subscribers with successively lower valuations reduces the average valuation), it will do so at a slower rate than the fall in the private valuation itself due to the bulk of existing subscribers with higher valuations. This implies that as saturation increases so too does the size of the network externality.

We note that ComReg have not conducted any analysis to assess the size of the network externality in Ireland. However, in the UK it was found to be substantial – the UK has found that a mark-up of between 30%-70% of the private value is appropriate.

Third, ComReg’s argument regarding second-hand handsets is not credible. ComReg argue that the subsidy required to prevent marginal subscribers from connecting is likely to be low because there is now a plentiful stock of second-hand mobile phones that marginal customers could avail of in the absence of an access subsidy. First, we note that this is based entirely on speculation on the part of ComReg, as it has not assessed the size of the current subsidy, how it would be impacted or how many marginal customers there might be. ComReg has also conducted no market analysis to assess the extent to which consumers consider second-hand phones to be substitutable for new phones.

Moreover, ComReg’s analysis also fails to consider that:

- Handset prices are currently low because they are subsidised – so over time second-hand prices will increase;
- The average lifetime of a handset is 4 years – so, within four years the current stock of ‘cheap’ handsets will largely no longer exist; and
- Second hand markets are subject to substantial information asymmetries. It is not unreasonable to assume that marginal subscribers and non-subscribers are individuals who are less comfortable with technology, lower income and more risk averse. Consequently it is not at all clear that such customers would view second hand phones as an acceptable substitute

We also note that ComReg and Analysys Mason appear to ignore other likely economic and social impacts of the reduction and/or withdrawal of device subsidies such as a large increase in the price of smartphones, in particular, for end-users. The achievement of public policy objectives such as maximising social inclusion and the availability of access to broadband services as part of the Knowledge Economy would be significantly undermined in the likely event that withdrawal of current considerable device subsidies on smartphones and tablets led to a slowdown or reversal of the trend toward increased penetration of these broadband enabled devices among mobile subscribers. Neither ComReg nor Analysys Mason has undertaken the necessary comprehensive, quantitative evidence based, assessment of the economic welfare and distributional impacts of this factor as part of the present consultation process. Vodafone believes that it is imperative that this issue is now taken into account before definitive conclusions on the appropriate approach to a cost oriented price control are reached.

Overall, therefore, Vodafone believes that ComReg has not conducted the necessary analysis to assess network externalities, and, to the extent that ComReg has assessed network externalities, its analysis is flawed.

### *Call Externalities*

Vodafone does not agree with ComReg’s assessment of call externalities. ComReg asserts that:

*“ComReg considers that pure LRIC appears to have better allocative efficiency characteristics than LRAIC + due also to the presence of call externalities (i.e. the benefit you gain when someone calls you). Given that the person making the call pays for the entire costs of the call implying it is only their welfare that is ultimately considered in making the call, setting Termination Rates above incremental costs could result in the calling party initiating an inefficiently low number of calls from the called party’s perspective. The quantitative benefit of the call externality is unknown; however, in qualitative terms the person receiving the call also derives some benefit from the call as otherwise they would presumably not answer the call. A pure LRIC methodology potentially goes further in recognising this call externality than a LRAIC + methodology.”*

Vodafone have a number of concerns with ComReg’s assertion above:

- ComReg have failed to recognise that the majority of ‘call externalities’ will be internalised. For example, the presence of repeat calling relationships, such as friends and families, is likely to result in the majority of call externalities being internalised.
- ComReg have provided no quantification of the magnitude of call externalities, and so cannot be in a position to assess whether they are greater than network externalities.

- Vodafone do not believe that un-internalised call externalities are material, and therefore for practical purposes they should not influence the setting of efficient cost oriented termination rates. We would refer to the research paper in Annex C of this response which demonstrates that call externalities should be largely internalised by subscribers and should not influence efficient platform pricing. The paper also demonstrates that the residual (un-internalised) call externality is small and that below-cost termination rates are not welfare maximising.

Given ComReg's failure to adequately assess the magnitude of network and calls externalities, ComReg cannot be in a position to determine that pure LRIC will give rise to improved allocative efficiency. Moreover, Vodafone believes that such an assessment would demonstrate that network externalities are likely to be considerably greater than call externalities, thereby suggesting that a LRIC+ standard is likely to produce more efficient outcomes.

#### *Dynamic Efficiency and competition effects*

ComReg have also asserted that:

*"Pure LRIC also, according to the Analysys Mason Report, improves dynamic efficiency in that the closer the Termination Rate moves to zero, the better the dynamic efficiency as the tariff-mediated network externalities are removed or reduced. In terms of competition this means that incentives for the larger Service Providers to implement differential on-net/off-net retail pricing policies are reduced and ultimately smaller Service Providers face lower financial barriers to entry/expansion. The impact of tariff-mediated network externalities has been clearly evident in Ireland to date where the two key MSPs have been able to broadly maintain their market shares".*

Vodafone believes that the above arguments are speculative and partial, and that ComReg has again failed to consider fully the potential set of impacts on competition arising from a change in termination rates.

First, the Irish mobile market is competitive. The evidence we set out above from ComReg's own market report shows that there has been entry and expansion in the market, that prices are falling and that usage is increasing. ComReg has undertaken no competition analysis of the market to support its assertion that the current MTRs act as a barrier to entry or expansion.

Second, Vodafone must also take issue with an unfounded assumption implicit in the assessment of the impact of MTR regulation in pages 41-43 of the Analysys Mason report that is central to its conclusions. This assumption is that on-net/off-net retail price differentials are driven solely by high levels of MTRs and would be eliminated if they were lowered, to the benefit of competition. However this assumption is false given that such on-net/off-net retail price differentials also exist in markets where the Receiving Party Pays principle is in effect. It is imperative that Analysys Mason and ComReg revisit the assessment of the impact of regulation on competition on the basis of the correct assumption that on-net/off-net price differentials may not necessarily be eliminated if MTRs were reduced to levels that allow for the recovery of efficient incremental costs only.

Third, notwithstanding Vodafone's strong disagreement with ComReg's analysis, we note that if ComReg's assumptions were to be correct, there is a potentially significant countervailing impact on competition that ComReg has failed entirely to consider.

ComReg have assumed that:

- High MTRs have created a substantial on-net/off-net pricing differential
- That differential has created a tariff mediated network externality (TMNE)
- That TMNE has acted as a barrier to entry or expansion for small operators.

However, ComReg have ignored the fact that lowering MTRs may also lower the intensity of competition between operators. Operators compete to attract new customers. When attracting a new customer, operators take account not just of the direct revenues associated with that client (the retail subscription fees and retail usage revenues) but also indirect interconnection revenues due to the calls made from customers of other networks. The presence of such indirect revenues has a positive impact on the incentives of operators to compete for customers. Consequently, even if ComReg's assumptions were to be correct, the reduction in MTRs may give rise to two competition effects that work in opposite directions. ComReg considered only one of these impacts, and so cannot have been in a position to determine that a pure LRIC approach results in improved dynamic efficiency/competition outcomes.

Finally, the assessment of dynamic efficiency set out by Analysys Mason in the second paragraph of page 37 of its report is incorrect if, by costs of a hypothetical efficient operator, Analysys Mason is referring to efficient incremental costs only (as in the case of a pure LRIC methodology). Vodafone must emphasise that if MTRs are set at a level that allows for the recovery of efficient incremental costs only then not only would there be no net dynamic efficiency benefits, but there would be serious dynamic inefficiency. This would be the case as operators would be compelled to seek to recover their costs in an inefficient manner, with no mark-up over incremental costs as a contribution to the fixed and common costs of the network permitted in the level of regulated MTRs, an inefficiently disproportionate contribution to recovery of these costs would be required from origination charges, leading to distortions to consumption and demand for services. As operators cannot recover the total costs of provision of termination directly from termination rates (including risk adjusted cost of capital on prior investment in network components associated with provision of termination services) they will be disincentivised from efficient investment in the associated network components in the future.

### **ComReg's failure to consider whether there is any empirical support for the benefits it asserts that a move to LRIC will give rise to**

ComReg has argued that the move to pure LRIC will result in significant reductions in mobile prices and increases in mobile traffic. It has argued also that lower MTRs would help smaller operators to compete, as they would find it easier to offer off-net prices that are comparable to the on-net prices of larger competitors.

However, we note that ComReg have not presented any empirical evidence or analysis of the effects of reduced MTRs in other jurisdictions to support this analysis. The appendix to this paper sets out independent analysis by Frontier Economics which has sought to examine empirically the extent to which cuts in MTRs have given rise to such effects.

The Frontier study looks at the impact of accelerating mobile termination rate cuts on the performance of the mobile market and upon its consumers since 2009. The report examines whether there is any empirical support for:

- **Policy-shift impact.** The report considers whether there has been a structural break in the trends for usage and prices given the acceleration in mobile termination rate reductions since 2009. The report also uses correlation analysis to look at the impact of MTR reductions in individual countries.
- **Longer-term relationship.** The report uses a longer time series and statistical techniques to examine the link between mobile termination rate cuts and consumer outcomes.

The key findings from the study are:

- **No link to usage and prices.** Although usage has increased and prices have fallen, there is no evidence that these trends have been related to the acceleration in the reduction in mobile termination rates. Despite a tripling in the rate of termination rate cuts since the introduction of the Commission's recommendations, there is no evidence at the EU level of an acceleration in the rate of mobile price reductions or the rate of usage increase.
- **No evidence of a link between MTR reductions and the market position of smaller players.** There appears to be no evidence of a positive link between the market share of smaller operators and the acceleration in MTR reductions since 2009.
- **Potential risk of lower take-up and investment.** It is too early to draw conclusions on the impact of accelerated mobile termination rate cuts on penetration rates and investment levels - there is a risk that they could have a detrimental impact.

#### *Alleged Pent-up demand for Mobile Off-net and fixed to mobile calls*

It is ComReg's contention that a further fall in MTRs towards the pure LRIC rate will correct for an under-consumption of fixed to mobile and mobile cross-net calls. In other words, high level of MTRs are leading to a pent-up demand for these call types that will somehow be satisfied with further drops in MTR, over and above the dramatic falls that have already taken place. Indeed, ComReg would argue the differential between a LRIC+ or LRAIC+ rate and a pure LRIC rate would be of sufficient magnitude to materially affect this claimed market failure. The facts in the Irish market do not in anyway support this contention.

In Vodafone's financial years<sup>25</sup> 08\09 to 11\12, Vodafone's average MTR has fallen over 50% from 9.3c to 4.6c. During the same period, inbound traffic from other mobile operators has **[Redacted]**. The following figure shows the trends in MTR and inbound volumes over the period<sup>26</sup>. It shows that there is no evidence of a correlation between a falling MTR on the Vodafone network and an increase in traffic from fixed or other mobile networks. It is difficult to see how ComReg could support a contention that further falls in MTR will have any different result.

<sup>25</sup> Vodafone's financial year runs from April to March

<sup>26</sup> To the best extent possible, Vodafone have corrected the data to account for transit traffic i.e. traffic that originates on mobile networks but arrives on Vodafone via transit over fixed networks. **[Redacted]**

[Redacted]

## **ComReg's failure to taken into consideration the impact that a benchmarking rather than a BU LRIC approach may have on the benefits case and market outcomes**

ComReg has assumed that its assessment of the effects of LRIC on efficiency and competition are unaffected by whether it implements the proposed solution on the basis of a cost model or a benchmark. This is simply wrong.

ComReg is proposing an exceptionally small sample of countries against which to benchmark. As things stand, the only country against which we are benchmarked is France. ComReg has carried out no analysis to suggest that this is appropriate. Moreover, as we set out in response to Q5 below, we believe there are compelling reasons to suggest that this rate is likely to be below the LRIC cost for Ireland. In consequence, ComReg will be imposing a remedy that imposes losses on Vodafone, and other operators, for every minute received. Given that ComReg's own analysis shows that the benefits of pure LRIC over LRAIC+ are small, Vodafone does not believe that a remedy that carries with it the high probability that it will impose losses on operators cannot be considered proportionate.

Even if a small number of additional decisions become binding in other countries (e.g. Belgium, Italy, Spain, the UK and Portugal), ComReg has carried out no analysis to assure itself that prices will be above the Irish LRIC that would have been derived from a LRIC model for Ireland. Under a LRIC+ regime, and a benchmark based on a large population of countries, NRAs can use a benchmark methodology with a high degree of certainty that even if the benchmark rate differs from the 'true' country specific cost, it is very unlikely that the rate will be out of the LRIC-SAC range. However, in this case, given the LRIC standard and the limited number of countries against which Ireland would be assessed (at most 6) it is highly likely that the benchmark rate would be lower than the true LRIC rate for Ireland.

This is particularly likely to be the case given that Irish operators are relatively small compared to those in the benchmark countries, and thus are unlikely to be able to benefit from the same economies of scale. Similarly, the population dispersion in Ireland is likely to be higher than in other member states, leading to higher traffic costs. A benchmark LRIC that has a substantial probability of resulting in operators incurring losses is clearly inconsistent with European law, and ComReg's duties.

ComReg have noted that the rates in the benchmarked countries do not differ materially from each other, and so "ComReg would expect that the model result of an efficient pure LRIC rate for MTRs in Ireland would be in the same range as the results for other EU member states. However, there is a very substantial variance in the rates, with rates varying by almost .5c from 0.8c for France to 1.27c for Portugal. In revenue terms, the impact of a .5c variation **[Redacted]**, which Vodafone considers to be material

## **ComReg's failure to assess appropriately the transparency, regulatory risk and regulatory uncertainty issues of the measures it has proposed**

ComReg's proposed approach gives rise to an unreasonable degree of regulatory uncertainty. ComReg has noted that as more countries arrive at binding decisions, it will vary the benchmark. Given the small number of countries in the sample this could have a substantial impact on the benchmark and hence on Vodafone's remedies. **[Redacted]** Not knowing what one of its key revenue drivers will be, whether its fixed costs will be recoverable, or potentially, whether it will be forced to make a loss on every minute it receives is simply not acceptable.

With respect to ComReg's statements on regulatory certainty as set out in paragraph 5.25 of ComReg's consultation document, Vodafone would highlight that regulatory certainty and transparency is of benefit primarily when the regulatory approach on which transparency is being provided is one that allows full and direct recovery of the efficiently incurred total costs of service provision over the investment cycle (including an appropriate contribution to recovery of fixed and common costs and the risk adjusted cost of capital). Indeed the only benefit of transparency to operators of a future regulatory approach that does not allow full and efficient recovery of total costs of service provision (e.g. cost oriented MTRs on the basis of pure LRIC) is to provide operators with sufficient information to ensure that they do not undertake future investment that would be uneconomic in the context of an environment of onerous regulation of the level of MTR charges.

It is notable that ComReg believes that, since the Termination Rate Recommendation was published by the Commission in 2009, operators have had a high degree of regulatory certainty about the future level of regulated rates. Vodafone does not agree that this has been the case. However ComReg's statement in paragraph 6.83 of the consultation document appears to represent an implicit admission by ComReg that there was a presumption from that time, at least on its part, that a pure-LRIC approach would be implemented (even though no detailed assessment of this approach by reference to efficiency criteria or other factors has been conducted and consulted upon by ComReg until now).

Moreover it appears to reflect an assumption by ComReg that all service providers in the communications sector should also have recognised that the 2009 Termination Rate Recommendation essentially pre-determined that a pure-LRIC methodology would be adopted, and that the ComReg and Analysys Mason assessment in the present consultation would amount essentially to a formality. Vodafone submits that mobile operators have not in fact had a high degree of regulatory certainty in the period since the publication of the Commission's Mobile Termination Rate Recommendation in 2009 given that the Recommendation is not automatically binding, and because we could not prejudge the outcome of an assessment that ComReg had not yet conducted with reference to its statutory regulatory objectives. That it would have been inappropriate for Vodafone or other operators to assume that a pure-LRIC approach would be adopted in Ireland has been borne out by the fact that a LRIC+ cost orientation methodology, rather than a pure LRIC methodology, is being adopted in at least one other EU Member State (the Netherlands) despite the Commission's Termination Rate Recommendation. The implementation of a pure-LRIC methodology to the setting of MTRS is therefore not automatic, nor should it be.

Indeed Vodafone is alarmed that the criterion of taking utmost account of the Termination Rate Recommendation, ostensibly a non-binding Commission guidelines document, is being interpreted by ComReg in practice as a requirement of complete adherence to the Termination Rate

Recommendation as its paramount regulatory objective. This implicit view, as explained previously in this response, is however unrelated to, and potentially in conflict with, ComReg’s statutory regulatory objectives under EU and national legislation.



## 6 Vodafone comments on the assessment of the regulatory approaches

### *Overview*

Vodafone notes ComReg's statement in section 5.2 of the present consultation that the assessment of the regulatory approaches is carried out on the basis of all of the assessment criteria without assigning specific weights to individual criteria. However it is unclear from the consultation document on what basis each of the assessment criteria factor into ComReg's overall assessment of the regulatory options considered. It is important that ComReg provide a high level of transparency on this issue if stakeholders are to have the necessary level of confidence in its decision making. This is particularly necessary given that the primarily qualitative nature of the assessment approach ComReg has adopted is susceptible to a large degree of subjectivity.

If ComReg's statement is an implicit indication that it assigns equal weight to each of the investment criteria then Vodafone strongly rejects this proposed approach. We consider that, to be fully consistent with ComReg's statutory regulatory objectives, with its focus on long term end user welfare, higher weights must be attached to the efficiency criteria and lesser weight to the criterion of taking utmost account of (which ComReg appears to wrongly interpret as automatic adherence to) a non-binding Commission Recommendation, particularly in circumstances where this may not be congruent with the achievement of ComReg's regulatory objectives once national circumstances are taken fully into consideration.

As outlined previously Vodafone considers that, if a price control remedy (other than the continuation of the existing voluntary glidepath based on BEREC benchmarks) is concluded to be part of the minimum suite of remedies necessary to address potential competition problems in the MVCT market then an alternative cost oriented remedy is optimal to impose. However the key issue is what form of cost orientation is optimal in terms of the achievement of key regulatory objectives such as the promotion of end user interests. Vodafone considers that the approach to a cost oriented MTR must be that which allows recovery of the total costs of an efficient operator, including an appropriate contribution to the fixed costs of the network, and a proportionate contribution to business overhead. Only this approach to cost-orientation strikes the best trade-off achievable in terms of optimising allocative, productive and dynamic efficiency criteria, while also being consistent with the other criteria that ComReg and Analysys Mason have considered.

### *Allocative Efficiency*

We note the practical difficulties identified by Analysys Mason and ComReg regarding the implementation of Ramsey pricing to obtain the optimal mark-up for each individual service that most efficiently recovers the substantial fixed and common costs of telecoms networks while minimising the impact on consumption of these services by end users. However it certainly does not follow that because Ramsey mark-ups across services including mobile termination are difficult to determine

accurately (given the lack of availability of relevant information) that the appropriate approach is not to include any mark-up whatsoever over efficient incremental costs of mobile termination in the regulated MTRs to be charged. To do this, as ComReg is effectively proposing with the intended adoption of cost oriented MTRs on the basis of a pure-LRIC cost model, could only be justified on welfare grounds if either:

- (a) The price elasticity of demand for wholesale mobile termination services is perfectly/infinately elastic and/or:
- (b) Call externalities are sufficiently large to outweigh the demand elasticity factor

Vodafone does not believe that either of these conditions are met in the case of mobile termination rates and ComReg has provided no objective evidence either in relation to the broad magnitude of the price elasticity of demand for mobile call termination, or in relation to the size of call externalities.

In the absence of information to calculate Ramsey mark-ups with a high degree of accuracy, we consider that the allocation of common costs on the basis of EPMU is an appropriate second-best solution that would achieve a cost oriented MTR at least broadly approximating to the efficient level and therefore achieving ComReg's objectives for end-user welfare as effectively as practicable in the context of existing data availability constraints.

#### *Network Externalities*

Vodafone strongly disagrees with ComReg's assessment of network externalities and its conclusion that these are not significant in the Irish market given conditions such as the high level of mobile penetration. We consider that the conditions for significant externalities arising in the market are met as the costs of maintaining a connection to the network are considerably subsidised and it is likely that a significant proportion of the user base would disconnect without this ongoing subsidy. It is not the case that the extent of mobile penetration is central to the size of externalities as, even in a saturated market, there would be a significant reduction in consumer welfare arising from a significant reduction in the overall subscriber base (fewer individuals contactable) as subscribers disconnected in response to a reduction or withdrawal of mobile device subsidies.

Vodafone notes the statement of Analysys Mason in paragraph 5.13 of their report that the costs of keeping subscribers on a network are low because of ongoing handset subsidies. However this is dependent on those subsidies continuing to be funded out of mobile termination rates, the prospects for which would be seriously undermined if MTRs were regulated using a pure-LRIC cost model. Vodafone considers that the Analysys Mason assessment is therefore characterised by a degree of circular reasoning that calls into question the validity of its conclusions on the extent of network externalities.

Vodafone considers that Analysys Mason and ComReg systematically underestimate the extent to which marginal subscribers would disconnect from mobile networks in the absence of device subsidies, with corresponding welfare losses for both these marginal subscribers and all other users. This is because there has been a failure to carry out a sufficiently comprehensive quantitative evidence based cost-benefit analysis, including an analysis of the distributional impacts of the proposals for a pure-LRIC based approach versus the use of alternative cost orientation options such as LRIC+. As set out further

below, factors which are claimed by Analysys Mason as supporting the case for no mark-ups on the level of regulated MTRs to account for network externalities, are invalid.

ComReg and Analysys Mason wrongly claim that the SIM-only packages now being marketed by operators indicate that network externalities (which would justify mark-ups to fund handset subsidies) have ceased to be important. Vodafone considers that the SIM-only packages now being made available by mobile service providers seek to exploit the very low cost of mobile switching in the Irish market (once mobile customers are out of contract) to induce mobile subscribers of competitors, who have previously availed of the handset/device subsidies offered by their existing service provider, to switch. In this way operators can benefit from the fact that the cost of the handset subsidy has been borne by the competing service provider. However this does not detract from the fact that subsidising the access costs for subscribers via handset subsidies, to reflect the presence of significant network externalities, remains important.

Vodafone also notes the separate claim that the development of a second-hand market for handsets indicates there is no longer a need for device subsidies for marginal customers. This argument is invalid as there is clearly a strong relationship between the prices that can be charged for second-hand handsets/devices and the price charged for new handsets/devices. The fact that new handsets are currently significantly subsidised by mobile service providers also acts to lower prices of second-hand handsets below the level that could otherwise be charged for the latter. A reduction or full withdrawal of handset subsidies for new mobile devices, due to the imposition of regulated MTRs on the basis of a pure-LRIC methodology, would lead to a considerable rise in demand for second-hand devices as consumers sought to substitute them for now higher priced new devices. This increase in demand would however not be accompanied by any offsetting increase in the supply of handsets to the second-hand market, indeed the supply of second-hand devices may even decrease as the handset replacement cycle for now more expensive new devices would be likely to lengthen. Consequently the price of second-hand handsets would also increase as a result of the withdrawal of the subsidies on new handsets. The resulting increased access costs for subscribers would lead to significant disconnections of marginal subscribers from mobile networks. Vodafone believes that such disconnections, and the costs to the remaining subscribers of mobile networks of fewer subscribers being available to contact on mobile networks, would be significant and could outweigh any claimed benefits of pure-LRIC pricing, particularly relative to viable alternatives such as LRIC+ which appear to provide a better trade-off in terms of the achievement of ComReg's statutory objectives.

We observe that ComReg and Analysys Mason appear to ignore other likely economic and social impacts of the reduction and/or withdrawal of device subsidies such as a large increase in the price of smartphones in particular, for end-users. The achievement of public policy objectives such as maximising social inclusion and the availability of access to broadband services as part of the Knowledge Economy would be significantly undermined in the likely event that withdrawal of current considerable device subsidies on smartphones and tablets led to a slowdown or reversal of the trend toward increased penetration of these broadband enabled devices among mobile subscribers. Neither ComReg nor Analysys Mason has undertaken the necessary comprehensive, quantitative evidence based, assessment of the economic welfare and distributional impacts of this factor as part of the present consultation process. Vodafone believes that it is imperative that this issue is now taken into account before definitive conclusions on the appropriate approach to a cost oriented price control are reached.

### *Call Externalities*

Vodafone does not agree with the assessment of call externalities set out on page 3 of the Analysys Mason report, as it appears to imply that call externalities are a significant factor justifying significant reductions in mobile termination rates, or even the setting of termination rates at levels below costs.

We do not believe that un-internalised call externalities are material, and therefore for practical purposes they should not influence the setting of efficient cost oriented termination rates. We would refer to the research paper in Annex C of this response which demonstrates that call externalities should be largely internalised by subscribers and should not influence efficient platform pricing. The paper also demonstrates that the residual (un-internalised) call externality is small and that below-cost termination rates are not welfare maximising.

These findings are consistent with the position that a LRAIC+ or LRIC+ methodology would be superior to use of a pure LRIC methodology in determining the efficient level of MTRs.

### *Productive Efficiency*

Vodafone notes that Analysys Mason, on page 35 of its report, correctly defines productive efficiency as being maximised at the level of minimum average cost. However ComReg's current proposals to set the regulated level of MTRs on the basis of a pure LRIC costing methodology would necessarily lead to the level of regulated termination charges being set below average costs as this approach allows for the recovery of efficient incremental/marginal costs only from MTRs. A pure-LRIC methodology, by definition, is therefore inconsistent with the maximisation of productive efficiency, particularly over the medium to long term. This is in contrast to the LRIC+ or LRAIC+ cost orientation methodologies which, by allowing recovery of an appropriate contribution towards the fixed and common costs of the network directly from mobile termination charges, more closely approximate to the level that maximises productive efficiency.

### *Dynamic Efficiency*

The assessment of dynamic efficiency set out by Analysys Mason in the second paragraph of page 37 of its report is incorrect if, by costs of a hypothetical efficient operator, Analysys Mason is referring to efficient incremental costs only (as in the case of a pure LRIC methodology). Vodafone must emphasise that if MTRs are set at a level that allows for the recovery of efficient incremental costs only then not only would there be no net dynamic efficiency benefits, but there would be serious dynamic inefficiency. This would be the cases as operators would be compelled to seek to recover their costs in an inefficient manner, with no mark-up over incremental costs as a contribution to the fixed and common costs of the network permitted in the level of regulated MTRs, an inefficiently disproportionate contribution to recovery of these costs would be required from origination charges, leading to distortions to consumption and demand for services. As operators cannot recover the total costs of provision of termination directly from termination rates (including risk adjusted cost of capital on prior investment in network components associated with provision of termination services) they will be disincentivised from efficient investment in the associated network components in the future.

Contrary to the claims of ComReg and Analysys Mason that the setting of MTRs on the basis of pure-LRIC would promote dynamic efficiency by increasing competition, Vodafone would note that the retail mobile market is already characterised by robust competition. Moreover the emergence of a number of MVNOs indicates that entry barriers are currently low and the current level of MTRs in Ireland has not been a deterrent to market entry. Indeed by reducing MTRs to pure-LRIC levels a key source of revenue for MVNOs would be severely undermined, not only reducing the attractiveness of further new entry (to the limited extent that this is feasible in a highly competitive mobile retail market), but potentially increasing the probability of market exit by existing MVNOs. In contrast to ComReg's claims that reducing MTRs to the level that recovers efficient incremental costs only could advance dynamic efficiency through intensified competition, it is more likely that competition (in terms of number of market players) and choice would be reduced.

In conclusion Vodafone considers that it is clear from the factors considered above that the impact of pure-LRIC regulated MTRs would be negative, with any supposed benefits for allocative efficiency at a specific point in time (static efficiency) more than offset by the adverse effects on dynamic efficiency in particular over the investment cycle. Alternative approaches to cost orientation of MTRs such as LRIC+ in Vodafone's view offer a better trade-off in terms of the achievement of ComReg's statutory regulatory objectives.

#### *Regulatory Certainty/Transparency*

With respect to ComReg's statements on regulatory certainty as set out in paragraph 5.25 of ComReg's consultation document, Vodafone would highlight that regulatory certainty and transparency is of benefit primarily when the regulatory approach on which transparency is being provided is one that allows full and direct recovery of the efficiently incurred total costs of service provision over the investment cycle (including an appropriate contribution to recovery of fixed and common costs and the risk adjusted cost of capital). Indeed the only benefit of transparency to operators of a future regulatory approach that does not allow full and efficient recovery of total costs of service provision (e.g. cost oriented MTRs on the basis of pure LRIC) is to provide operators with sufficient information to ensure that they do not undertake future investment that would be uneconomic in the context of an environment of onerous regulation of the level of MTR charges.

It is notable that ComReg believes that, since the Termination Rate Recommendation was published by the Commission in 2009, operators have had a high degree of regulatory certainty about the future level of regulated rates. Vodafone does not agree that this has been the case. However ComReg's statement in paragraph 6.83 appears to represent an implicit admission by ComReg that there was a presumption from that time, at least on its part, that a pure-LRIC approach would be implemented (even though no detailed assessment of this approach by reference to efficiency criteria or other factors has been conducted and consulted upon by ComReg until now).

Moreover it appears to reflect an assumption by ComReg that all service providers in the communications sector should also have recognised that the 2009 Termination Rate Recommendation essentially pre-determined that a pure-LRIC methodology would be adopted, and that the ComReg and Analysys Mason assessment in the present consultation would amount essentially to a formality. Vodafone submits that mobile operators have not in fact had a high degree of regulatory certainty in the period since the publication of the Commission's Mobile Termination Rate Recommendation in 2009 given that the Recommendation is not automatically binding, and because we could not prejudice

the outcome of an assessment that ComReg had not yet conducted with reference to its statutory regulatory objectives.

That it would have been inappropriate for Vodafone or other operators to assume that a pure-LRIC approach would be adopted in Ireland has been borne out by the fact that a LRIC+ cost orientation methodology, rather than a pure LRIC methodology, is being adopted in at least one other EU Member State (the Netherlands) despite the Commission's Termination Rate Recommendation. It is also notable that the existing voluntary glidepath approach based on BEREC benchmarks was put in place in 2010, after the publication of the EC Commission's Termination Rate Recommendation, even though the approach was not in line with the Commission's preferred approach. The implementation of a pure-LRIC methodology to the setting of MTRs is therefore not automatic, nor should it be.

Indeed Vodafone is alarmed that the criterion of taking utmost account of the Termination Rate Recommendation, ostensibly a non-binding Commission guidelines document, is now being interpreted by ComReg in practice as a requirement of complete adherence to the Termination Rate Recommendation as its paramount regulatory objective. This implicit view, as explained previously in this response, is however unrelated to, and potentially in conflict with, ComReg's statutory regulatory objectives under EU and national legislation.

#### *Impact of Regulation on Competition*

There appears to be a major inconsistency between Analysys Mason's assessment of the issue of incomplete pass through of MTR reductions by fixed operators on page 41 of its report, and its view of the impact of MTRs above efficient incremental costs. Analysys Mason defends the observed incomplete pass through of MTRs by fixed operators by claiming that this behaviour is efficient if subscription charges are reduced at the same time as a result. However when mobile operators have MTRs above the level of efficient incremental costs (as would be determined by a pure-LRIC cost orientation methodology) but then reduce subscription costs by subsidising end-user devices, this is regarded by Analysys Mason as inefficient and imposing a deadweight loss. These divergent conclusions on the impact of regulation on competition with respect to fixed and mobile operators respectively are not adequately justified in the present consultation.

Vodafone must also take issue with an unfounded assumption implicit in the assessment of the impact of MTR regulation in pages 41-43 of the Analysys Mason report that is central to its conclusions. This is that on-net/off-net retail price differentials are driven solely by high levels of MTRs and would be eliminated if they were lowered, to the benefit of competition. However this assumption is false given that such on-net/off-net retail price differentials also exist in markets where the Receiving Party Pays principle is in effect. It is imperative that Analysys Mason and ComReg revisit the assessment of the impact of regulation on competition on the basis of the correct assumption that on-net/off-net price differentials may not be eliminated if MTRs were reduced to levels that allow for the recovery of efficient incremental costs only.

It must also be highlighted that it is not clear that high on-net/off-net price differentials actually lead to smaller operators finding it more difficult to gain market share. Indeed price differentials may be indicative of competitive mobile markets, rather than an indicator of potential anti-competitive

behaviour. We refer to a recent report produced by Frontier Economics<sup>27</sup>, attached as Annex D to this response, which has examined evidence from a range of jurisdictions and does not find any evidence to support the hypothesis that high on-net/off-net price differentials make it difficult for smaller operators to compete for customers.

#### *Impact of Spillover of MTR Regulatory Price Control Approach Into Related SMP Markets*

Vodafone notes that ComReg’s advisors, in section 3.4.3 of their report, recognise that the treatment of MTRs on a cost oriented, LRIC basis will give rise to compatibility issues with pricing remedies in other regulated markets:

*‘It is costly for the regulator and the industry as a large number of regulatory pricing decisions might need to be reopened. This is particularly a concern if the other services have been price-regulated using different models.’*

These markets are directly linked to the MVCT market because they comprehend the wholesale inputs required to support an end-to-end retail call or they are indirectly linked because they are subject to price controls which assess the combination of wholesale costs which make up retail bundles. The fact that it is costly – though this cost is very unlikely to be anywhere near the same order of magnitude as the drop in termination revenues which will result from ComReg’s proposals - or difficult is not a reason to ignore the spill-over effects into other SMP markets.

ComReg must take a holistic view of linked pricing remedies to bring forward a coherent price control regime. ComReg is currently consulting on a number of these markets and/or price controls. In the context of the impacts of its price control proposals for the MVCT market on MNOs, ComReg’s failure to address the end to end effects of these proposals in a coordinated fashion across the various active consultation processes gives rise to problems of equity, discrimination and proportionality as between regulated MNOs and SMP undertakings in linked markets.

#### *Additional Information on Equity Criteria*

On page 46 of the Analysys Mason report it is acknowledged that the result of falls in MTRs would be to increase mobile retail call prices (albeit only slightly) and over time, leading to a claimed ‘modest’ decline in the number of mobile subscribers. However this ignores the separate impact of reduced device subsidies in raising access costs and leading to significant losses of marginal subscribers which Vodafone has addressed in detail in section 4 of this response. Vodafone considers that the analysis of the equity criterion conducted by Analysys Mason and ComReg is therefore partial in not addressing all effects, and makes inadequately supported assertions about the size of these effects.

It is essential that a comprehensive quantitative evidence based cost-benefit analysis is carried out to verify the distributional impacts of each of the possible mobile termination price control remedies, including both LRIC+ and the pure LRIC methodologies, before any definitive conclusions can be made about the appropriate form of cost oriented price control to be adopted for the setting of regulated

<sup>27</sup> *‘The impact of mobile termination charges on competition between mobile providers: Final Report Prepared For Vodafone Group’ Frontier Economics Ltd., December 2011*

termination rates. However the assessment of equity issues carried out in the present ComReg consultation and Analysys Mason report does not meet the necessary standard for fully justified conclusions on the optimal price control remedies for fixed and mobile termination rates to be made.

Vodafone must dispute Analysys Mason's assessment of data on distributional effects on different user groups as set out on page 49 of its report, which appears to underplay the potential for reductions in MTRs to the level of efficient incremental costs only to have a regressive social impact by disproportionately adversely affecting lower income user groups.. The data shows that 26% of households in C1, C2 and DEF segments are mobile only, compared to only 15% of AB households. Contrary to Analysys Mason's interpretation, Vodafone considers that the data indicates a notable concentration of mobile only households among relatively lower income groups.

Vodafone would also note that households among older age groups are not necessarily economically disadvantaged. Many older households may have large accumulated wealth and more disposable income, large overheads typical for households in younger age groups, such as mortgage payments have in many cases been fully paid off or are of relatively modest size for older households. Factors such as this at least partially offset the effect of lower retirement income relative to those age segments primarily still in the workforce.

It is also necessary to highlight that any welfare gains for households with fixed lines from reductions in MTRs would possibly arise only to the extent that there is pass-through by the fixed incumbent in particular. There is however no evidence of significant pass-through of previous large reductions in MTRs to fixed line retail prices historically, and any non-binding verbal or written commitments by the fixed incumbent that it will pass through 100% of any future MTR reductions in the retail prices charged to its fixed line customers in the future (as referred to on page 59 of the Analysys Mason report) must necessarily be treated with scepticism.

#### *Ireland Specific Market Factors for Assessing Regulatory Approaches*

On page 61 of its report as part of the present consultation, Analysys Mason refers to the high value of credit offered by one of the smaller MNOs to incentivise customers to port in from another operator and claims that this is evidence of the existence of a barrier to inter-operator competition in Ireland that is somehow related to the current level of MTRs. Vodafone strongly disagrees with the view that the attribution of high incentives offered by a smaller operator to induce customers of competing networks to switch to it can be clearly attributed to the need to overcome an implied disadvantage from the existing level of regulated MTRs in Ireland. It can equally or more validly be claimed that the offering of high incentives to switch merely reflects the smaller MNO concerned competing vigorously to attract customers from competitors and that to induce sufficiently high switching to meet its customer acquisition targets must offer suitably large switching incentives. The need to considerably 'undercut' competitors on price (including introductory call credit offers) and other dimensions of value in order for a MNO to increase its market share significantly at their expense is a general feature of the mobile retail market, characterised as it is by robust competitive conditions. This competitive undercutting behaviour would likely characterise the competitive mobile retail market irrespective of the level of MTRs, and does not provide evidence of a barrier to inter-operator competition from current levels of MTRs as Analysys Mason claims.



Vodafone also strongly disagrees with Analysys Mason's assessment regarding the impact on investment if MTRs are set on the basis of a pure-LRIC methodology. We agree that incentives to invest will be maintained if MTRs are set at a cost oriented level using a methodology, such as LRIC+, that allows for the recovery of all incremental costs and an efficient contribution to the fixed and common costs of the network as well as to general business overhead. However if regulated MTRs are set on the basis of a pure-LRIC costing methodology then operators will not be able to efficiently recover fixed and common costs of the network. This will inevitably adversely impact future investment plans, irrespective of how competitive the retail market is. For example under conditions of intense competition where operators would not be able to profitably increase origination charges at all in order to attempt to recover all fixed and common costs (regulated MTRs set on the basis of pure-LRIC now preventing any contribution of mobile termination to recovery of these costs), operators would be compelled to try to absorb these costs themselves. This would reduce profitability and the returns on both past and prospective future investments. If operators are consequently unable to earn their risk adjusted cost of capital then long term profit maximising operators will be deterred from undertaking efficient investment and innovation in the future.

#### *Comparative Assessment of Relevant Regulatory Approaches (pure LRIC vs LRIC+ or LRAIC+)*

With regard to the general approach in Section 6 (page 68 onwards) of the Analysys Mason report relating to the Assessment of Regulatory Approaches, Vodafone considers that there are two key questions in particular that must be addressed by ComReg if this assessment is to be both transparent and robust. Some of these questions have already been raised in previous sections of this response but are reiterated below for the sake of clarity. These are:

1. What weighting does ComReg attach to each of the assessment criteria? Are they equally weighted?
2. Why do ComReg and Analysys Mason appear to interpret the requirement to take utmost account of the EC Termination Rate Recommendation as in practice meaning to adhere completely to the pure LRIC costing methodology set out in the Recommendation?

In relation to the first question, Vodafone does not believe that all of the criteria assessed by ComReg should have equal weight in the assessment. In particular, as set out previously, we believe that the efficiency and competition criteria should have the greatest weight in the assessment of the various possible price control options for termination rates as these relate most directly to ComReg's statutory regulatory objectives under EU and national legislation.

In relation to the second question, Vodafone considers that there is no objective basis for interpreting the preferred approach of setting MTRs on the basis of a pure LRIC costing methodology set out in the Recommendation as an effectively automatic and binding requirement. On the contrary it is open to ComReg, having assessed all relevant factors including its regulatory objectives, and after taking utmost account of the EC Recommendation, to nonetheless conclude for example that termination rates set on the results of a cost model based on the LRIC+ methodology would be the most appropriate price control obligation to impose.

Moving on to the specific price control regulatory approaches assessed in the consultation documents, Vodafone considers that the options of 1. No Price Control, 2. Fair and Reasonable, 3. Bill and Keep and 4. Receiving Party Pays, are not viable regulatory options where a price control remedy is found to be appropriate either because they very clearly fail most of the assessment criteria and/or because they require structural change (e.g. Receiving Party Pays) that is impractical and likely outside ComReg's powers to enforce. Accordingly we do not fundamentally disagree with ComReg's assessment of these options and do not consider these further in this response. However, as set out previously, the failure to assess a continuation of the existing voluntary glidepath approach or LRIC+ as discrete regulatory approaches with reference to the relevant criteria is a serious omission in the analysis carried out by ComReg and Analysys Mason. We believe it is imperative that these two potential regulatory approaches must also be explicitly considered if the conclusions of the assessment are to be valid.

Vodafone notes that the Analysys Mason assessment of a LRIC+ approach to setting cost oriented MTRs emphasises the practical difficulties of determining the appropriate Ramsey mark-up on MTRs to allow for the optimal recovery of the efficient fixed and common costs of the network. We accept that the lack of availability of detailed information on price elasticities is an issue for the determination of the efficient level of MTRs, however we believe that the use of an equi-proportional mark-up (EPMU) approach would provide for a reasonable approximation to the mark-up over incremental costs that would be implemented for MTRs if there was complete information in relation to demand elasticities.

In any event an EPMU approach to allocation of fixed and common costs provides a much closer approximation to the optimal mark-up than not allowing any mark-up at all over efficient incremental costs (the pure LRIC methodology) in setting the level of regulated termination rates. It is not clear to Vodafone why Analysys Mason, in its assessment on page 72 of its report, fails to reach the logical conclusion that a LRIC+ methodology using EPMU allows for the closest approximation to the efficient level of MTRs and is therefore superior to a pure-LRIC methodology that does not allow for any mark-up to contribute to efficient recovery of the fixed and common costs of the network.

As set out previously in this response Vodafone considers that there is good evidence to support the position that network externalities are significant and there is therefore a strong efficiency case for a significant mark-up over incremental costs to account for them.

Vodafone strongly disputes the claims made by Analysys Mason for the appropriateness of use of a pure-LRIC methodology in setting MTRs when compared with LRAIC+. Given robust competition in the mobile retail market it is unlikely that mobile service providers would be able to recover more than a part, if any, of that portion of the fixed and common costs previously recovered from MTRs via an increase in the level of charges to their own retail customers. Consequently profitability and investment returns would be undermined, disincentivising efficient network investment and innovation in future. The use of a pure-LRIC methodology in setting regulated MTRs would clearly be inferior to use of a LRAIC+ or LRIC+ methodology, particularly with regard to the criterion of maximising dynamic efficiency. The scope for price discrimination, grossly overstated in the assessment on page 73 of the Analysys Mason report, is too limited to alter the conclusion that the pure-LRIC methodology is sub-optimal with respect to efficiency criteria in particular.

In conclusion Vodafone considers that the overall Harvey Balls comparative assessment set out in page 85 of the Analysys Mason report is incorrect in a number of respects in terms of the relative comparison of the LRAIC+ and pure LRIC methodologies against the key criteria. In light of the reasoning set out previously in this response we believe that both LRAIC+ and LRIC+ methodology score far higher on a

pure LRIC methodology in terms of efficiency criteria overall, and in particular on the criteria of productive and dynamic efficiency. Moreover we consider that the LRAIC+ and LRIC+ methodologies score at least as well as the pure LRIC methodology with regard to the competition, equity, and transparency/regulatory certainty criteria.

Much lesser relative weight should be attached to the remaining criteria of ease of implementation and the need to take account of the EC Recommendation. In any event we agree with the Analysys Mason assessment that LRAIC+ scores as well or better than a pure LRIC approach to cost orientation of termination rates with respect to the criterion of ease of decision and implementation. With respect to the criterion of taking account of the EC Recommendation, it is axiomatic that the pure-LRIC approach to cost orientation scores more highly than the LRAIC+ or LRIC+ approaches if this criterion is interpreted as meaning full adherence to the Commission Recommendation. An alternative, and in our view more literal and therefore accurate interpretation of this criterion, taking full account of the EC Recommendation is as effectively fulfilled by the adoption of the LRAIC+ or LRIC+ methodologies as it is by the pure LRIC approach to cost orientation. It must be open to ComReg, having taken equally full account of the EC Recommendation with respect to these various options, to nonetheless conclude that a LRAIC+ or LRIC+ methodology for cost orientation of termination rates would be the superior approach.

Vodafone believes it is clear that when the above factors are considered, an overall assessment of the relevant criteria must conclude (if a continuation of the existing voluntary glidepath approach is not to be implemented) that a LRAIC+ or LRIC+ methodology are the more effective approaches to achieve ComReg's statutory regulatory objectives. The final decision between these approaches can only await a detailed assessment, which has not been carried out to date owing to the incorrect omission of the voluntary glidepath and LRIC+ cost orientation approaches from consideration in the present consultation.

Q4. Do you believe that asymmetry should be allowed for any FSPs or MSPs going forward? Please explain the reasons for your answer, clearly indicating the relevant paragraph numbers to which your comments refer, along with all relevant factual or other evidence supporting your position.

No. Vodafone supports the proposed elimination of MTR asymmetries and therefore the ending of the competitive distortion caused by the large differences in the levels of MTRs between different mobile service providers in Ireland. The nature of these distortions has been described in detail in Vodafone's response to ComReg's consultation on the review of the MVCT market (ComReg document 12/46) and it is not proposed to reiterate them here.

We consider that the equalisation of MTRs across existing mobile operators can be effectively accommodated within the framework of a continuation of the existing voluntary glidepath based on existing BEREC benchmarks.

## 7 Vodafone comments on the Implementation of the Preferred Price Control

Q5. Do you agree or disagree with the proposed benchmarking approach for MTRs set out above? Please explain the reasons for your answer, clearly indicating the relevant paragraph numbers to which your comments refer, along with all relevant factual or other evidence supporting your position.

*Summary Response*

Vodafone disagrees entirely with ComReg’s proposed approach for the following reasons:

- ComReg is proposing an exceptionally small sample of countries against which to benchmark. As things stand, the only country against which we are benchmarked is France. ComReg has carried out no analysis to suggest that this is appropriate. Moreover, as we set out below, we believe there are compelling reasons to suggest that this rate is likely to be below the LRIC cost for Ireland. In consequence, ComReg will be imposing a remedy that imposes losses on Vodafone, and other operators, for every minute received in the context of a service – mobile termination – to which operators are compelled to provide access under an access obligation. We believe that this cannot be considered to be a proportionate remedy.
- Even if a small number of additional decisions become binding in other countries (e.g. Belgium, Italy, Spain, the UK and Portugal), ComReg has carried out no analysis to assure itself that prices will be above the Irish LRIC that would have been derived from a LRIC model for Ireland. Under a LRIC+ regime, and a benchmark based on a large population of countries, NRAs can use a benchmark methodology with a high degree of certainty that even if the benchmark rate differs from the ‘true’ country specific cost, it is very unlikely that the rate will be out of the LRIC-SAC range. However, in this case, given the LRIC standard and the limited number of countries against which Ireland would be assessed (at most 6) it is highly likely that the benchmark rate would be lower than the true LRIC rate for Ireland. This is particularly likely to be the case given that Irish operators are relatively small compared to those in the benchmark countries, and thus are unlikely to be able to benefit from the same economies of scale. Similarly, the population dispersion in Ireland is likely to be higher than in other member states, leading to higher traffic costs. A benchmark LRIC that has a substantial probability of resulting in operators incurring losses is clearly inconsistent with European law, and ComReg’s duties.
- ComReg have noted that the rates in the benchmarked countries do not differ materially from each other, and so “ComReg would expect that the model result of an efficient pure LRIC rate for MTRs in Ireland would be in the same range as the results for other EU member states. However, there is a very substantial variance in the rates, with rates varying by almost .5c from 0.8c for France to 1.27c for Portugal. In revenue terms, the impact of a .5c variation **[Redacted]**, which Vodafone considers to be material.
- Finally, ComReg’s proposed approach gives rise to an unreasonable degree of regulatory uncertainty. ComReg has noted that as more countries arrive at binding decisions, it will vary the benchmark. Given the small number of countries in the sample this could have a substantial impact on the benchmark and hence on Vodafone’s remedies. **[Redacted]** Not

knowing what one of its key revenue drivers will be, whether its fixed costs will be recoverable, or potentially, whether it will be forced to make a loss on every minute it receives is simply not acceptable.

## Introduction

ComReg asserts that a benchmarking approach is the best option for setting cost oriented MTRs in the short-term until a bottom-up (“BU”) LRIC model for Ireland is in place. The benchmark is intended to be based on the simple average of the MTRs applied in the EU Member States that have set pure LRIC MTRs based on a bottom up model. Only countries that have a final and binding decision in place would be included in the sample for ComReg’s final decision. Currently, France is the only country for which this is the case. The decisions in UK, Belgium, Portugal and Italy are under appeal and the decision in Spain could still be appealed. The decision in the Netherlands was annulled. The respective MTRs in the six “candidate countries” for the benchmarking (as well as the Netherlands) are listed in the table below.

Country	Pure LRIC MTR (cents per minute)	Status of final decision
Belgium	1.08	Decision under appeal
France	0.80	Final and binding decision
Italy	0.98	Decision under appeal
Netherlands	1.20	Decision annulled
Portugal	1.27	Final decision but period for appeal has not yet elapsed
Spain	1.09	Decision under appeal
UK	0.86	Decision under appeal

ComReg considers that the modelling results in other EU countries “show a reasonable degree of consistency” and states that it therefore expects that the modelling results for Ireland would be “in the same range”.<sup>28</sup> ComReg follows from this that the proposed benchmarking approach should not lead to results that are materially different from the results of an Irish pure BU LRIC model.<sup>29</sup>

Vodafone disagrees entirely with this approach. We believe that the approach ComReg proposes to use to determine MTRs in Ireland is not suitable for the following two reasons:

- The proposed approach does not consider the comparability between the Ireland and the benchmarks.
- The calculation of the average value is arbitrary and not sufficiently robust.

The impact of ComReg’s proposed approach will be to impose the lowest termination rates in Ireland, drastically cut operator revenues, and in all likelihood force operators to set termination rates below cost.

<sup>28</sup> ComReg 12/67, para. 7.45.

<sup>29</sup> ComReg 12/67, para. 7.44.

We set out our full views on the flaws in ComReg’s approach and the implications in the sections below.

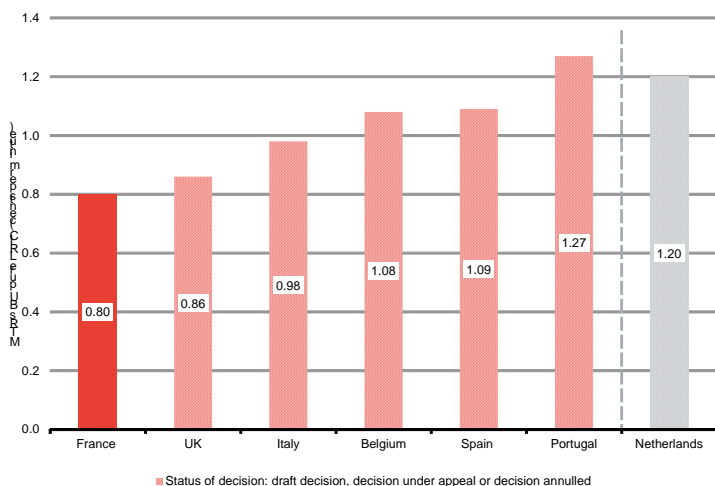
## Lack of comparability

The incremental cost of terminating a voice call on a mobile network vary across different countries depending country-specific factors such as, for example, the mobile technology deployed, network usage and scale, geographic characteristics, population density, cost of capital etc.

International benchmarking to set MTRs is, therefore, only meaningful and reliable, if it is based on a set of comparator countries that provide the service under comparable conditions or if adjustments are made for differences in key cost factors.

ComReg acknowledges that “comparable competitive markets” should be used for benchmarking<sup>30</sup>, but its proposal does not assess or comment on the comparability of the countries it nominates for the benchmarking. ComReg’s approach implicitly assumes that the cost characteristics and the costs in the candidate countries are broadly comparable to Ireland. Vodafone believes this is highly unlikely to be the case. There is almost half a cent between the lowest and highest MTR in the sample of six candidate countries (a difference of over 50%), which supports the view that costs can vary considerably across countries (see range in figure below).<sup>31</sup>

Figure 1. Range of MTRs in candidate countries



Source: Source: ComReg 12/67 (28/06/2012), Voice Termination Rates in Ireland – Proposed price control for fixed and mobile termination rates (Figure 7.2, page 104)

Mobile networks in Ireland are different from networks in the candidate countries in many respects and it is too simplistic to assume that the pure LRIC costs of mobile termination in Ireland would be similar to the costs in the candidate countries.

Ireland is much smaller than most of the candidates countries in terms of population and in terms of the number of mobile subscribers (see figure below). France, for example, has more than ten times as many mobile subscribers as Ireland. As the number of Irish mobile network operators is in line with the

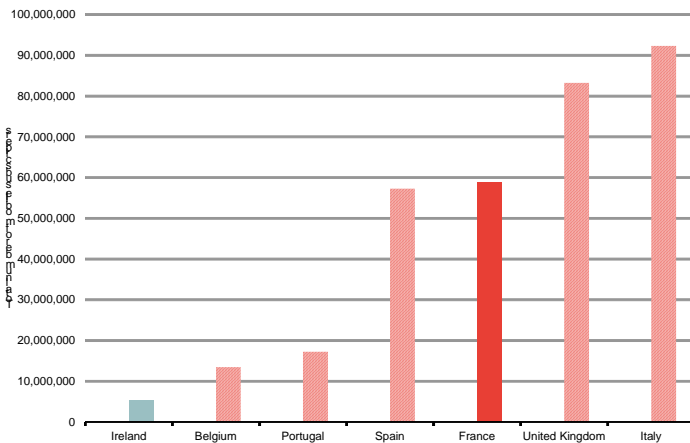
<sup>30</sup> ComReg (28/06/2012), p.97: “[...] In this regards, the Regulator may also take account of prices available in other comparable competitive markets.” [extract of quote, emphasis added]

<sup>31</sup> Part of the difference may also reflect differences in the modelling approaches.

number of mobile network operators in the candidate countries, this also means that the network sizes in terms of subscribers tend to be smaller in Ireland.

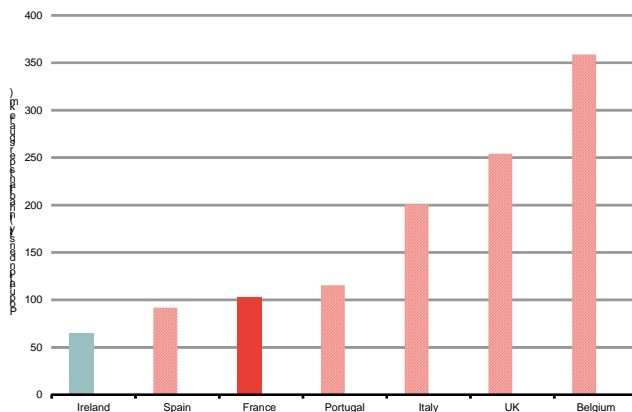
Given the scale of differences we highlight below, from just a few public sources, Vodafone finds it astonishing that ComReg is proposing to impose such a drastic cut in termination rates without even a basic assessment of the comparability of the proposed benchmark countries.

Figure 2. Considerably lower number of subscribers on Irish networks - total number of subscribers in Ireland and in candidate countries, Dec. 2011



Source: Globalcomms Wireless statistics

Figure 3. Low population density in Ireland – inhabitants per square km in Ireland and in candidate countries, 2010



Source: Eurostat

Note: The UK figures is from 2009.

## Calculation is arbitrary and not sufficiently robust

ComReg’s proposal aims to use an EU average as the benchmark for Ireland. However, if the average is calculated as described in the proposal it will be an arbitrary figure that is in no way robust.

This is for the following reasons:

- the sampling uncertainty is high due to a small sample and significant variation within the sample; and
- the composition and size of the final sample of countries is arbitrary and determined by regulatory and legal proceedings in other EU member states - in the extreme case, the sample will only include one country from the lower end of the range (i.e. France).

There are currently only six countries that could potentially be included in the sample for the benchmarking. Even if the average MTR was to be calculated on the basis of the full sample of six countries, the uncertainty in the results would be quite high. Calculating a confidence interval shows that the average costs could lie anywhere between 0.88 cents and 1.15 cents. Vodafone notes in particular, that the current proposed rate, based only on France actually falls outside the confidence interval for the average cost for the group.

Figure 5 below shows the impact on the average termination rate depending on which countries are included in the benchmark. This demonstrates the substantial impact on the benchmark that might arise depending on the speed of the appeals process in other Member States.

Figure 4. Variation of benchmark depending on composition of the finale sample

Countries included in the final sample	Average MTR
France	0.80
France and UK	0.83
All six countries except Portugal	1.00
All six countries	1.01
All six countries and Netherlands	1.04

Source: Calculation based on MTRs presented in ComReg 12/67 (28/06/2012), Voice Termination Rates in Ireland – Proposed price control for fixed and mobile termination rates (Figure 7.2, page 104)

## Implications of ComReg’s proposals

ComReg’s current flawed proposal which will be implemented in full in Just 10 month will impose the lowest termination rates in Europe on the Irish market. This will have two impacts:

- it will result in a dramatic reduction in revenues for operators in the market, and
- it will in all likelihood force operators to price termination rates below cost.



*Dramatic reduction in revenues*

Termination rates in Ireland are currently in line with the European average and have declined by 58% over the last 3 years. ComReg is now proposing, with a 10 month period, to cut termination rates by as much as 80%, making them the lowest in Europe. This will impose very substantial revenue reductions on Irish operators. For example, Vodafone has calculated that its revenues will be reduced by almost **[Redacted]**, and its operating profit by over **[Redacted]**.

Vodafone believes that it is entirely inappropriate for ComReg to impose cuts of such magnitude on the basis of such a limited and flawed analysis. Moreover, Vodafone wish to highlight that both the magnitude of the proposed cuts, the weakness of the supporting evidence and analysis and the manner in which this regulatory process has been conducted, raise very significant challenges for Vodafone Ireland **[Redacted]**.

*Imposing losses*

Under the existing LRIC+ regime, and a benchmark based on a large population of countries, NRAs can use a benchmark methodology with a high degree of certainty that even if the benchmark rate differs from the 'true' country specific cost, it is very unlikely that the rate will be out of the LRIC-SAC range.

However, in this case, given the LRIC standard and the limited number of countries against which Ireland would be assessed (at most 6) it is highly likely that the benchmark rate would be lower than the true LRIC rate for Ireland. The current proposal, which is based only on France, would give at least a 50% probability of requiring Irish operators to price a service below cost. Moreover, given the differences between Ireland and France, Vodafone believes that the true probability that the benchmark imposed by ComReg is below the true cost is substantially greater than 50%. Vodafone believes that a benchmark LRIC that has a substantial probability of resulting in operators incurring losses is clearly inconsistent with European law, and ComReg's duties.

Q6. Do you consider that it is appropriate for ComReg to impose, with effect from 1 January 2013, a maximum weighted average symmetric MTR calculated on the basis of a benchmark approach which uses the MTRs imposed by NRAs in other EU Member States where there is a decision in force on MTRs based on a pure BU-LRIC model? Alternatively do you consider that it would be appropriate for ComReg to apply that approach instead with effect from 1 July 2013 and to adopt the proposed glide path approach for the period from 31 December 2012 to 1 July 2013? Please explain the reasons for your answer, clearly indicating the relevant paragraph numbers to which your comments refer, along with all relevant factual or other evidence supporting your position.

Vodafone does not believe that either approach is appropriate for the reasons set out in response to Q5.

Q7. Do you agree with the proposed BU pure LRIC modelling approach for FTRs? Please provide reasons for your response. Please explain the reasons for your answer, clearly indicating the relevant paragraph numbers to which your comments refer, along with all relevant factual or other evidence supporting your position.

In its response to the Mobile Termination Rate section of this consultation Vodafone has set out its position as to the inappropriateness of a pure LRIC approach to the setting of termination prices. This position also applies to the FVCT market.

Q8. Do you agree with the cost model inputs and assumptions proposed by ComReg in relation to the pure BU-LRIC model for FTRs? Please explain the reasons for your answer, clearly indicating the relevant paragraph numbers to which your comments refer, along with all relevant factual or other evidence supporting your position.

Eircom has already implemented an NGN core serving a significant proportion of its installed based on access lines. It has announced an accelerated rollout of Next Generation Access which would connect end users to the NGN core. As a rational operator eircom would not be investing in network evolutions which will increase costs. Therefore a forward looking assessment of costs should be based on an IP based core for exchanges which will be NGN enabled within the timescale of the review. Given the length of time which would be required to extend the NGN core to the entirety of eircom's network it would not be appropriate to use this costing model for exchanges beyond the project NGN footprint at the end of the review period. These should be costed using the existing TDM cost model which should not result in any increase in costs for this portion of the network. The hybrid approach should yield an overall lower price for termination.

Q9. Do you agree with ComReg's proposals in relation to the implementation of its proposed pure BU-LRIC model for FTRs? Please provide reasons for your response. Please explain the reasons for your answer, clearly indicating the relevant paragraph numbers to which your comments refer, along with all relevant factual or other evidence supporting your position.

On the basis of the previous approach to FTR reductions ComReg's proposals appear to be equitable and reasonable.

Q10. Do you agree with ComReg's preliminary views as set out above regarding the treatment of common costs not recovered from pure LRIC for Eircom, the other SMP FSPs, and the SMP MSPs? Please explain the reasons for your answer, clearly indicating the relevant paragraph numbers to which your comments refer, along with all relevant factual or other evidence supporting your position.

As set out previously Vodafone does not believe that a pure LRIC approach is proportionate, reasonable or justified. In line with this position Vodafone does not agree with ComReg's preliminary views on the recovery of common costs.

In respect of the ComReg position set out in paragraphs 7.160-7.163, ComReg appears to be proposing that the common costs of call conveyance are fully recoverable in one rather than the other call conveyance wholesale market. There does not appear to be a substantive analysis by ComReg that inverting the position where origination is priced on a pure LRIC basis with its common costs recovered in the termination market would not yield a superior welfare surplus.

## 10 Vodafone Comments on the Regulatory Impact Assessment (“RIA”)

Q13. Do you have any views on the Regulatory Impact Assessment and are there other factors (if any) that ComReg should consider in completing its Regulatory Impact Assessment? Please explain the reasons for your answer, clearly indicating the relevant paragraph numbers to which your comments refer, along with all relevant factual or other evidence supporting your position.

Vodafone considers that the Regulatory Impact Assessment as set out in section 10 of the consultation document does not set out any material new information beyond that already described and assessed in previous sections of the consultation document. Consequently Vodafone has already set out its position in relation to the impact of ComReg’s proposed regulatory approach, and ComReg’s assessment of same, in previous sections of this response.

**Frontier Economics Report -  
'Assessing the impact of lowering  
mobile termination rates'**



## **Assessing the impact of lowering mobile termination rates**

A REPORT PREPARED FOR DEUTSCHE TELEKOM, ORANGE, TELECOM ITALIA, TELEFONICA, AND VODAFONE

July 2008



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## Executive summary

### Purpose of the report

There has been significant recent interest in the possibility of a drastic reduction in the level of mobile termination rates (MTRs) for interconnection of calls between mobile operators, as a means of achieving lower prices and higher usage of mobile services in Europe. This consideration is motivated by the US market experience, where mobile subscribers consume significantly higher levels of minutes compared to European subscribers, and where the interconnection mechanism between mobile operators involves low MTRs.<sup>1</sup> The EC has published recently a recommendation on the appropriate methodology for the setting of mobile termination rates, which also proposes that interconnection rates between mobile operators should be reduced drastically.

In this context, a group of European operators (Deutsche Telekom, Orange, Telecom Italia, Telefónica and Vodafone), have commissioned Frontier Economics to examine the merits of moving to a system of very low mobile interconnection payments (2 and 1 € cents per minute). This report provides our assessment of the impact of moving to such a system. In particular, we:

- Review what economic theory says about the relationship between MTRs and mobile retail prices and the efficient level of MTRs.
- Develop a simulation model to assess, based on the theory above, the impact on consumers' welfare of setting very low MTRs.
- Study the performance of the US mobile market, examining a series of key indicators affecting consumer welfare, in order to know whether US customers are better off than their European counterparts.

We also comment on the recent EU draft recommendation on the appropriate approach to the setting of MTRs, as one way to set inefficiently low MTRs is by underestimating the costs of termination.

### Lower MTRs do not imply lower prices

The economic analysis shows that it is flawed to assume that lower mobile termination rates will automatically lead to lower overall retail prices and to higher consumer welfare.

The tariffs in the mobile sector include call prices, connection charges, handset subsidies, and monthly rentals. In this context, reductions in MTRs will lower call prices but other tariffs are expected to increase, (e.g. subscription charges). The reduction in MTRs will not allow operators to recover their costs, unless some retail prices are increased.

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<sup>1</sup> MTRs are generally on a bill and keep basis for mobile to mobile interconnection, and at the level of fixed termination rates for fixed to mobile calls (see Markus 2004).

This “waterbed effect”, as predicted by the economic theory, has been acknowledged by Ofcom and other regulators. Recently it has also been confirmed empirically. Genakos and Valletti (2008) found for a set of 24 countries, all European with the exception of New Zealand, Australia, Japan and Turkey that this effect exists and is strong, although is not full<sup>2</sup>. In particular they find that 10% reduction in MTRs leads to 10% increase in mobile retail prices. Therefore, policy makers should not assume that the lower MTRs the better for consumers, in particular when the MTR level is set below costs.

### **There is no market evidence indicating that below costs MTRs are economically efficient**

There is a level of MTRs which maximizes market efficiency and welfare and should inform the regulatory decision regarding termination rates. The general economic result is that cost-oriented termination rates maximize efficiency. Departures from this standard are justified on the presence of network and call externalities.

The EC draft recommendation justifies below costs termination rates on the existence of call externalities and ignores the existence of network externalities. Economic theory indicates that in the presence of call externalities market efficiency requires both parties to be charged, in other words, the introduction of RPP (Receiving Party Pays). To achieve this pricing structure in the retail market, MTRs should be set below costs.<sup>3</sup>

There is no public market evidence showing that call externalities are large, in fact, indirect evidence points to the contrary. A study by Ofcom in 2005 showed that in their decision on network subscription, only 2% of respondents considered the price of others to call them in their choice of the network. This evidence suggests a low call externality. Also, as calls do not take place in isolation but form part of a communication process in which callers and receivers interact repeatedly, call externalities may be totally or partially internalized through call reciprocity between the parties. In addition, charging for receiving calls could give rise to other problems, such as undesirable calls and SPAM which would increase the time when mobile phones are switched off, reducing thus the welfare of consumers.<sup>4</sup> These problems are not hypothetical: customers in the US have recently filed a lawsuit against mobile carriers for the imposition of charges for unsolicited messages.

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<sup>2</sup> The authors find that a reduction in MTRs also reduce profits, “thus mobile firms suffer from cuts in termination rates” (Source: Genakos and Valletti (2008))

<sup>3</sup> Reciprocally the existence of network externalities call for above cost termination prices.

<sup>4</sup> The words *welfare* and *surplus*, when referred to consumers and subscribers are used interchangeably throughout the document.

## **The reduction in consumer welfare of drastically reducing MTRs can be substantial**

We have quantified the impact on consumers of drastically reducing MTRs to 2 and 1 € cents. The quantification is based on a model of competition between mobile operators used in most of the economic literature on this subject. This model assumes that operators compete for their share of the customer base by offering prices intended to maximize the value that consumers obtain from using mobile telephony. Thus, the results we report do not depend on competition between operators being weak.

Without charging for incoming calls (i.e. under CPP) in the more realistic scenario of low call externalities, the loss in consumers welfare of reducing MTRs to 2 € cents is 11% in Western European (WE) countries and 10% in Central and Eastern European countries (CEE). This loss comes from a reduction in penetration (9% reduction in either area, which represents around 42 and 10 million subscribers in WE and CEE countries, respectively) following the price increase in the fixed subscription charges in order to recover the losses made on calls (the waterbed effect). Even in the unlikely case of high call externalities consumers' welfare would also be reduced.

Assuming charges for incoming calls (i.e. RPP is introduced) the results are more dependant on the assumptions of the size of call externalities. In what we consider the more likely case of relatively low call externalities, losses in consumers' welfare could be as high as 45% for WE and CEE countries when MTRs are reduced to 2€ cents.

It is important to note that, in general, the reduction in MTRs will increase the minutes of usage<sup>5</sup> however the welfare of consumers is reduced following two effects: the increase in subscription charges under CPP (the waterbed effect) and the charges for incoming calls in an RPP system, which will increase as the MTRs are reduced, lowering the value for customers of mobile telephony and hence, penetration. Thus, by drastically reducing MTRs, actual subscribers would generally tend to speak more but there will be fewer subscribers. This is exactly the situation in the US.

## **The evidence used to support the interconnection model in the US is flawed**

It is sometimes argued that the US mobile market truly reflects the benefits accruing to consumers from low MTRs. Thus, advocates of the US model stress that customers enjoy lower retail prices and more minutes of use, without any significant negative impact on penetration.

We find that this analysis is too simplistic to be used in drawing inferences for regulatory policy. It also fails to address the key question: the extent to which consumers are overall better off under the US system.

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<sup>5</sup> We find that a reduction in MTRs reduce the traffic per user only when reception charges and low call externalities are assumed.

## Lower penetration and coverage in the US reduces the welfare of consumers, and is often ignored or underweighted

Penetration in the US is 85%, significantly lower than in Europe, with examples of rates well above 100% in Spain, Germany, the UK or Latvia, even after controlling for inactive subscribers (i.e. those having but not using a SIM card). US penetration levels applied to Europe would imply 154 million less of mobile phones, which would reduce significantly European consumers' welfare. This lower penetration is confirmed by other sources, including consumers' surveys, reflecting that in the US 25% of households do not have a mobile phone being the figure in Europe much lower (17%). In fact, for the EU-27 countries, only Romania and Bulgaria are behind the US levels. Eventually, if in the long term US reaches similar penetration levels than in Europe, customers are also harmed by the 3-4 years delay in service adoption (see next figure).

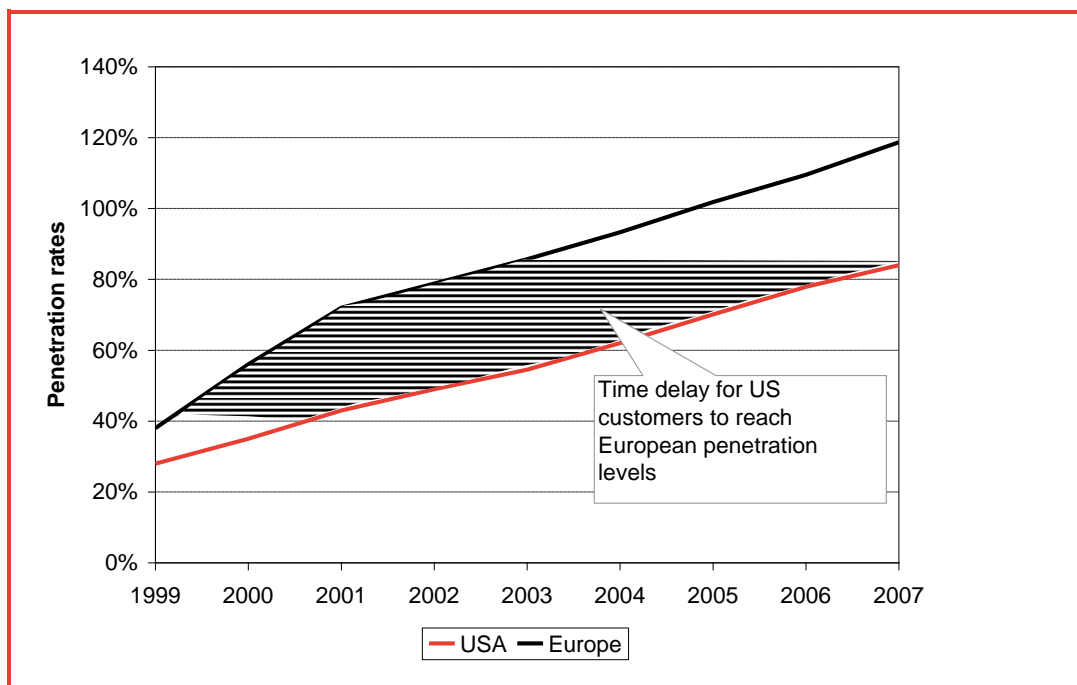


Figure 1: Evolution in penetration (US vs. Europe)

Source: *Global Wireless Matrix, Merrill Lynch, 4Q 07*

The same is true of population and geographic coverage levels as shown in the next figure. The gap in coverage occurs even when US wireless operators received in 2007 \$1.18 billion to provide the service in high costs areas. The difference in geographic coverage may be reflecting that population density is lower in the US than in the EU, however:

- it is in less populated and remote areas where the utility of mobile telephony is likely to be high, as it allows people living or travelling through these areas, to be contactable; and

- these remote areas are less developed economically, so lower coverage would also reflect that mobile service offers in the US are targeted to high usage consumers, who possibly are not located there.

Evidence from Sweden supports this point: it has lower population density and yet significantly higher population and geographic coverage than the US.

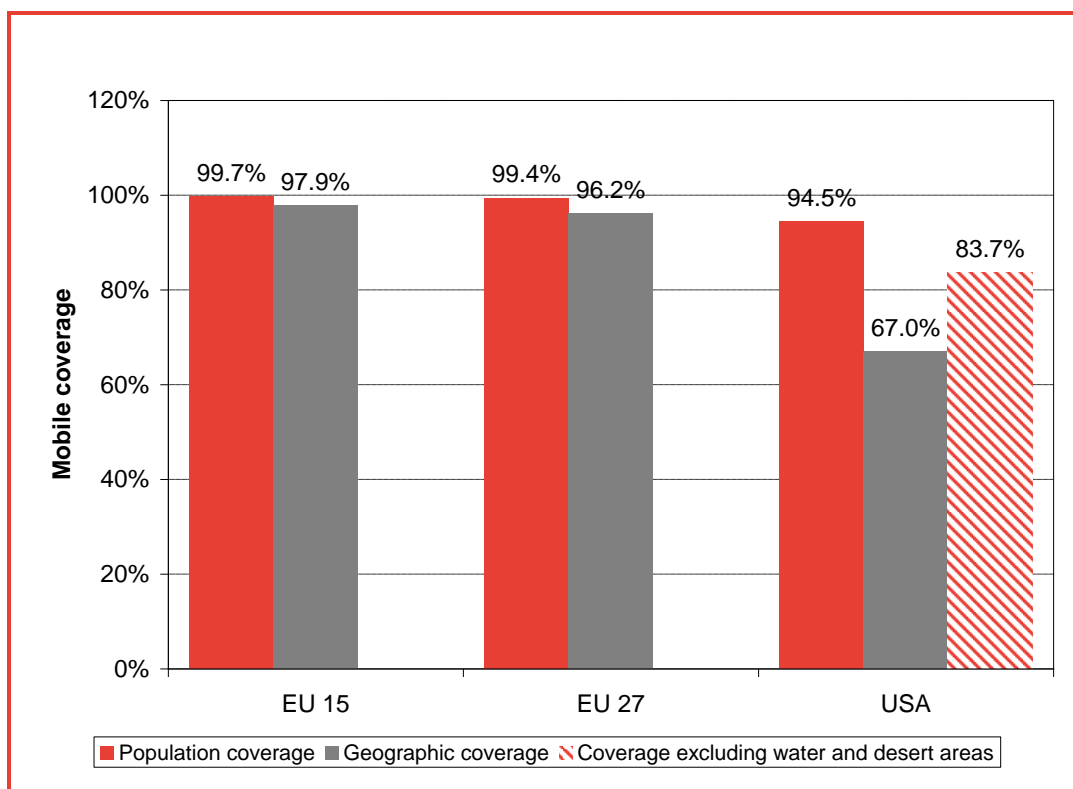


Figure 2: Population and geographic coverage in the US

Source: GSM Association and FCC

### **Higher usage and lower prices do not imply that US customers are better off than their European counterparts, as their monthly expenditure is higher**

The higher minutes of use (MoU) and the lower prices as measured by the Revenues per Minute (RPM) cannot be interpreted as evidence of consumers being better off in the US. This would only be the case if US customers had the option to choose European type of plans and they refused it. In other words, US customers would be better off under the US offers if they could reduce their expenditure (which currently is 11.73€ higher a month than in Europe) by reducing the number of conversation minutes but decided not to do it.

But this is clearly not the case. We show in the report that US pricing plans – compared to European- offer the option of talking many minutes in exchange for a high monthly fee. Other plans like paying lower line rentals and getting higher price per minute for each call are not available. The options left for a customer who does not want to talk as much as, say, 500 minutes a month, unlimited on-

net calls, etc. in exchange for a smaller monthly bill are either taking an expensive prepaid plan<sup>6</sup> or not subscribing at all.

### The available evidence indicates that only European heavy users will be better off under US plans

In fact, the available evidence suggests that the majority of European consumers would be worse off under the US plans. If we use the OECD telecommunications consumption basket, (which is a reasonable approximation as the OECD basket is used in the EU's Implementation reports) we can compare how much a European customer would spend with US and European plans (see next Figure)<sup>7</sup>.

The OECD comparison highlights the effect of the US pricing plans, namely that they offer a good deal for high consumers of mobile minutes/services. As the usage intensity decreases, the US price plans score worse. This is clearly observed for medium users, where the US minimum expenditure is 13 and 17 US\$ higher per month, than those in Western and Central and Eastern European countries. Put differently, according to these calculations, a medium user in a European country would pay more than an additional \$200/per year if only US plans were available.

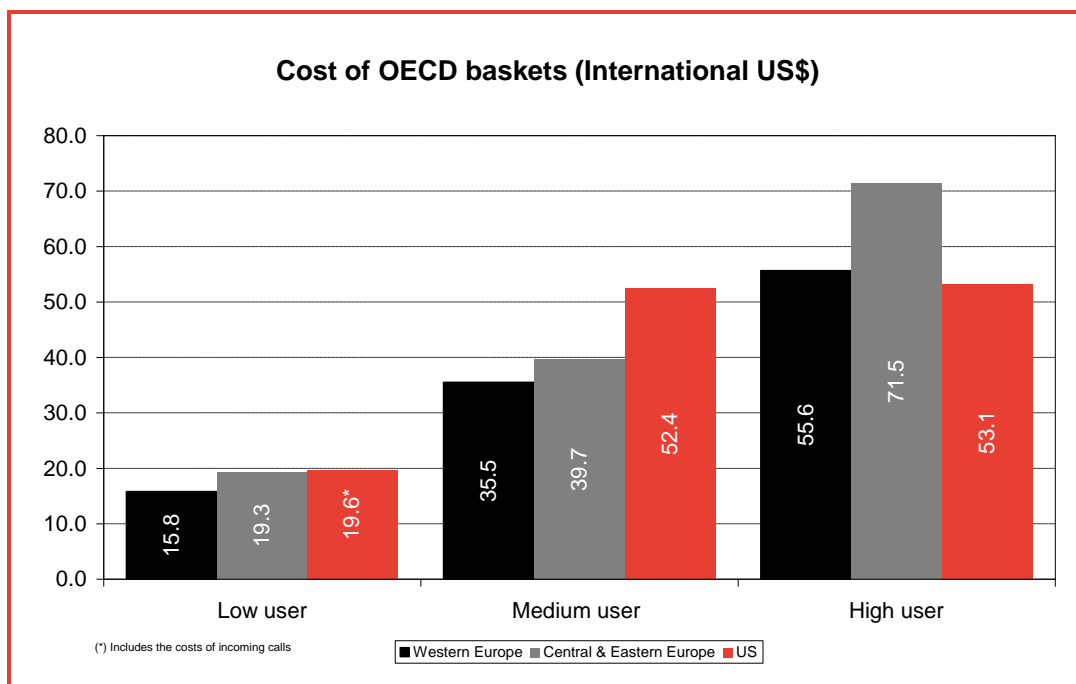


Figure 3: Mobile expenditure for OECD countries: low, medium and high user

Source: OECD Communications Outlook, pages 216-218

<sup>6</sup> European-type prepaid plans are not offered by all operators. They imply charges for incoming calls, a price per minute ranging from 10 to 33 US\$ cents and 90 days for the expiration of the prepaid card. To get the 10 US\$ cents per minute, customers have to buy a 100\$ prepaid card.

<sup>7</sup> Similar results are obtained from other sources: Analysys (2007) and GSMA (2008)



We expect that, overall, European consumers would be worse off under US-type price plans, as we reckon that the proportion of medium and low usage subscribers is much higher than high usage subscribers<sup>8</sup>. From a distributional point of view if US type plans were applied, low and medium users would be net losers while high users would gain. The same is also of application for prepaid users, who tend to be low intensive users.

### **The EC draft Recommendation, as it stands now, underestimates termination costs**

One way to set inefficiently low mobile termination rates is by underestimating the true costs of providing termination services. As currently drafted, the Commission Recommendation on the regulatory treatment of fixed and mobile termination rates, if applied, will likely lead to below costs termination prices:

- By excluding the coverage costs from termination prices, the draft proposal is introducing a distortion in the allocation of resources, as there is no reason based on cost causality principles why outbound mobile calls should be treated differently from inbound calls.
- The exclusion of common costs and of indirect costs are not justified on the grounds of economic analysis, which clearly indicates that, in order to achieve economic efficiency, the price of all services should contribute to the recovery of all these costs.
- The consideration of NGN technologies in the modelling, when such technology is now beginning to be deployed, risks to produce inaccurate estimates.

### **Conclusion**

The economic and the empirical evidence indicate that drastic reductions of MTRs are likely to reduce the welfare of European customers. In addition, relying on the US experience as support of regulatory policies that, in practice, lead to below cost MTRs, is not advisable. Analysis of usage patterns shows that only European heavy users would benefit from such an approach. The current version of the EC draft recommendation on fixed and mobile termination rates contains aspects that are expected to lead to an underestimate of the costs of terminating calls.

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<sup>8</sup> Because the MoU for high users is more than 300 minutes a month, well above the average MoU of European customers, around 160 minutes, as reported by Merrill Lynch



# 1 Introduction

This report provides an economic analysis and modelling of the impact of lowering mobile termination rates (MTR) for interconnection of calls between mobile operators below efficient levels. By efficiency we mean the level that maximizes companies' and consumers welfare.

We have based the analysis on three main sources:

- The existing economic literature on MTRs and its impact on market outcomes and consumer welfare (section 2).
- A modelling exercise, based upon the findings of the economic literature, aimed at quantifying the impact on consumer welfare of setting inefficiently low termination rates (see Section 3).
- We have also reviewed the international experience, mainly that of the US. MTRs in this country can be considered below mobile termination costs, which is the basic efficiency benchmark. However it is sometimes argued that this has led to a good deal for customers, who enjoy relatively high mobile usage and lower prices per minute. In section 4 we analyze to what extent it can be argued that US customers are better off than European mobile users.

We have finally considered the recent EU recommendation on the appropriate approach to the setting of mobile termination rates – our assessment of this is found in Section 5. The conclusions are presented in Section 6

In addition we have included several Annexes. Annex 1 explains the adjustments made in the variables used for comparison between the US and the European markets. Annex 2 presents detailed results of the quantitative modelling. Annex 3 briefly reviews some basic cost modelling concepts and, finally, Annex 4 includes tables offering further details of some figures included in Section 4.



## 2 Economic analysis of termination rates

### 2.1 INTRODUCTION

In competitive retail mobile markets the level and structure of call charges and subscriptions (and hence consumer welfare) are influenced by the level and structure of termination rates.

The economic analysis shows that it is flawed to assume that lower mobile termination rates will automatically lead to lower overall retail prices and to higher consumer welfare. A reasoning of this kind implicitly assumes that there is only one retail price in the market (call prices) therefore ignores the potential effect that termination rates may exert on other prices - such as monthly and connection charges and handset subsidies- and the effect of the level of termination rates on the way operators compete with each other. This is not to say that the level of mobile termination rates (MTRs) does not matter or that high MTRs are necessarily good, as there is a level of termination rates, usually cost based, which maximizes total (consumer plus producer) welfare.

In this section we use the existing economic literature to explain:

- How retail prices are influenced by MTRs, showing that the idea of lower MTRs leading to lower retail prices holds under specific assumptions. Here we draw on Armstrong (2002) and Gans and King (2001).
- The desirable (optimal in the sense of maximising welfare) level of MTRs, focusing on the assumptions where below cost termination rates are optimal. In this part we use the works of Armstrong and Wright (2007), DeGraba (2003) and Jeon, Laffont and Tirole (2004).

The general conclusions are as follows:

- The presumption that lower MTRs will help reduce overall retail prices for mobile services and therefore benefit customers can only be held under very specific circumstances.
- Efficient termination rates are usually cost oriented. Network and call externalities would support departures from this benchmark, requiring detailed information for their implementation. B&K (Bill and Keep) is an optimal wholesale price mechanism only under very specific assumptions and gives rise to other practical problems, including the need for additional regulation.

### 2.2 ON THE RELATIONSHIP BETWEEN MTRS AND MOBILE RETAIL PRICES

The majority of the economic literature on the relationship between retail pricing and wholesale charges assumes that operators compete for their share of the customer base. They compete by offering prices intended to maximise the welfare that customers would get from subscribing to their network. Customers choose the network that they believe will provide them with the highest level of

value, measured as the difference between the value that the consumer gets for the product less any charges made by the supplier.

The direct relationship between MTRs and retail prices, by which lower MTRs will produce lower retail prices and higher consumer welfare, comes from a simplified scenario where mobile operators sell only call services, setting a common price, denoted by  $p$ , for on/off net prices.<sup>9</sup> Under this scenario call charges and profits increase as the MTR increases and so operators have an incentive to set high MTRs, which explains why lower MTRs would lead to lower prices and higher consumer welfare.<sup>10</sup>

If we modify this setting by introducing the kind of tariff structure that is observed in the real world, the results are quite different as we will see in the next two sections. What we do not modify, however, is the assumption that operators compete by trying to offer the best value to subscribers and that subscribers choose the network that best match their preferences.

### 2.2.1 The effect of introducing fixed tariffs for handsets and/or line rentals

Let us consider a scenario in which mobile operators do not only sell traffic, but also charge monthly fees and/or sell handsets (which can be subsidized). In the remaining of the section and for the sake of simplicity, we focus on the fixed subscription charge only. Thus, operators charge a per minute price  $p$ , common for on and off-net calls, and a subscription charge  $F$ .<sup>11</sup>

As in the case above, there is a direct relationship between call prices and MTRs which implies that lower MTRs lead to lower call prices. However, now the termination rate has an additional effect: it exerts a negative impact on the fixed subscription charge. Thus, a lower MTR leads to lower call prices but to higher charges for subscription.

This effect is commonly known as the “waterbed effect”, reflecting the idea that the regulation of termination rates affects the retail prices of other mobile services.

*“A waterbed effect is shown to arise when demands and/or marginal costs are interdependent, firms use nonlinear pricing, or there is a zero-profit constraint or global price cap”*<sup>12</sup>

The theoretical existence of the waterbed effect have also been recognized by regulators such as Ofcom and the New Zealand Commerce Commission, but sometimes it has been questioned is empirical relevance.

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<sup>9</sup> Allowing for on/off-net price discrimination does not alter the results of the discussion.

<sup>10</sup> Armstrong (1998).

<sup>11</sup> “Two-part tariffs” in the economic jargon.

<sup>12</sup> Schiff (2007), page 1.

However, in a recent study Genakos and Valletti (2008)<sup>13</sup> has tested empirically the existence of the waterbed effect and have found that it exists and it is strong (although not “full”<sup>14</sup>). In particular:

*“Our estimates suggest that although regulation reduced termination rates by about ten percent, this also led to a ten percent increase in mobile outgoing prices”<sup>15</sup>*

Analyzing a wide set of countries<sup>16</sup> and using econometric techniques to isolate the effect of fixed-to-mobile (FTM) termination rates on retail prices, they find that over the period considered<sup>17</sup> regulators decreased MTRs by 10%, which led to an overall increase in mobile bills to customers of 10%.<sup>18</sup> In other words, the 10% reduction in FTM termination rates had caused a 10% increase in consumers’ expenditure in mobile services.<sup>19</sup> Interestingly, they show that the waterbed effect exists under quite general market conditions. In particular it would not occur only in a monopoly saturated market, a situation that does not happen in Europe.

Thus, both economic theory and empirical research suggest that a reduction of MTRs is likely to have a “waterbed” effect, and lead to increases in some retail prices for mobile services. In the absence of externalities, it can be shown that MTRs below costs lead to higher retail prices and lower consumer welfare. In this case consumer welfare is maximised by cost-based MTRs.

Note that the existence of a waterbed effect does not depend on competition between operators being weak, nor that the *mode* of competition is altered as a consequence of a change in the termination rate. It simply reflects that, given the competition in the retail market, a change in the termination rate does not affect solely the price of traffic services, it also influences equilibrium prices of other related services such as fixed subscription charges.

In the presence of off-net/on-net pricing, the waterbed effect is still operating. MTRs below cost in this context would be expected to reduce the difference

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<sup>13</sup> Up to our knowledge this is the only study that isolates the effect of MTRs on mobile retail prices. Hausman (2004) provides some additional evidence of an increase in mobile prices in the UK after the reduction of MTRs in July of 2003. [

<sup>14</sup> The authors find that a reduction in MTRs also reduce profits, “thus mobile firms suffer from cuts in termination rates” (Source: Genakos and Valletti (2008))

<sup>15</sup> Genakos and Valletti (2008), page 2.

<sup>16</sup> Poland, UK, Belgium, Austria, Italy, Japan, Spain, Norway, Sweden, Denmark, Hungary, Portugal, France, Australia, Czech Republic, Germany, Slovak Republic, Switzerland, Ireland, Luxembourg, New Zealand, Turkey, Netherlands and Greece.

<sup>17</sup> 1999-2006.

<sup>18</sup> Genakos and Valletti use price information from Teligen, which provides the best possible deals for each user profile among all contracts available (post-paid and pre-paid).

<sup>19</sup> In the Section 3 we include the modelling results of the impact of lowering MTRs on subscription prices, penetration and consumer welfare.

between on and off-net prices. This softens competition for subscribers, resulting in lower consumer welfare.<sup>20</sup>

### 2.2.2 Conclusion

The presumption that lower MTRs will help reduce retail prices for mobile services and benefit customers, can only be held under very specific circumstances.

In particular, if the price structure observed at the retail level is different to a uniform per minute charge, which is rather usual in the industry, then economic theory predicts that MTRs below cost may reduce the welfare of consumers. Furthermore, in the presence of on-net/off-net prices, reductions in above-costs-MTRs could also be detrimental for customers.

Existing empirical evidence<sup>21</sup> provides support for the existence of strong waterbed effects, confirming the prediction of economic models.

## 2.3 EFFICIENT MOBILE TERMINATION RATES

The previous section has shown that the relationship between MTRs and prices is complex and, in particular, depends on the structure of pricing in the retail market. The purpose was to show that regulators should not assume that the lower the MTR the better for the customer.

However, this is not to say that the higher the MTRs the better for the market and for the customer. There is a level of MTRs which maximizes market efficiency and welfare. This optimal level is the one which should inform regulatory decisions in dealing with mobile termination rates.

The purpose of this section is to show what current economic literature says about optimal termination rates. In general terms the results reflect the principles of price regulation, with departures from cost based pricing justified by the existence of some types of externality. If there are call externalities, which means called parties attach some value to being called - and this benefit is not internalized in other ways - sharing the total costs of the call between the called and the calling party (i.e. RPP<sup>22</sup>) becomes desirable. In this case, optimal call termination rates could be below cost in order to induce operators to reflect the externality in their retail prices.<sup>23</sup> In this context, Bill and Keep (B&K), will be optimal only if very specific conditions are satisfied.

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<sup>20</sup> This effect is formalized in Gans and King (2001). The basic idea is that with below costs MTRs, operators are incentivized to reduce the size of any related termination losses, which they achieve by raising their subscription prices.

<sup>21</sup> Genakos and Valletti (2008).

<sup>22</sup> Note that RPP does not necessarily imply that the whole cost is borne by the called party.

<sup>23</sup> It is important to note that the optimality of an access charge below cost is a consequence of the presence of call externalities, not of the existence of RPP.



### 2.3.1 Optimal MTRs with no externalities

Under this setting<sup>24</sup> operators provide subscription and call services to consumers and the latter choose the supplier on the basis of which provides them with the highest level of value (consumer welfare), measured as the difference between the value that the customer gets from the product less any charges made by the supplier. In this simple framework, it can be demonstrated that termination rates should be cost oriented. Both above and below cost MTRs can be shown to damage welfare. This general solution changes as we introduce call and network externalities.

### 2.3.2 Optimal MTRs with network externalities

Network externalities arise when existing subscribers of a network benefit from new subscribers joining the network. In mobile markets the presence of additional subscribers generates a positive externality on existing ones since it gives the possibility of calling additional people.

The literature shows that in the presence of network externalities the efficient termination rate should be above cost.<sup>25</sup> A higher termination rate induces operators to lower their subscription prices promoting network participation at a level consistent with the social interest. Thus, in line with the waterbed effect commented above, MTRs are used as an instrument to internalize the network externality.

### 2.3.3 The impact of call externalities on MTRs

Under the presence of call externalities individual calls generate value to both, caller and receiver. In this case, efficient retail prices require that the total cost of the call (including origination and termination) to be allocated to both parties in proportion to their valuation.<sup>26</sup> This means that with call externalities, efficient retail prices require charging both the called and the calling party, i.e. RPP (Receiving Party Pays) but it is not necessarily the case that the called party recovers the costs of termination and the calling party the costs of origination, as it is the total cost of the call that is shared.

If operators set call prices at costs, the efficient MTR will be below costs and will *decrease* as the size of the call externality increases. As the benefit to the receiver increases, the called party should bear a larger fraction of the total cost of the call and this is managed by setting a lower MTR, which reduces the retail charge to the calling party. However the exact expression of the optimal tariffs can be complex, depending on a number of factors, such as the way in which operators compete, the presence of reception charges and the existence of on/off-net price discrimination. Thus although MTRs below costs may be efficient, determining

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<sup>24</sup> This basic model is developed in Armstrong (1998) and Laffont, Rey and Tirole (1998a, 1998b)

<sup>25</sup> Wright (2002b) and Armstrong and Wright (2007).

<sup>26</sup> See DeGraba (2003).

the exact amount by which termination rates should be below termination costs is likely to be complex.

For example, in the simple scenario<sup>27</sup> with two symmetric mobile operators that do not price discriminate between on-net and off-net calls; reception charges are regulated at cost<sup>28</sup>, and receivers are assumed not to hang up, then the efficient termination charge equals the cost of termination minus a fraction of the total cost of the call that is determined by the size of the call externality. More formally, if we denote by  $C$  and  $C_T$  the overall cost of the call and the cost of termination respectively, and by  $b$  the size of the call externality then efficient requires  $MTR = C_T - b \cdot C$ . Notice that the estimation of the efficient charge requires information not only on termination costs but also on the size of the call externality.<sup>29</sup>

On top of this, the introduction of RPP in order to allocate in an efficient manner the cost of the call may create other problems. Jeon, Laffont and Tirole (2004) show that in a context with call externalities and differentiated price competition for customers through non-linear tariffs there is a risk of connectivity breakdown (i.e. operators set prices in such a way that calls to rival networks become prohibitively costly). If the call externality is sufficiently large networks could set excessive off-net prices in order to reduce off-net call volumes (thus taking advantage of its size) and, in the limit, avoid off-net calls in order to make rival networks less attractive (connectivity breaks down). If the call externality is small, operators could set very high off-net reception charges in order to damage rivals' customers.

Thus, even if the termination charge is regulated below cost to account for call externalities and if RPP is introduced, the equilibrium outcome may be highly inefficient since operators will have incentives to avoid off-net traffic by increasing off-net call prices (incoming or outgoing depending on the size of the call externality). This will result in a distorted pattern of traffic.

Although connectivity breakdown may seem to be an extreme outcome, mobile offers in the USA point in this direction, with large differences between on-net and off-net prices. At present, most of the plans in the US offer on-net traffic for free (both incoming and outgoing calls) while off-net calls (incoming and outgoing) have a positive price.

Factoring in call externalities in the termination price requires controlling for several factors:

- In the first place, the size of the externality. There is not much public information regarding the importance of call externalities. A study by Ofcom in 2005<sup>30</sup> showed that in their decision on network subscription consumers

<sup>27</sup> See Jeon, Laffont and Tirole (2004).

<sup>28</sup> i.e. the reception charge equals the cost of termination minus the MTR.

<sup>29</sup> According to this formula the loss in efficiency that may arise from not considering call externalities decreases with termination costs.

<sup>30</sup> Ofcom (2005), Annex F.

do not assign much value to the possibility of being called. Only 2% of responders considered the price of others to call them in their choice of the network. This evidence suggests a low call externality.

- Second, the extent to which tariff offers already reflect call externalities. Low termination rates in this context are set to encourage the appearance of retail prices reflecting the call externality so that the called party bears part of the costs. Current pricing mechanisms observed in CPP countries, such as special arrangements for consumer to business calls such as 8XX calls, allocate part of the costs to the called party.
- Third, calls do not take place in isolation, rather they are part of a broader communication process in which senders and receivers interact repeatedly and behave reciprocally. Taylor (2002), analyzing the long distance telephony market, found that “a call in one direction stimulates something like one-half to two-thirds of a call in return.” Therefore, outbound calls generate inbound calls and in this way the call externality is internalized to some extent.<sup>31</sup>
- Fourth, low termination rates and low off net call prices help proliferation of certain type of calls which consumers do not value (for instance marketing calls or SPAM<sup>32</sup>). In this respect, mobile customers in the US have recently filed a lawsuit against 6 mobile-phone carriers and a top mobile virtual operator in Mississippi federal court due to the imposition of charges for unsolicited messages received by subscribers.<sup>33</sup>

### ***Bill and keep (B&K)***

The presence of call externalities is usually used as an argument to support B&K, which corresponds to a situation in which the MTR is set to zero. However, if we look at the previous expression for the optimal termination rate ( $MTR = C_T - b * C$ ), B&K (which corresponds to  $MTR = 0$ ) is appropriate only under very specific conditions. In particular, the ratio of the cost of termination to the cost of originating the call must equal the ratio between the recipient and the caller’s valuation of a call. A particular case is when the cost of origination equals the cost of termination and the value of calls is shared evenly among senders and receivers.

Thus, the optimality of B&K requires information on origination and termination costs and on the relative valuation of the call of calling and called parties, and cannot be based solely on the existence of call externalities.

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<sup>31</sup> Motivated by this evidence, Cambini and Valletti (2008) consider a model with call externalities and “reciprocal” communication patterns. They find that under this broader setting the risk of connectivity breakdown previously commented and the off/on-net price differential induced by the MTR are much reduced. They also show that a light-touch policy such as the imposition of reciprocity, allowing operators to negotiate over the level of the MTR, may be sufficient to induce an efficient market outcome.

<sup>32</sup> A study by Ofcom carried out in 2003 found that 36% of mobile subscribers at least occasionally chose not to answer calls from an unrecognized or unidentified source (Ofcom, 2003. Page 10).

<sup>33</sup> See RCRWireless News. May 16, 2008.

Even assuming that B&K may reduce some transaction costs<sup>34</sup> it is not obvious that it will diminish or eliminate the need for regulatory intervention in termination. For instance, in order to avoid the “hot potato” problem (i.e. the incentive of the initiating network to deliver the call at the point of interconnection –PoI– closest to the originating customer) the regulator may need to specify these points and set a regulated termination price (possibly cost oriented) for the remaining interconnection points.

### 2.3.4 Co-existence of network and call externalities and implications on optimal tariffs

We have seen that the existence of network externalities asks for an above cost termination charge (in order to incentivise subscription) whereas the internalization of call externalities requires a MTR below cost.

In reality, both types of externalities will be present to some extent and the regulator will have to weigh the importance of each. An interesting result emphasized by Armstrong and Wright (2007) is that:

*“the presence of call externalities will amplify the impact of network externalities, since users will receive more calls when there are more mobile subscribers”.*<sup>35</sup>

The implication is that the combination of both, network and call externalities, could result in above-cost MTRs. In other words, despite the fact that call externalities, when considered alone, lead to below cost MTRs, these widen the importance of network externalities, which require a higher MTR.

### 2.3.5 Conclusion

Efficient termination rates are usually cost oriented. Network and call externalities would support departures from this benchmark, requiring detailed information for their implementation. Bill and Keep is efficient only in a scenario where there are network externalities, and the costs of termination and origination are equal to the ratio of the recipient and the caller’s valuation of a call. In setting termination rates, regulators should consider the extent to which any call externality is not already internalized in the bilateral relationship between the called and the calling party, and the undesirable effects in the form of retail prices aimed to leverage network size or the making of undesired calls and SPAM.

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<sup>34</sup> Although interconnection billing would not be necessary, counting equipment will still be in place, for instance to bill special numbers. In addition, traffic will need to be classified according to whether the interconnecting network operator fulfils the B&K conditions (e.g. points of interconnection, international traffic, etc.). For these purposes, technical equipment at the interconnection points similar to today’s equipment is necessary (source: T-Mobile).

<sup>35</sup> Armstrong and Wright (2007), page 19.

## 3 Quantitative impact of lowering MTRs

### 3.1 INTRODUCTION

In this chapter we summarise the findings on modelling the potential impact of drastically reducing MTRs from current levels. The impact is measured on a typical Western European (WE) and a Central and Eastern European (CEE) markets on the following variables:

- overall average prices paid;
- mobile market penetration; and
- the total value obtained by consumers from using mobile telephony (consumer welfare in economists' jargon).

These results are based on a simulation model of competition between mobile operators adopted in most of the academic literature on the topic.<sup>36</sup> This model assumes that operators compete for their share of the customer base by offering prices intended to maximize the value that consumers obtain from using mobile telephony. Thus the results we report do not depend on competition between operators being weak.

Annex 2 offers more details on the modelling assumptions. In the following sections we report the main highlights.

### 3.2 RESULTS

In this section we present the results of lowering MTRs on consumers. We differentiate between two scenarios: the impact under the existing Calling Party Pays arrangements (CPP) and with the introduction of payments for incoming calls or Receiving Party Pays (RPP).

In each of these two scenarios we report the results for low and high call externalities. The scenario of low call externalities implies that the ratio between the benefit received by the called party and that of the calling party is 0.1. In the high call externality, this value is 0.7 which is at the highest end of the range advocated for those claiming for the existence of call externalities. As discussed in the previous chapter, call externalities not already internalised within particular user groups are likely to be small. We therefore expect that the scenario under low call externalities to be the more plausible, in the absence of any evidence to the contrary. We have decided not to model network externalities explicitly, in the interest of keeping the simulation and results more transparent (and

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<sup>36</sup> More specifically, the model is a "Hotelling type" differentiated Bertrand model. It allows for subscribers to choose between competing networks, based on the relative value that each network offers to its subscribers. This value, the per capita consumer surplus, is measured as the difference between the value that a consumer gets for the product he/she consumes, in this case the value of making and receiving calls, less any charges made by the mobile operator to which he/she is subscribed. The model also simulates the impact of changes in the level and structure of prices on the likely levels of mobile penetration.

tractable). This implies that the results do *not include* the negative impact on welfare from setting a termination charge below cost, in the presence of network externalities.

### 3.2.1 Impact of lowering MTRs under CPP

Without reception charges the effect of reducing MTRs is to increase the average volumes of calls made per subscriber. In our modelling, we find that the Average Minutes of Use (AMoU) could increase significantly, by up to 1.6 times in the case with MTRs equal to 2€ cents (see Table 1).

In isolation, this is obviously beneficial to subscribers. However, in the absence of reception charges, reducing MTRs *also* causes competing networks to increase their fixed subscription charges to subscribers so as to recover the losses made on calls. This has a negative impact on penetration. For instance, if we assume that MTRs are equal to 2€ cents, mobile penetration is estimated to fall by 9% in either WE or CEE countries (1% if call externalities are assumed to be high). If MTRs are lowered to 1 € cent the reduction in mobile penetration can be as high as 16% (4% reduction if call externalities are high) for either WE or CEE countries (see Table 1 and Table 2)<sup>37</sup>.

We find that the net balance on consumers of these two effects (the positive of the traffic increase against the negative effect of lower penetration) is in most cases negative, thus reducing the benefit that consumers get from mobile services:

- In WE countries, if MTRs are equal to 2€ cents total consumer welfare is reduced by 11% when call externalities are low and by 1% if call externalities are high. If MTRs are set to 1 € cents, total consumer welfare is reduced by 19% and 6% for low and high call externalities, respectively (see Table 1).

Western Europe CPP		Average Minutes of Use (% of AMoU with MTR at cost)	Penetration		Total Consumer Surplus (% of CS with MTR at cost)	
			Low Call Externality	High Call Externality	Low Call Externality	High Call Externality
MTR (€ cents)	2	162%	91%	99%	89%	99%
	1	198%	84%	96%	81%	94%

Table 1: Average Minutes of Use, Penetration and Total Consumer Surplus. Western Europe - Without reception charges

Source: Frontier Economics

- In CEE countries, only under the assumption of high call externalities and MTRs set at 2 € cents, the total consumer surplus remains invariant. With low

<sup>37</sup> These are reductions compared to what penetration would be absent the reduction in MTRs

call externalities, MTRs set at 2 € cent reduce total consumer welfare by 10%. Consumers experience 19% reduction in their welfare (4% reduction when call externalities are high) when MTRs are set to 1 € cent (see Table 2).

Central and Eastern Europe CPP		Average Minutes of Use (% of AMoU with MTR at cost)	Penetration		Total Consumer Surplus (% of CS with MTR at cost)	
			Low Call Externality	High Call Externality	Low Call Externality	High Call Externality
MTR (€ cents)	2	167%	91%	100%	90%	100%
	1	206%	84%	97%	81%	96%

Table 2: Average Minutes of Use, Penetration and Total Consumer Surplus. Central and Eastern Europe - Without reception charges

Source: Frontier Economics

### 3.2.2 Impact of lowering MTRs under RPP

If operators charge for incoming calls networks do not make losses on calls (on average) so the pressure to increase fixed subscription charges is alleviated. However, the introduction of reception charges has a mixed effect on traffic levels. If the reception charge is small, (or the value of the call externality is large), reception charges will not have a material effect on call volumes, while the reduction in MTRs, and consequently lower call charges, will result in increased average volumes of calls made per subscriber. In our modelling, we find that the volume of calls might increase by 50% in WE countries and by 53% in CEE countries, with MTR equal to 2€ cents. This makes consumers better off (see Table 3 and Table 4).

However, if reception charges become large (or the value of the call externality is small), high reception charges cause subscribers to refuse to accept calls, which will reduce the average volume of calls made. We find that this could reduce calls up to 70% in WE and CEE countries (see Table 3 and Table 4). This is estimated to reduce the welfare of consumers.

The impact of the introduction of reception charges on penetration depends on the size of call externalities. If call externalities are assumed to be high, penetration in CEE and WE countries slightly increases or remains constant when MTRs are set to 2 and 1 € cent respectively. If call externalities are low, the negative effect on penetration of introducing reception charges is quite large. Our modelling suggests that if MTRs are equal to 2 € cent penetration in WE and CEE countries could be reduced by 37% (see Table 3 and Table 4).

In our modelling the overall impact on consumer welfare of these two factors is marginally positive if call externalities are large, with MTRs equal to 2€ cents. With low call externalities, the reduction on consumer welfare is much larger: 45% for WE and CEE countries. This negative effect comes from the impact on mobile penetration following the introduction of incoming charges to recover the cost of calls (see Table 3 and Table 4).



Western Europe RPP		Average Minutes of Use (% of AMoU with MTR at cost)		Penetration		Total Consumer Surplus (% of CS with MTR at cost)	
		Low Call Exter- nality	High Call Externality	Low Call Externality	High Call Externality	Low Call Externality	High Call Externality
MTR (€ cents)	2	32%	150%	63%	102%	55%	103%
	1	30%	143%	60%	100%	52%	100%

Table 3: Average Minutes of Use, Penetration and Total Consumer Surplus. Western Europe - With reception charges

Source: Frontier Economics

Central and Eastern Europe RPP		Average Minutes of Use (% of AMoU with MTR at cost)		Penetration		Total Consumer Surplus (% of CS with MTR at cost)	
		Low Call Externality	High Call Externality	Low Call Externality	High Call Externality	Low Call Externality	High Call Externality
MTR (€ cents)	2	33%	153%	63%	103%	55%	103%
	1	31%	146%	59%	100%	51%	101%

Table 4: Average Minutes of Use, Penetration and Total Consumer Surplus. Central and Eastern Europe - With reception charges

Source: Frontier Economics

### 3.3 THE US EXPERIENCE

We provide a detailed assessment of the US experience in the next chapter. However, it is useful at this stage to provide a brief description of the US system, in order to assess the relevance of the different results presented in this section. In summary, the US operates a B&K interconnection system between mobile operators, with reception charges at the retail level. The majority of US subscribers purchase packages that come in the form of bundles of incoming and outgoing minutes, for a periodic fee. In practice therefore, the US system is a hybrid between the CPP and RPP scenarios presented in this section. To the extent that the majority of US subscribers do not consume significant minutes outside their bundles, the US system would be more closely represented by the results presented under the CPP scenario.



### 3.4 CONCLUSIONS

In this section we have quantified the impact on consumers from lowering MTRs below cost levels. The welfare of consumers can be seriously reduced from this policy, even when call externalities are taken into account.

These results indicate that, given the lack of evidence on the size of call externalities, and the potentially very material effect on consumer welfare from below cost termination charges, it would be advisable to err on the side of caution and set cost based MTRs. Any policy aimed at setting below costs MTRs should be supported by strong factual evidence on the size of the externalities not internalized by the parties and consider extremely carefully a significant deviation below costs.



## 4 Analysis of the US experience

### 4.1 INTRODUCTION

From the analysis of the relevant economic literature in section 2 we concluded that:

- The presumption that lower MTRs will help reduce overall retail prices for mobile services and therefore benefit customers is flawed and can only be held under very specific circumstances.
- There is an optimal level of MTRs, which is generally cost oriented unless call and network externalities are present. In particular, termination rates equal to zero are optimal only under very specific circumstances and gives rise to other practical problems, including the need for additional regulation. In addition if RPP is followed after the introduction of B&K (which does not necessarily need to happen but could arise as termination costs are greater than zero), other problems coming from strategic pricing in the form of leveraging network size, could arise.

In spite of this, it is sometimes argued that the experience of markets with low (meaning below costs) termination rates clearly shows that customers are better off, as they tend to talk more and get cheaper prices, without any significant effect on mobile penetration.

The purpose of this section is to analyze whether, on the basis of the available information, such statement can be maintained. To comply with this aim we took the US example as reference. Although there are some other countries with low or zero mobile termination rates, the US is, in many instances, especially with regard to the socio economic environment, the more relevant benchmark.

We have structured this section as follows:

- First, we review and comment on the arguments generally used by the advocates of low or zero termination rates / RPP systems.
- Second, we expand on some of our challenges to these arguments, which covers two aspects
  - the use of a limited set of metrics to compare US and EU market performance, thereby underweighting or just ignoring others, mainly penetration and coverage; and
  - the omission of the fact that, even for a limited set of metrics, variables with the same name measure different things so that adjustments are necessary to compare like with like.
- Third, after adjusting the metrics to ensure an “apples with apples” comparison, we answer the key relevant question: if on the basis of these indicators of the US and European markets, it can be said that US customers are better off than European users.

On this basis we conclude the following:

- The evidence based on the international experience presented for the advocates of below costs or zero MTR is weak and cannot be used as presented to date as a basis for regulatory policy.
- US wireless users are not on the whole better off than their European counterparts:
  - There is a gap in mobile penetration and coverage, which even if it narrows over time, harms consumers with delays in service adoption.
  - After adjusting MoU (Minutes of Use), ARPU and RPM (Revenue Per Minute) figures in the US with respect to Europe, to ensure that the comparison is meaningful, US customers consume more minutes but spend more money: we cannot therefore conclude that they are better off.
  - Using the OECD telecommunications usage, which is representative of EU mobile consumption, US price plans could benefit high usage consumers, but would be likely to harm medium and low usage customers. As the proportion of low and medium users is higher, more European users would be expected to be worse off under the US offers, and they would be the low users.

#### 4.2 THE CASE FOR LOW TERMINATION RATES

The main evidence used to argue that the international experience supports the benefits of low (below costs) termination rates is a cross country comparison on selected variables.

Thus, it is argued that countries with low mobile termination rates or even B&K exhibit higher minutes of use and lower revenue per minute (interpreted as a proxy for prices), and do not systematically show lower penetration rates (see Table 1).

The advocates of this view claim that these conclusions hold even when statistical analysis is used to control for other variables, more specifically GDP per capita, penetration of fixed telephony, proportion of subscribers with GSM technology, market share of the two largest players, % of prepaid subscribers and the existence of number portability (source Littlechild: 2006).

	Wireless penetration	MoU	RPM (€)	Termination mechanism
Canada	60.90	424	0.07	B&K RRP
USA	84.00	814	0.03	B&K RRP
Hong Kong	138.30	495	N/A	B&K RRP
Singapore	125.00	339	0.06	B&K RRP
Europe	118.70	159	0.14	CPNP/ CPP
France	89.00	247	0.12	CPNP/ CPP

Table 5: Comparison in selected metrics for Calling Party Networks Pays-CPP and Bill and Keep-RPP countries

Source: Global Wireless Matrix, Merrill Lynch (4Q 07)

However this type of analysis is too simplistic to be used in drawing inferences for regulatory policy:

- *The analysis does not address the relevant economic question.* The fact that we observe differences in some indicators does not imply that overall customers are better off. For instance price plans in the US are in the form of “buckets” of minutes. One of the reasons for their existence, is the need to overcome customer’s reluctance to answer certain calls for which they are not willing to pay. Once the bucket of minutes is purchased, the opportunity cost of talking is quite low and, if the expectation is not to run out of minutes, even zero. This could lead to relatively high consumption of minutes, without any evidence that this is what consumers would prefer if they could choose, for instance, European-type price plans.
- *The analysis focuses on a small set of metrics.* Other variables such as coverage which indicates the ability to make and receive calls everywhere (basic in this case, as mobility is one of the key attributes for wireless) or quality performance are not considered.
- *Problems in the data.* The analysis is not comparing like with like:
  - The minutes of use are overstated in RPP systems as inbound and outbound on-net calls are double counted. Also in some RPP countries, like the US, some operators charge for the ring time and for unanswered calls, and these minutes, which are not conversation minutes, are included in MoU figures.
  - ARPU figures are overstated in CPP countries. The revenue figures per customer in CPP countries, which are used to calculate the revenue per minute, include termination revenues. As retail revenues for off-net calls also include termination (because they form part of retail prices), termination revenues are counted twice and hence RPM figures are

overstated in CPP countries. This comparability issue arises regardless of the level of termination rates.

- Finally, penetration rates in some CPP countries may be overestimated as some users that have several SIM cards but use only one, may be counted more than once. This is a different issue to that of users having several SIM cards and effectively using them (for instance professionals with personal and company mobile phones).
- *The impact of other explanatory variables is not appropriately considered.* Market performance is affected by a number of variables, not only termination rates. To account for other reasons explaining market performance, Littlechild (2006) undertakes an econometric analysis using RPM, MoUs and penetration as dependent variables and GDP per capita, fixed penetration, market share of the two top players, % of subscribers with GSM technology, % prepaid customers and the existence of number portability as explanatory variables. The conclusion from this analysis is that, after accounting for these explanatory variables, RPP reduces average revenue per minute, significantly increases average usage and does not affect mobile penetration rate. We think that on the basis of the econometric analysis such conclusions cannot be maintained because
  - the problems of comparability between the market indicators of CPP and RPP countries are not corrected;
  - the analysis does not control for prices and quantity in the estimated supply and demand functions, which can invalidate the statistical robustness of the results; and
  - there is a very small sample of countries with B&K. Therefore, inferences are based on a very limited set of examples.
- *There is contrary evidence that should also be considered.* There are countries that have considered a change in the interconnection (and retail pricing) mechanism applicable to mobile termination. All of the ones that have considered it, have changed from RPP to CPP (Zehle, 2003), including developing countries from Central and South America and the Caribbean, Mongolia, Cambodia, Romania, Pakistan and India. Although cross-country analysis does not provide conclusive evidence on the relationship between penetration and CPP, case studies of emerging countries that have switched from RPP to CPP show a significant impact of CPP on market growth and the development of the mobile sector. Zehle (2003) states that (page 15): *‘The fact that under mobile party pays cellular users have to pay for mobile terminated calls and cannot properly control costs other by switching off the phone must weigh more heavily in a price sensitive market, such as emerging markets.*
- France also switched from B&K to a Calling Network Party Pays (CNPP) in 2005 without this leading to significant changes in usage or customers’ bills.

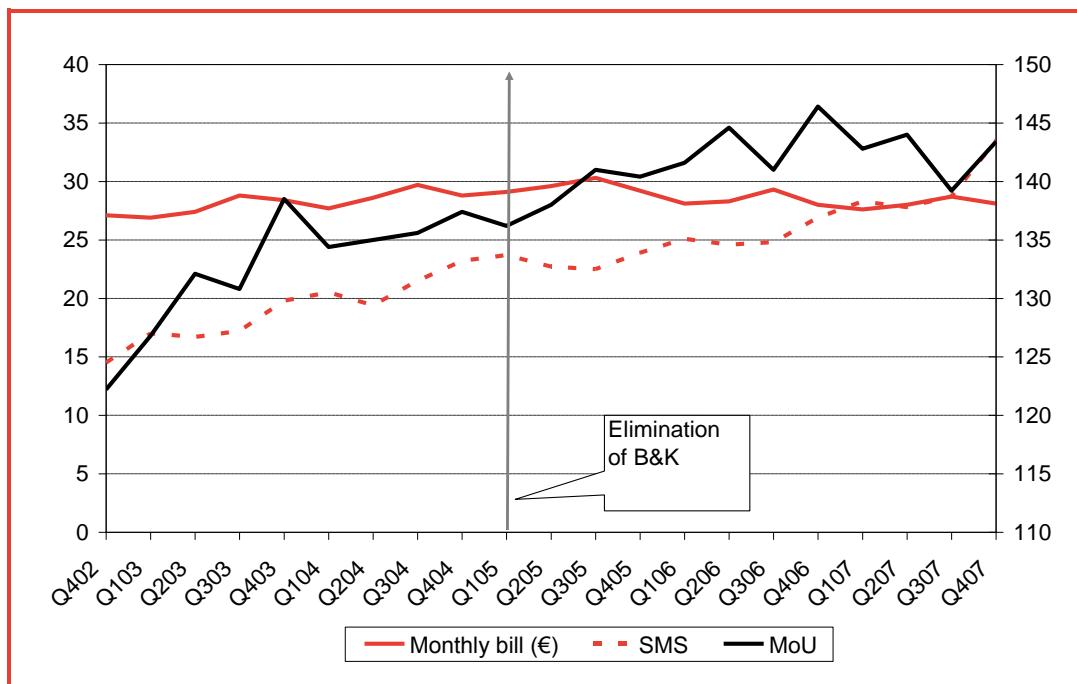


Figure 4: Evolution in France of the monthly bill and minutes of use before and after the introduction of MTRs

Source: Arcep's Quarterly Reports

## 4.3 COMPARISON WITH THE US

### 4.3.1 Introduction

We now turn to an analysis of the US and European experience, focusing on a series of key performance indicators. The purpose is to test if the claim that US consumers are better off than their European counterparts is supported by the data.

As mentioned earlier, it is reasonable to take the US as a relevant benchmark for the EU. In addition, among the B&K/RPP countries, the US is the closest to Europe in terms of income and demographics, as it is shown in the table below.

	GDP p.c. (€)	Population (millions)
<b>Hong Kong</b>	<b>20,175</b>	<b>7</b>
<b>Singapore</b>	<b>24,502</b>	<b>4</b>
<b>Europe</b>	24,854	495
<b>Canada</b>	<b>32,456</b>	<b>33</b>
<b>US</b>	31,460	303

**Table 6: GDP p.c. and Population Comparison for selected CPP and RPP countries**

*Source: Merrill Lynch Global Wireless Matrix, 4Q 07, with the exception of Europe. Source: <http://epp.eurostat.ec.europa.eu/>*

In what follows:

- We first expand in the metrics used for the comparison, including subscription and geographic coverage.
- Secondly, we adjust the information on MoU, ARPU and RPM to make these performance indicators comparable.
- By using these data, we then assess whether it can be said that US customers are better off than European mobile customers.

### 4.3.2 Subscription

#### *Subscription in the US lies well behind subscription in the EU*

Before undertaking a comparison of penetration rates, it is necessary to adjust reported rates for inactive subscribers. Data on subscribers for European countries may be overestimated because of the existence of inactive subscribers (subscribers who churn between operators but are still active in operators' accounts). To control for this we compare US penetration figures with those of the EU for which we have found information on active subscribers, defined as those who have made or received a call/SMS in the last 3 months. As can be seen in the chart below, the US lags significantly behind European countries in terms of penetration.

This result is consistent with reported penetration rates from other sources. For instance the United Nations reports 75% penetration for the US and 107% for Europe.<sup>38</sup>

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<sup>38</sup> See *The Global Information Society: a Statistical View*. April 2008. Page. 25



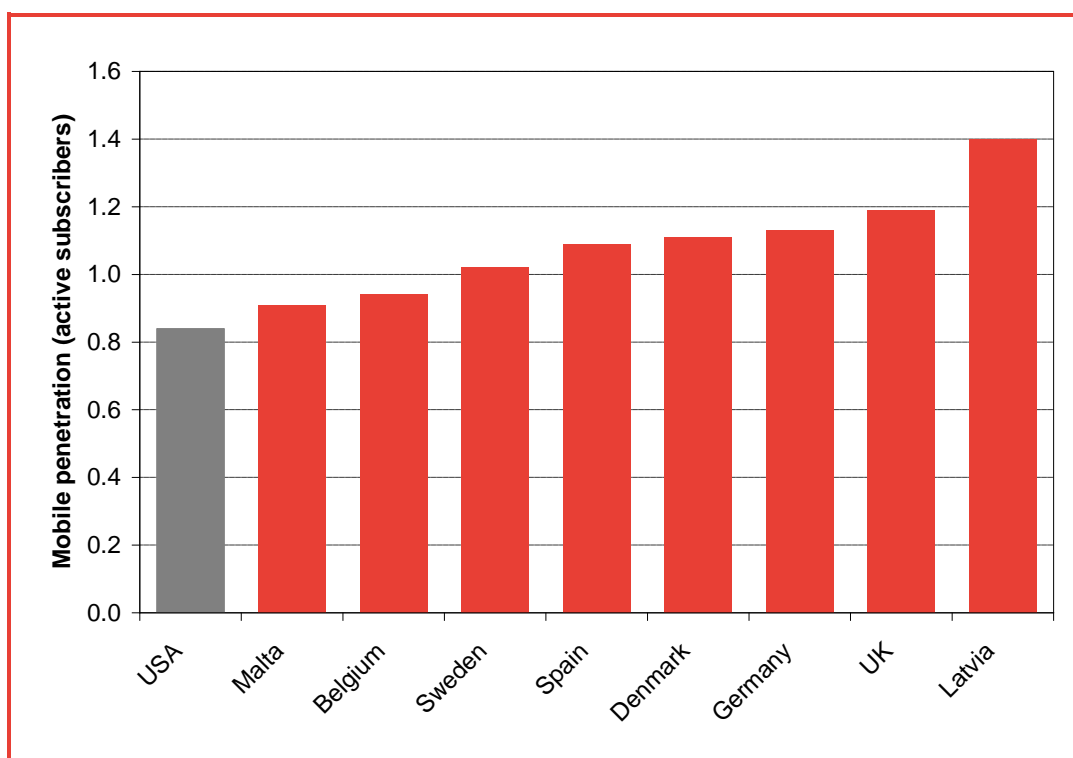


Figure 5: Mobile penetration (active subscribers) in the US and Europe

Source: 13<sup>th</sup> Implementation Report and Merrill Lynch Global Wireless Matrix, 4Q 07

Other evidence also points out that penetration in the US is below EU levels. For instance, customer surveys provide comparable information to the extent that survey participants are asked the same question. In this respect, we have found comparable survey based information on mobile penetration for households in the US and Europe. Thus, in 2007, in the EU-27, 83% of households had at least 1 mobile telephone. In 2007 the percentage was 75% for the US. With the exception of Romania and Bulgaria, all EU countries are above the US rate (see Figure 6 below and Table 8 in Annex 4)

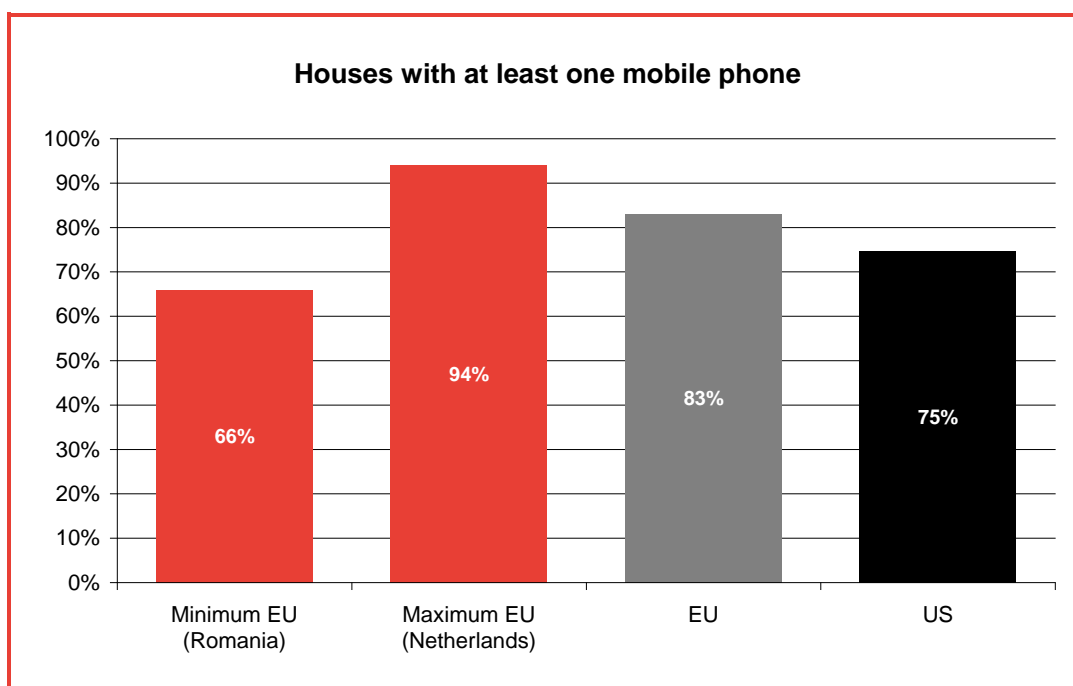


Figure 6: Percentage of households with at least 1 mobile phone (see more details in Table 8 in Annex 4)

Source: For the US: Blumberg SJ, Luke JV. *Wireless substitution: Early release of estimates from the National Health Interview Survey, July - December 2007*. National Center for Health Statistics. Available from: <http://www.cdc.gov/nchs/nhis.htm>. For Europe: European Commission: *Sondage sur les communications électroniques. Eurobaromètre Spécial 293. Novembre – décembre 2007* (available at [http://ec.europa.eu/information\\_society/policy/ecomms/doc/library/ext\\_studies/household\\_07/eb68\\_2\\_ecomm\\_full\\_rep\\_fr.pdf](http://ec.europa.eu/information_society/policy/ecomms/doc/library/ext_studies/household_07/eb68_2_ecomm_full_rep_fr.pdf))

### ***Lags in penetration also reduce the welfare of consumers***

The figure below shows that penetration in the US seems to be 3-4 years behind European levels. Although measuring the time lag requires more careful analysis, the chart shows that even if the US reach similar penetration levels, the time lag lasts several years. There is also no apparent trend for convergence in penetration.

Eventually if in the long term US penetration reaches European levels, the delay in the diffusion of mobile services would be expected to reduce the welfare of consumers quite significantly. For instance, Hausman (1997) estimates that the costs of delay in the introduction of cellular telephony services in the US was US\$ 25 billion per year.

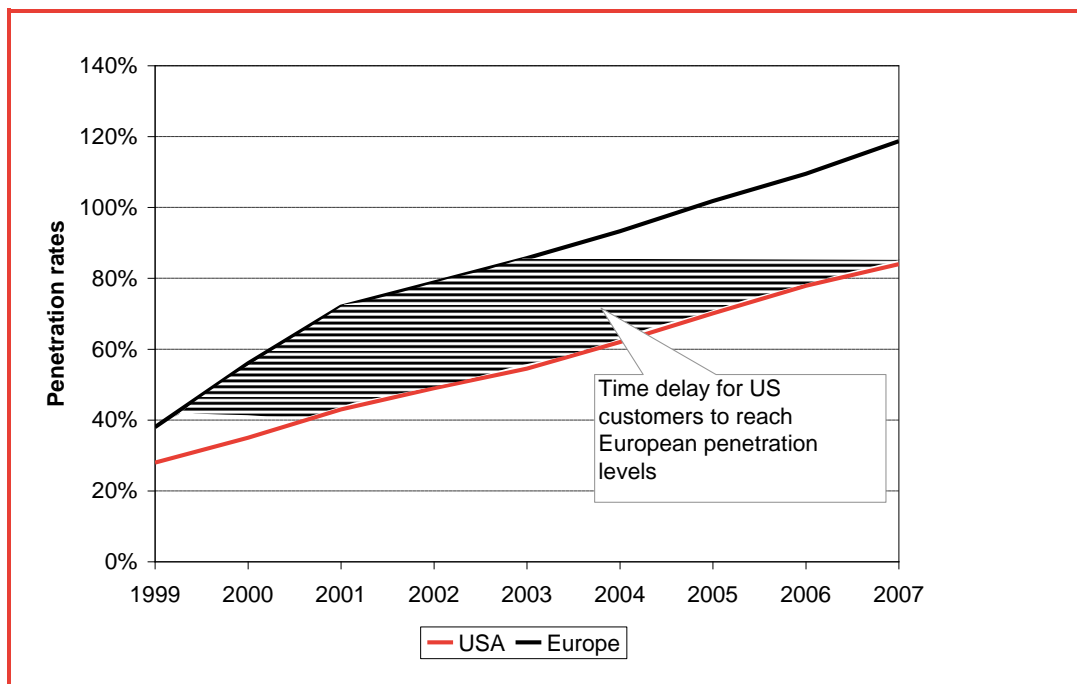


Figure 7: Evolution in mobile penetration (US vs. Europe)

Source: *Global Wireless Matrix, Merrill Lynch, 4Q 07*

### 4.3.3 Coverage

Population coverage figures in the US are comparable with those of the EU-27. However, in terms of geographic coverage, the US scoring is much worse than in the EU.

The figure below plots both population and geographic coverage. The figure for geographic coverage in the US is a bit larger when computed over land (excluding water and desert) area instead of total area.<sup>39</sup> However, in both cases the US is quite behind Europe in terms of geographic coverage. This is the case even when, contrary to European operators, US wireless operators received in 2007 98%, or \$1.18 billion, of the \$1.2 billion that the program paid out each year to CETCs (competitive eligible telecommunications carriers<sup>40</sup> – non-incumbent carriers that have been certified for participation in the high-cost program).<sup>41</sup>

<sup>39</sup> The source for water area is <https://www.cia.gov/library/publications/the-world-factbook/print/us.html> and for desert area: National Park Service, <http://www.nps.gov/archive/moja/mojadewd.htm>

<sup>40</sup> CETCs are non-incumbent carriers that have been certified for participation in the high-cost program. The high-cost program is one of four Universal Service Programs receiving 62% of the total Universal Service funds. It provides financial support to carriers operating in high-cost—generally rural—areas in order to offset their costs, thereby allowing these carriers to provide rates and services that are comparable to the rates and services that customers in low-cost—generally urban—areas receive.

<sup>41</sup> United States Government Accountability Office (GAO) report to Congressional Committees. Telecommunications. June 2008. Available at <http://www.gao.gov/new.items/d08633.pdf>

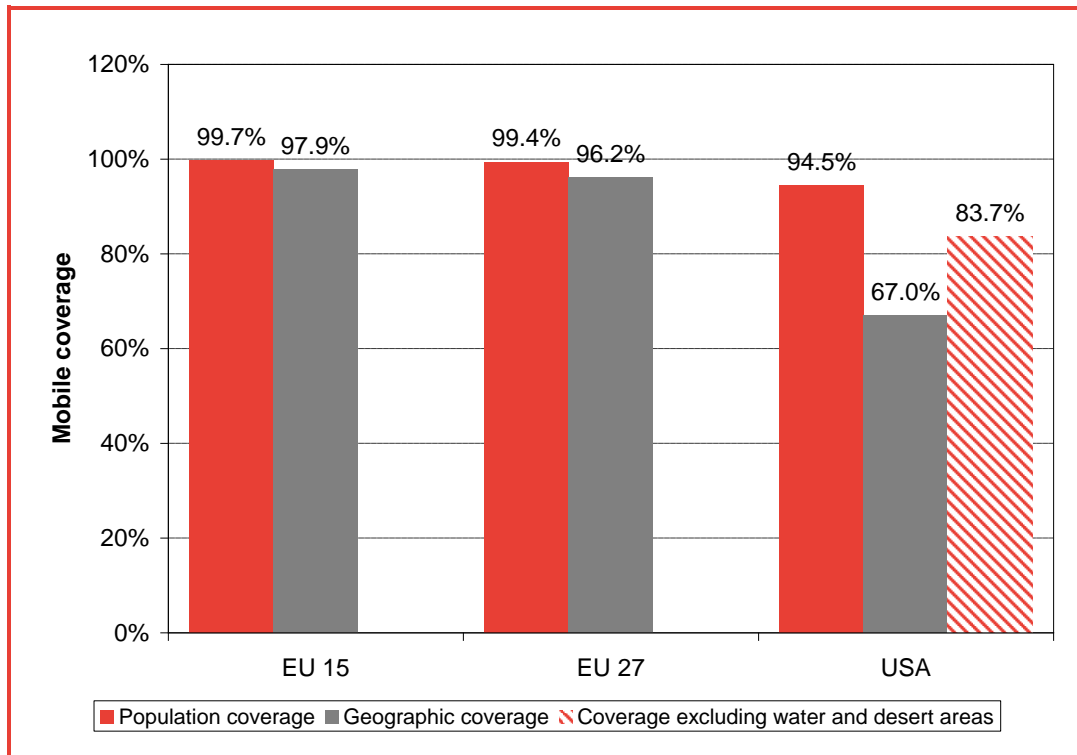


Figure 8: Population and geographic coverage in the US

Source: GSM Association and FCC

The difference in geographic coverage may be reflecting that population density is lower in the US than in the European Union and the higher costs to cover remote areas. This interpretation should however take into account the following considerations

- it is in less populated and remote areas where the utility of mobile telephony for society is higher, as it allows people living or travelling through these areas, to be contactable; and
- these remote areas are less developed economically, so lower coverage would also reflect that mobile service offers in the US are targeted to high usage consumers, who possibly are not located there. According to this, low coverage would also be explained by the US service offers compared to the European ones.

Evidence from Sweden supports the last point made: it has lower population density and yet significantly higher population and geographic coverage than the US.<sup>42</sup>

#### 4.3.4 Minutes of use

Reported billed minutes for the US operators include:

<sup>42</sup> According to the GSMA data, population coverage in 2006 for Sweden was 99.9%. The figure for geographic coverage in the same year was 86.5% and 94.7% if we exclude water areas.

- ring time for answered calls, as they are also billed; and
- for some operators charging for it, ring time for unanswered calls.

Therefore, the minutes of use (MoU) reported by US operators include in addition to conversation minutes ring time, even if the call is not answered.<sup>43</sup>

To ensure that we are comparing true conversation time both in the US and in Europe we have adjusted the MoU figures in the US to exclude ring time and take account of the billing method. We then have compared it with the European data, which has also been adjusted to reflect the billing method in the different countries.<sup>44</sup>

We also adjust the US MoU to control for the fact that on-net minutes are counted twice, as both the outgoing and the incoming leg are billed to the customer. In CPP countries like those in Europe, on-net M2M minutes are counted once. Annex 1 explains this adjustment.

The following chart shows the MoU for the US and European countries before and after the adjustment. As can be seen, the difference in the US reported minutes vs. true conversation minutes is quite significant and implies a 46% reduction. The divergence in the European countries is explained by the billing method. Thus for those European countries not billing by second, true conversation minutes are lower than those reported.

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<sup>43</sup> Verizon and AT&T charge for unanswered calls if the ring time exceeds 60 and 30 seconds, respectively. Sprint does not charge for unanswered calls and we have not found information regarding the other operators. We have assumed that these other operators do not charge for ring time in unanswered calls.

<sup>44</sup> See Annex 1 for a detailed explanation of the adjustments.

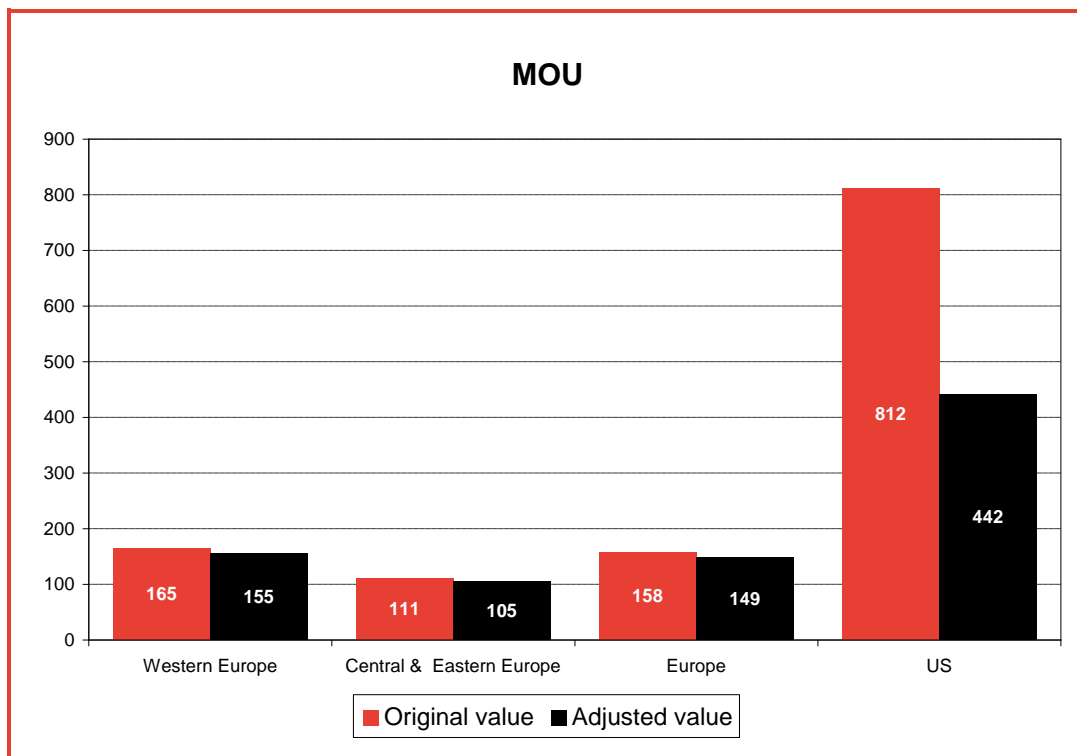


Figure 9: Minutes of use (MoU) before and after adjustments to control for non-conversation time (see more details in Table 9 in Annex 4)

Source: Frontier Analysis from Merrill Lynch's information

After these adjustments, the US MoU is still above the European levels. We now turn to the reasons explaining this difference.

#### ***Lower levels in penetration and in the percentage of prepaid users***

As the number of subscribers grows, the proportion of low usage customers in the operators' client base increases. This implies that the average minutes of use decreases as customers with less preference for the service purchase it later. Similarly, prepaid customers generally exhibit a low usage profile. As the share of this type of customer increases, average usage decreases.

We have not corrected US - MoU figures to control for this effect because we did not find reliable information to support the calculations. It is possible however to provide an indication of the potential magnitude of this effect. Littlechild (2006) estimates an elasticity of -2.3 on the impact of the percentage of prepaid customers on MoU. If we used this, and taking the percentage of prepaid customers in the US at 15% (source: FCC) and 60.9% for the EU (source: EC's 13th Implementation Report) the US MoU figures should be further reduced by 107 minutes.

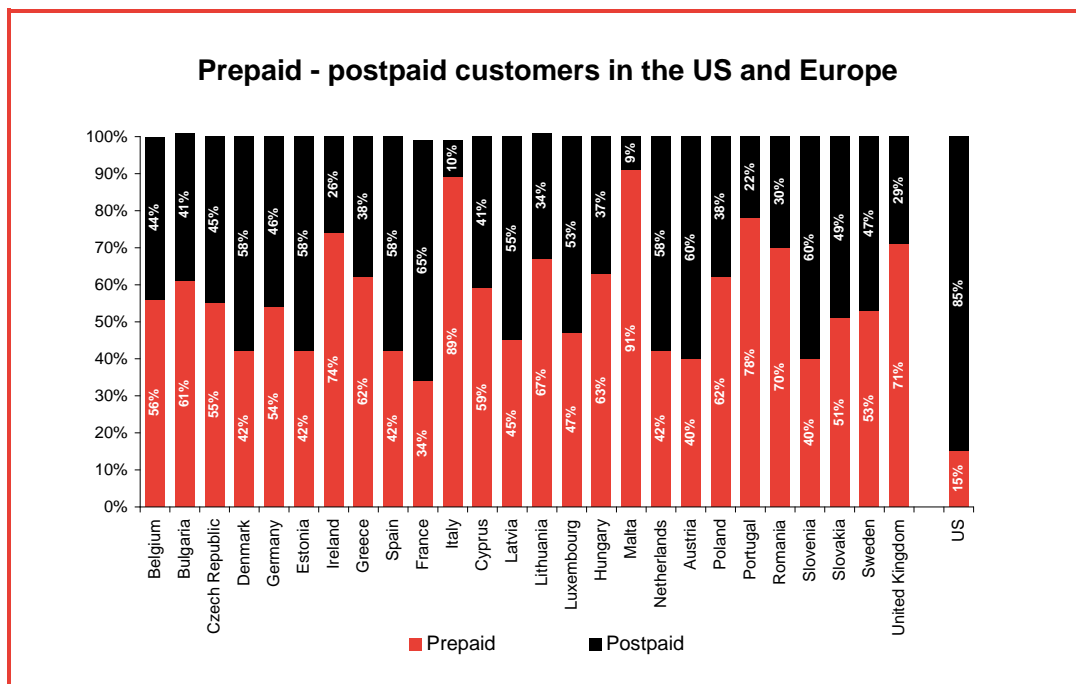


Figure 10: Distribution of prepaid and postpaid customers in Europe and the US

Source: FCC and European Commission

### *US price plans*

The price plans in the US encourage the consumption of many minutes through the offering of “buckets” of minutes in post paid and the relative high prices of prepaid plans.

Post-paid wireless plans in the US are often "buckets" of minutes by which a monthly fee is paid for a specific number of minutes each month, whether they are used or not. If customer uses more minutes than in the monthly allotment, a much higher charge is paid for the extra minutes. Unused minutes do not carry over to the next month. For instance the cheapest post-paid plans are commercialized by T-Mobile and Sprint and offer 300 minutes a month at a cost of 29.99US\$ (excluding taxes).

Most of these plans have free on-net calls, and free calls during nights and weekends. Usually customers must pay a sign-up fee and may get the phone free in exchange for signing up a minimum period of time (usually 2 years) subject to an early termination fee. For instance Verizon Wireless' contract termination fee starts at \$175, and is reduced \$5 per month for each full month toward the contract's term that the customer completes<sup>45</sup>. Family plans are becoming very

<sup>45</sup> Source: FCC (2008). The FCC has recently announced its intention to regulate the conditions to apply early termination fees, in order to ensure that all operators prorate the fees over the life of a contract and eliminate them when customers renew contracts and do not upgrade their equipment. Source: The Wall Street Journal, 13 June 2008)

popular in the US. They allow several users to share a pool of minutes but are demanded mainly by medium and high users.<sup>46</sup>

The price of prepaid plans in the US also encourages the consumption of the postpaid ones. Standard (meaning European type) prepaid plans are not offered by all operators. They imply charges for incoming calls and a price per minute ranging from 10 to 33 US\$ cents. The following table reflects the “pay as you go” plans offered by AT&T and T-Mobile (Sprint and Verizon wireless do not have prepaid plans announced on their web pages).

	Daily/monthly price	Anytime minutes	Text messaging	Top-up (US\$)	Expiration (days)	Sign-up fee	Contract length	Minimum phone price	Taxes included
AT&T	0	0.25	0.15	15	30	0	0	9.99	No
				25, 50, 75	90				
				100	365				
T-Mobile	0	30	N/A	10	90	0	0	0	No
				25	90				
				50	90				
				100	365				

Figure 11: "Pay as you go" prepaid plans in the US

Source: Operator's web pages - consulted in June 2008

The figure shows that getting the cheapest price per minute requires 100 US\$ expenditure, whilst the minimum expenditure leads to prices ranging from 20 to 30 US\$ cents a minutes. In all cases, incoming calls are charged at the same price. It is also worth highlighting a couple of things regarding the top-up. Because incoming calls are charged, the US customers need to pay the top-up in order to have the phone active. Second, in the US, the expiration time is generally either 30 or 90 days while in comparison European countries, such as the UK and Germany, it is unlimited.

There are two other types of price plans offered in the US, which somehow reflects the complexity that these plans confer to the final users: (i) “pay by the day plans”, by which the user pays a fixed amount (between 1-3 US\$ every day he/she makes or receives a call); and (ii) monthly payments in exchange for a fixed number of minutes (offered by AT&T only).

The next table shows the pay by the day plans. To estimate the price per minute in this case, we need to make assumptions on the number of days where the customer will use the cellular (in the same way final customers will need to envisage how many days he/she wants the phone to be active, which highlights the complexities of these plans). It is clear that these plans encourage call concentration in specific days (to save in the fixed costs per day and spread them in a higher number of minutes) and switching the mobile off or not taking calls to avoid the fixed payments when the customer does not want to initiate calls.

<sup>46</sup> For instance, Family plans are 76% of price plans for subscribers with monthly expenditure above 100 US\$. For monthly expenditure below 20 US\$, this ration is 19% approximately (source M:Metrics Inc). This is consistent with the prices of Family plans. The minimum expenditure for a Family plan is \$60, while the minimum expenditure for an individual plan is \$30. This means that, if two people are to share a plan, the monthly minimum expenditure is still a burden for low users. In addition, low fee family plans are not a very good deal when compared to individual plans. For example, the lowest fee family plan allows the user to talk 550 minutes, whereas he/she could obtain 900 minutes in an individual plan for the same price. However, for medium and high users they can be cheaper than individual plans.



If the use is low, as one would expect in prepaid, the price per minute is high in comparison with postpaid plans. For instance, assuming that the customer calls 15 days a month and 3 calls per day, 1 in peak time and 2 at night time, with an average duration of 3 minutes for each call, the price per minute ranges from 0.21 to 0.34 US\$ in the case of Verizon (and this does not account for the cost of the handset, 60US\$); 0.21 for AT&T and 0.15 for T-Mobile.

Pay by the day										
Company	Daily price	Cost per minute	Weekend	Text messaging	Top-up (US\$)	Expiration (days)	Sign-up fee	Contract length	Minimum phone price	Taxes included
Verizon	0.99	0.1	0.1	0.1	15-29.99	30				
	1.99	0.05	0.05	0.05	30-74.99	60	0	0	59.99	N/A
	2.99	0.02	0	0.02	75-99.99	90				
					100+	365				
AT&T	1	0.1	0.1	0.15	15	30				
					25, 50, 75	90	0	0	9.99	No
					100	365				
T-Mobile	1	0.1	0.1	N/A	10, 25, 50	90	0	0	0	No
					100	365				

Figure 12: Pay by the day prepaid plans in the US

Source: Operator's web pages

Regarding “monthly payments” type of plans, the one with the lowest monthly price (29.99 US\$) implies a price per minute of 0.15 US\$, applying also to incoming calls. The price per minute decreases and can be lower than 5 cents a minute, assuming that all minutes are consumed, but this requires a minimum expenditure ranging from 40 to 70 US\$ and paying 10 US\$ for the handset. At these levels, post-paid plans become more attractive for US customers.

In summary, the higher MoU in the US is explained by the type of price plans observed in this country, which encourages high consumption at low prices in exchange for high levels of monthly expenditure. The relative high prices of prepaid plans, also implies that relatively low usage customers are excluded from the market, leading to a higher average level of minutes compared to Europe.

#### 4.3.5 Average Revenue Per User (ARPU)

Before comparing with the US we have corrected European figures to account for double counting in mobile termination revenues. In CPP countries, ARPU figures include M2M termination revenues. As the price of outgoing M2M calls *offnet* also includes termination costs, these are counted twice.<sup>47</sup> In the US this problem does not arise because M2M interconnection is settled by using B&K.<sup>48</sup>

As the following figure shows, the ARPU per user is higher in the US than in the EU-27 before and after the adjustment. This is consistent with the price plans in the US, which are biased towards post-paid customers and the use of bucket of minutes in exchange for a high monthly expenditure.

<sup>47</sup> This issue arises regardless of level of termination rates.

<sup>48</sup> This adjustment is explained in Annex 1.

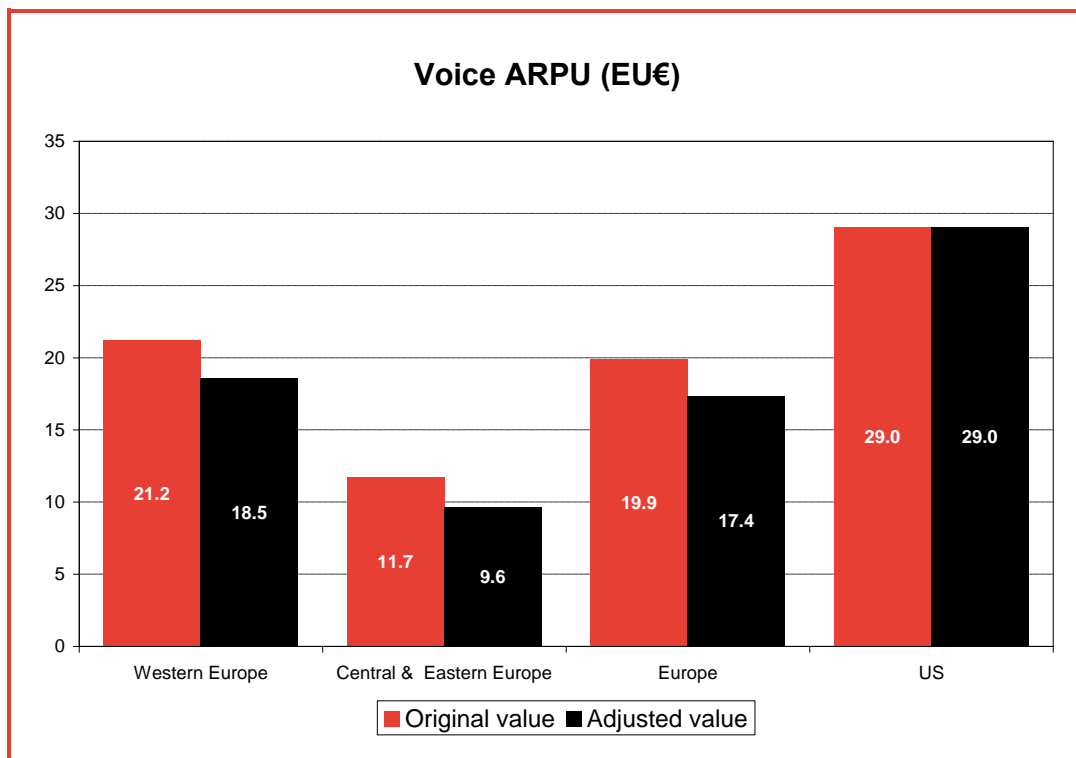


Figure 13: Average Revenue Per User (ARPU) comparison between US and European countries (€) (see more details in Table 10 in Annex 4)

Source: Frontier Analysis from Merrill Lynch's information

Thus, the 29€ a month per customer<sup>49</sup> is 3 times higher than the average revenue obtained by mobile operators from customers in Central and Eastern European countries and 1.5 times higher than Western European ones. Taking the European average, the difference is 12€ a month per customer.

#### 4.3.6 Revenue per minute

Revenue per minute (RPM) is used in international comparisons as a proxy for retail prices. Following the adjustments in the MoU and the ARPU, the RPM figures change accordingly, as they are calculated as the ratio between the ARPU and the MoU.

Below we reported the RPM figures in US\$ and in Purchasing Power Parity (PPP) US\$. The latter reflect an exchange rate which takes into account the different cost of life between the US and European countries.

After the adjustments, the RPM figure for the US rises from 4€ cents per minute to 7€ cents or 9US\$ cents (PPP), although it is still below the European level.

<sup>49</sup> Note that this figure does not vary with the adjustment as the double counting problem does not arise in the US.

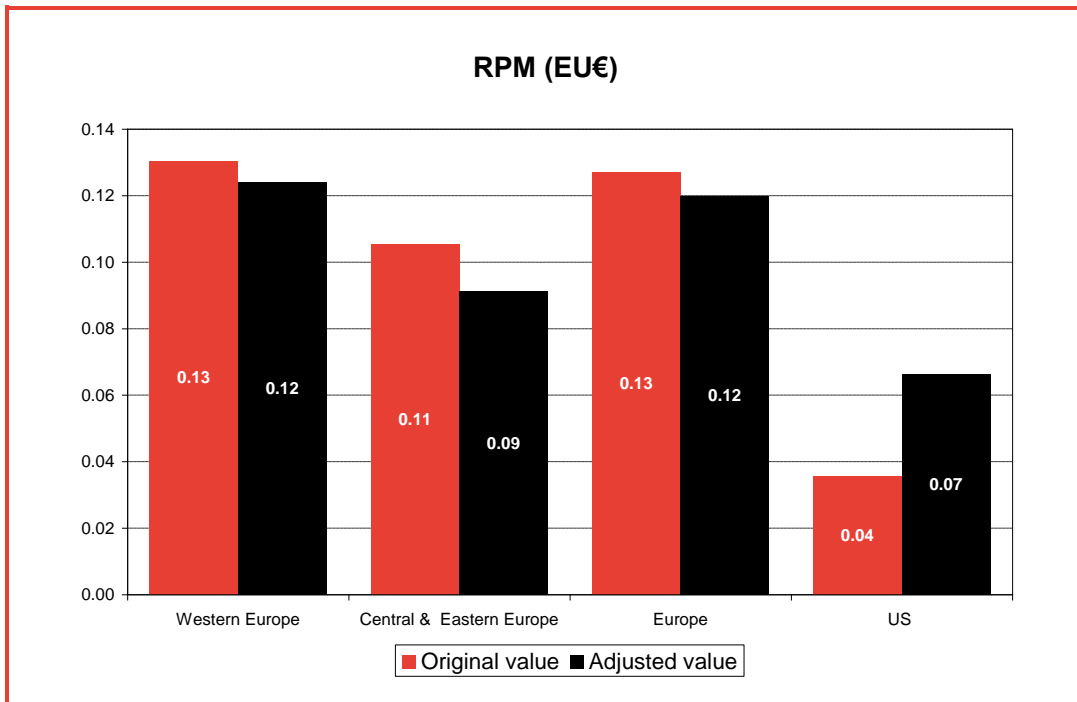


Figure 14: Revenue Per Minute (RPM) comparison between US and European countries (€) (see more details in Table 11 in Annex 4)

Source: Frontier Analysis from Merrill Lynch's information

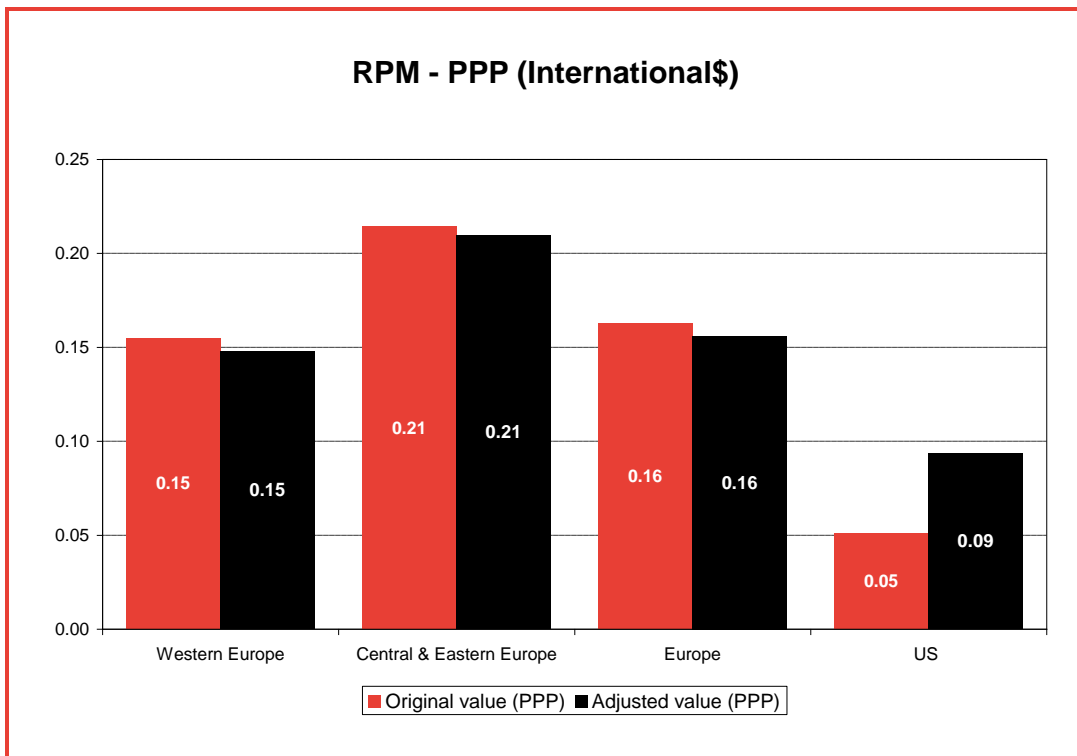


Figure 15: Revenue Per Minute (RPM) comparison between US and European countries

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(PPP US\$) (see more details in Table 12 in Annex 4)

Source: Frontier Analysis from Merrill Lynch's information

Note that there are still other factors that have not been taken into account and could partly close the gap between the RPM of the US and Europe:

- The higher percentage of prepaid customers implies lower MoU, which leads, ceteris paribus, to higher RPMs. If we use the elasticities reported in Littlechild (2006) to adjust for this, the MoU in the US would decrease by in 107 minutes, and the RPM would increase to 0.09 US\$ cents/minute.
- The higher income per capita in the US, which ceteris paribus, leads to higher traffic consumption and lower RPM in the US. We have not found reliable estimates on income elasticities to adjust the US' MoU and RPM figures.

Lower US RPM figures should not be surprising as demand cannot absorb the large amount of traffic offered by the operators without corresponding call reductions. However this should not be interpreted as evidence of consumers being better off in the US. We deal with this issue in the following section.

#### 4.4 IMPLICATIONS FOR EUROPEAN MOBILE CUSTOMERS

After accounting for the differences in the measurement of subscribers, MoU, and ARPU, we conclude that those customers with a cellular in the US consume more minutes, at lower prices per minute, and have higher expenditure as measured by ARPUs.

The US model also produces a gap in geographic coverage and in penetration.

Given these differences, a key question is to what extent EU customers would be better off with the US system. This is the focus of our next Section.

##### 4.4.1 Implications for the welfare of European customers<sup>50</sup>

The fact that US customers consume more minutes at lower prices (leading to higher expenditure) than their Europeans counterparts does not necessarily imply that US customers are better off.

This would only be the case if US customers had the option to choose European type of plans and they refused it. In other words, US customers would be better off under the US offers if they could reduce their expenditure by reducing the number of conversation minutes but decided not to do it.

But this is clearly not the case. As we have seen, US pricing plans offer the option of talking much more minutes in exchange for a high monthly fee. Other

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<sup>50</sup> To keep this section simple, we have not sought to quantify the impact of the lower levels of penetration and coverage in the US, beyond the simulation analysis undertaken in the previous section. If falls in penetration compared to what they would have been under the existing system, were the outcome of using such a system in Europe, as our modelling implies, this would produce a considerable harm for European customers.

plans like paying lower line rentals and getting higher price per minute for each call are not available. The options left for a customer who does not want to talk as much as say, 500 minutes a month, unlimited on-net calls, etc. in exchange for paying a smaller monthly bill are either taking an expensive prepaid plan or not subscribing at all.

The conclusion would be different if the US monthly bills were lower than in the EU but had the same MoU as they currently have. European customers would then be unambiguously better off under these plans because they would give them more minutes and lower expenditure. However this is not the case.

In fact, the available evidence suggests that the European consumer would be worse off under the US plans. If we use the OECD telecommunications consumption basket, (which is not an unreasonable assumption as the OECD basket is used in the EU's Implementation reports) we can compare how much a European customer would spend with US and European plans. This is shown in the next figure.

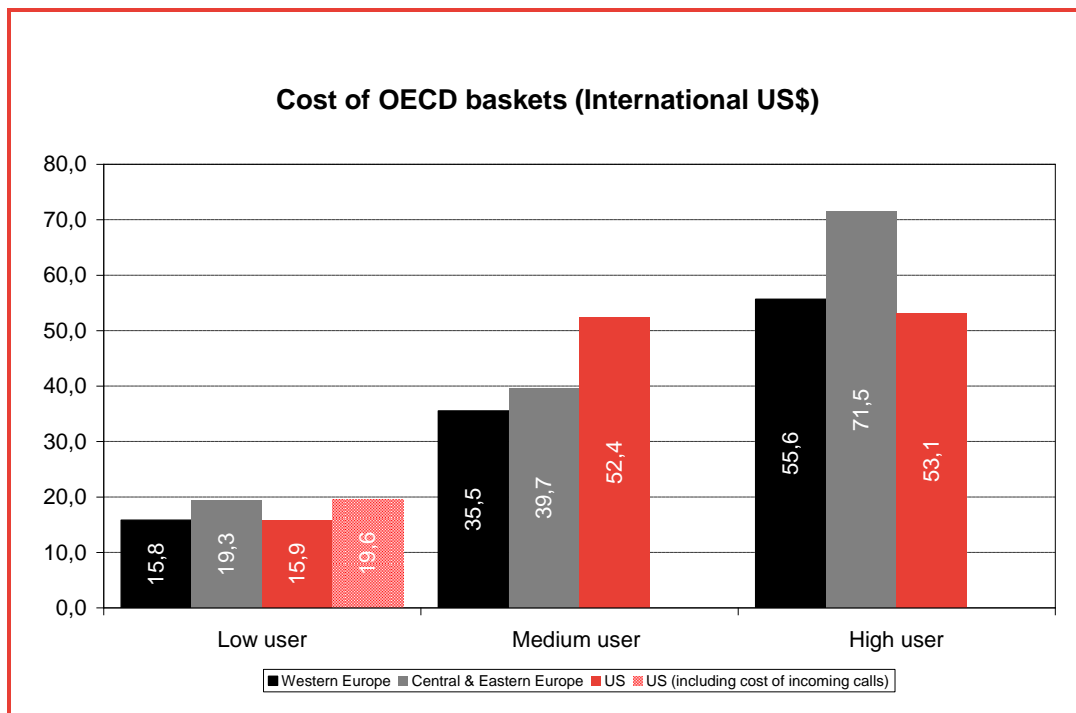


Figure 16: Mobile expenditure for OECD countries: low, medium and high user

Source: *OECD Communications Outlook*, pages 216-218

The OECD baskets consider only outgoing calls. When comparing the costs for the same number of calls between RPP and CPP countries, the charges for incoming calls are not included. The US figures are therefore underestimated, in this comparison, as they are compared with CPP countries, which offer all incoming minutes free. In summary therefore:

- The comparison shows the effect of the US pricing plans, namely that they offer a good deal for high consumers of mobile minutes/services.

The minimum<sup>51</sup> expenditure for high users in the US is lower than in European countries.

- As the usage intensity decreases, the US price plans score worse. This is clearly observed for medium users, where the US minimum expenditure is 13 and 17 PPP US\$ higher per month, than those in Western and Central and Eastern European countries. Put differently, according to these calculations, a medium user in a European country would pay more than an additional \$200/per year if only US plans were available.
- The US scoring for low users seems to indicate that the US is cheaper than the average of European countries. Unfortunately the OECD does not indicate what price plan is used for the US. We believe that this result is based on the “pay as you go” AT&T prepaid price plan which charges 0.25US\$/min for outgoing and incoming calls, and 0.15US\$ per SMS.<sup>52</sup> As we have seen earlier in this section, prepaid plans in the US do not look appealing for low users and, in fact, prepaid penetration in the US is a fraction of European levels.
- As indicated earlier, the calculation of the minimum monthly expenditure is not considering that incoming calls are charged in this prepaid plan. As an illustration, it would require subscribers to this package to receive only one incoming call for each three outgoing calls, for the minimum monthly expenditure to become 19.6 US\$, above the European levels. Thus, we think that the result for the US must be treated very cautiously in this case. This is supported by other studies, which found that the minimum expenditure for low users is higher in the US than in the European countries including Sweden, Netherlands, Norway, the UK, Italy, France and Germany.<sup>53</sup>

The GSMA (2008) has released a report which reinforces the above results. More specifically, it reflects that when including the costs of incoming calls and applying the OECD methodology, the US plans offer a good deal for high users but not for medium and low users (as reflected in the following three Figures).

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<sup>51</sup> The OECD basket comparison assumes the choice of the least cost option for any given level of usage.

<sup>52</sup> If we apply this price plan to the OECD low user profile we obtain a minimum expenditure of 15.95US\$, quite similar to that reported for the OECD.

<sup>53</sup> Analysys (2007)

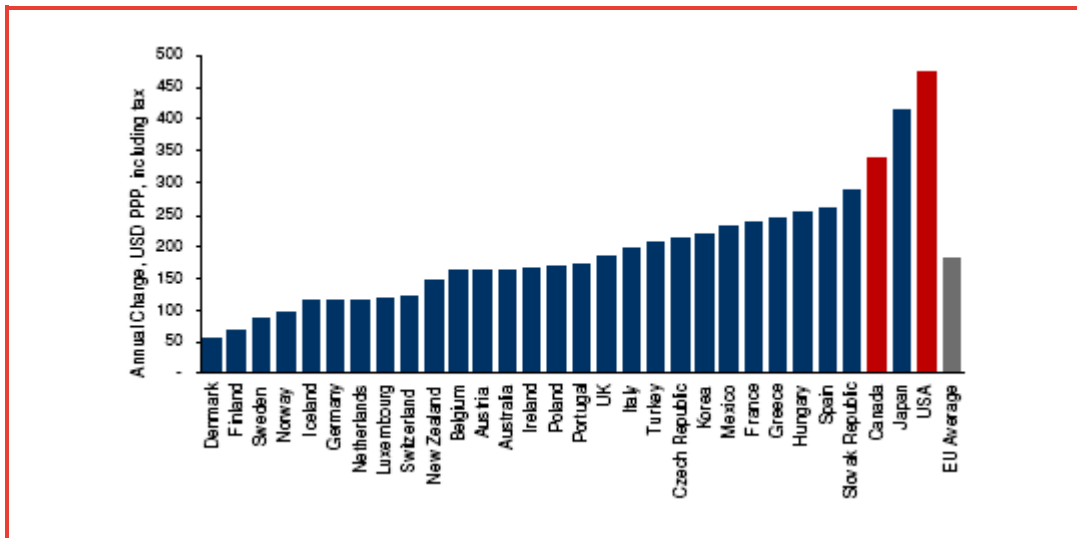


Figure 17: Adjusted OECD basket of low user mobile telephones, May 2008

Source: GSMA (2008)

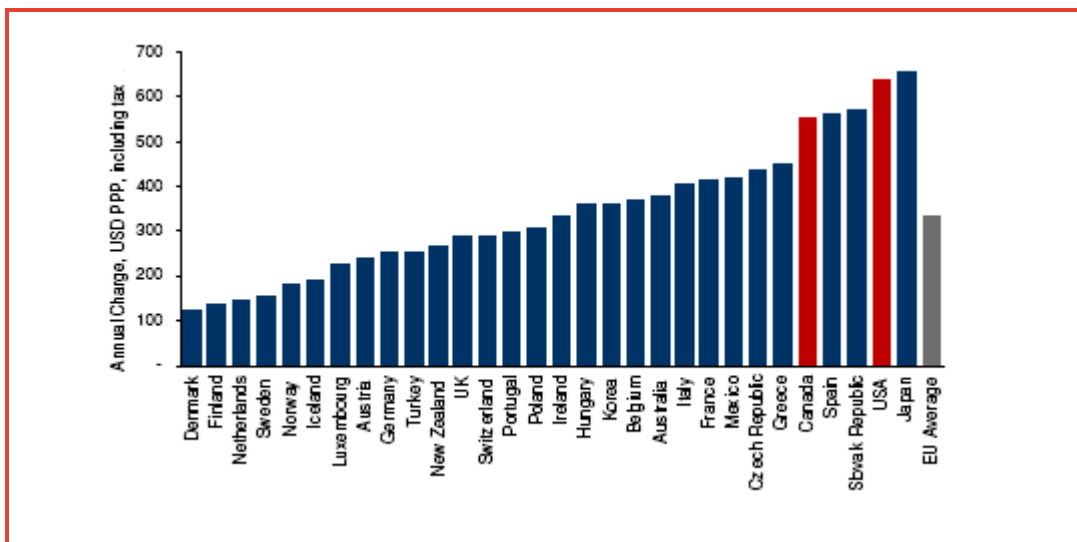


Figure 18: Adjusted OECD basket of medium user mobile telephones, May 2008

Source: GSMA (2008)

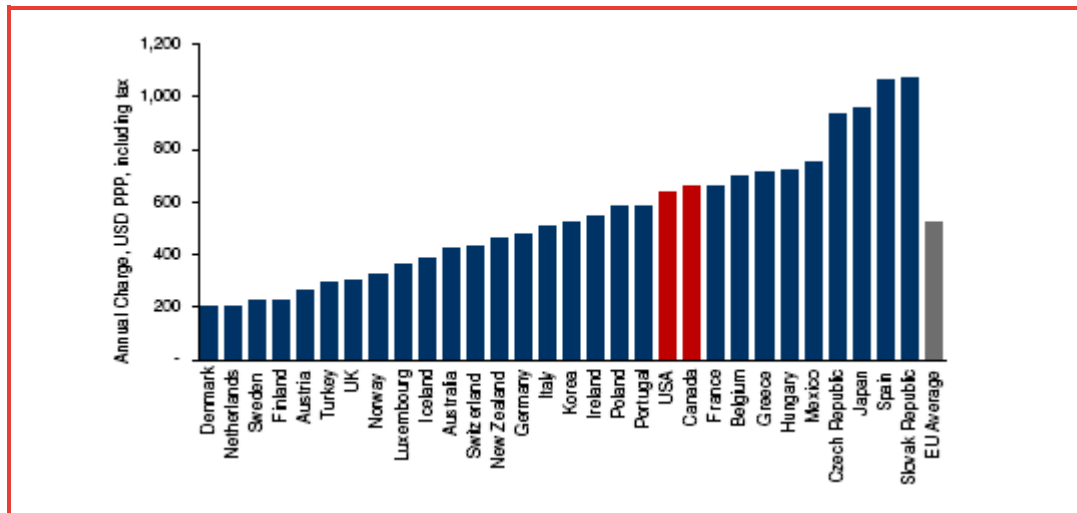


Figure 19: Adjusted OECD basket of high user mobile telephones, May 2008

Source: GSMA (2008)

## 4.5 CONCLUSIONS

In this section we have reviewed the existing evidence supporting mobile systems with low or zero termination rates. We have argued that this evidence cannot be used to support a regulatory action to move towards the interconnection regime existing in these countries.

If we take the US example, which is a reasonable benchmark to compare with, we can conclude that its performance in terms of penetration and coverage is well below the European standards, so in this respect, European customers are much better off.

Regarding the other metrics such as MoU, ARPU we find that the US customers consume more minutes but at higher monthly expenditures than their European counterparts. As the option of consuming less minutes, paying more per minute and having lower overall expenditure is not available for US customers, we can not conclude on the basis of this evidence that they are better off than European users.

Additional evidence on the relative position of different types of user suggests that only high users would be better off. Medium and low user customers would be worse off as they prefer a lower level of minutes in exchange for a lower monthly expenditure, even if they imply a higher price per minute. This is not surprising when looking at US price plans: postpaid plans imply higher minimum consumptions (the cheapest option is 30 US\$ per month) and prepaid plans are not as appealing as in Europe (which would explain the much lower levels of prepaid customers in the US).

The overall effect on consumer welfare for existing subscribers of having US-type price plans will depend on the proportion of high vs. medium and low usage customers. The proportion of medium and low usage profile subscribers is much higher than high usage subscribers, as the MoU for high user is more than 300



minutes a month, well above the average MoU of European customers, around 160 minutes, as reported by Merrill Lynch. We would therefore expect a significantly larger number of subscribers to be worse off, compared to the number of subscribers that would be better off if US tariff plans were offered in Europe.



## 5 Mobile termination costs and the EC recommendation

### 5.1 INTRODUCTION

The Commission has published recently a recommendation on the regulatory treatment of fixed and mobile termination rates in the EU<sup>54</sup>. The objective of the recommendation is to achieve a further level of harmonisation across EU member states in relation to the approach followed by NRAs in determining cost oriented termination charges. In relation to mobile termination, the motivation for the recommendation is the observation that there is a significant variation in the approach of different NRAs to the setting of cost oriented mobile termination rates, and the resulting levels of termination across different EU states.

Consistent with economic theory, the recommendation supports the setting of cost oriented mobile termination rates by NRAs. However, the current Draft of the EC Recommendation includes proposals that could lead to prices being set at a level significantly below the efficient level. More specifically, the recommendation is proposing that:

- ***The incremental cost of wholesale voice call termination should exclude coverage costs*** (see *Principles for the calculation of wholesale termination rates in mobile networks*, in the Annex of the Draft Recommendation).
- ***The termination costs should exclude any contribution to the recovery of fixed and common costs***, on the grounds that the termination charge needs to reflect the benefits of receiving calls, and hence should be set below “average” cost (Paragraph 14 of the Draft Recommendation)
- **A bottom up LRIC model should be used as a benchmark of the efficient network costs with the assumption of NGN (all-IP) technologies** as the basis for modelling the core network (Paragraph 11 of the Draft Recommendation).

In this section of the report we provide our assessment of the recommendation in relation to the setting of mobile termination rates, focusing on two key arguments that relate to this report:

- First, whether there is a justification for excluding ‘coverage network costs’ and other fixed and common costs; and
- Second, whether the Commission’s recommendation in respect of costing of an efficient network is appropriate.

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<sup>54</sup> Draft Commission Recommendation on the regulatory treatment of fixed and mobile termination rates in the EU, Brussels C(2008)

## 5.2 TREATMENT OF FIXED AND COMMON COSTS

### 5.2.1 Proposed increment structure

The Commission proposes that only those costs which are “avoidable” to the provision of mobile termination should be recovered from MTRs. Coverage costs, as costs which are fixed with respect to traffic, are specifically identified as a cost which should not be recovered from MTRs. Full cost recovery would require that operators recover fixed and common costs from the other services delivered over the network.

### 5.2.2 Recovery of coverage network costs

As indicated above, the Commission is arguing that the costs of a minimum coverage network requirement should be excluded from the calculation of termination costs, as they are not incremental to the provision of this service. The Commission seems to be proposing therefore that the current structure of charges for mobile services may not be efficient, and that the costs of a minimum coverage network should *not* be recovered from call charges. There are two important distinguishing characteristics for the provision of mobile services:

- First, the cost structure of mobile networks is different to that of fixed networks, with the copper access network being dimensioned based on the number of customers served –i.e. independently of the level of traffic, while the radio access network in mobile networks being dimensioned based on the level of traffic -to a large degree independently of the number of subscribers<sup>55</sup>.
- Second, unlike the pricing structure of fixed communications services, the pricing structure of mobile services has evolved in what are widely recognised to be competitive markets, reflecting the underlying costs.

The pricing structure faced by the vast majority of mobile subscribers is pre-pay, where following the acquisition of a handset, call prices paid by subscribers cover all the costs of the mobile services they consume. This is in line with the principle of cost causality – the costs of adding an additional subscriber to the network is immaterial, and prices paid by mobile subscribers enable them to make and receive calls wherever they are. They therefore cover the cost of the whole mobile network, including any coverage cost. The same applies to calls received by mobile subscribers, as these can be received wherever calls can be made.

In relation to post-pay subscribers, there has also been a proliferation of the offer of ‘packages’ of minutes by most mobile operators throughout the EU. Post-pay subscribers’ monthly subscription costs include therefore, the costs, of making a

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<sup>55</sup> The cost of a hypothetical minimum “coverage” network would be independent of both the number of subscribers and of the volume of traffic but could be considered a fixed and common cost. Such a cost may be efficiently recovered by applying a Ramsey pricing rule. However the incremental cost of any notional “access service” purchased by mobile subscribers is minimal as very few costs are subscriber driven, hence the majority of coverage costs under a Ramsey pricing rule would be recovered through traffic services

certain number of calls. Thus, there is no indication in relation to the retail pricing structure faced by post-pay subscribers that the charges reflect a distinction between a ‘coverage’ element, and a ‘usage’ element. Any recurring subscription element may be related to efficient recovery of the relatively high “retail” costs associated with serving contract customers.

The analogy that seems to be drawn by the Commission between mobile and fixed services, seems therefore flawed. The Commission recognises itself that the setting of termination charges needs to try and achieve, to the extent possible, an efficient allocation of resources, as would be the outcome in a competitive market. For example, it states in relation to the appropriate cost accounting concept (see Paragraph 9 of the Draft Recommendation):

*In a competitive environment, operators would compete on the basis of current costs, and would not be compensated for costs which have been incurred through inefficiencies*

In competitive mobile markets the pricing structure that has emerged for the vast majority of mobile customers does not distinguish between ‘coverage’ and ‘capacity’ charges in relation to outbound mobile calls. The Commission has not provided a clear cost causality rationale as to why inbound calls should be treated any differently from outbound calls, when it comes to the NRAs’ approach to setting termination charges to achieve an overall efficient pricing structure.

### **5.2.3 Exclusion of other common costs**

The Commission is also arguing that no other fixed and common costs between the termination and other services should be recovered from the termination rate set by NRAs. The grounds on which this seems to be argued is that NRAs should recognise the presence of call externalities, and therefore seek to set termination rates below cost. As indicated in the earlier part of our report, the presence of call externalities can justify the setting of termination rates below cost. As discussed earlier however, in the presence of network externalities the reverse is desirable. The evidence on the magnitude of the two externalities is relatively limited, especially in relation to the value called parties attach to calls received (the call externality). There should therefore not be a presumption that the appropriate level of termination rates is below cost – this is an empirical question.

Even if call externalities were present and required the setting of termination rates below cost, there is no reason a priori to expect any relationship between such externalities and the magnitude of fixed and common costs. In this respect, the justification provided by the Commission for NRAs to seek to reduce or eliminate any contribution made by termination rates to the recovery of fixed and common costs, seems totally unfounded.

Finally, operators must recover fixed and common costs in the long run in order to maintain investment incentives. Ramsey pricing rules set out the optimal recovery of fixed and common costs in order to maximise efficiency – these require that recovery of such costs is done in inverse proportion to the demand (super) elasticities for the relevant services. Due to practical difficulties in applying Ramsey pricing rules, regulators have set regulated prices using

mechanical rules such as Equi-Proportionate Mark Ups (EPMU) and the LRAIC (Long-Run Average Incremental Cost) approach to recover a proportion of fixed and common costs from regulated prices (see Annex 3 for a description of the different approaches).

A “pure” LRIC approach, as seems to be advocated by the Commission, by setting the price of regulated services to only include the avoidable costs of delivering that service will, by definition, recover no fixed and common costs from that service. A zero allocation of common costs to a service cannot be consistent with a Ramsey pricing rule, as this would require that the super-elasticity for the service to be infinitely higher than for other services. Thus, even in the presence of call externalities, a “pure” LRIC approach would result in prices that were demonstrably inefficient.

### 5.3 THE PROPOSED COST ESTIMATION APPROACH

#### 5.3.1 Indirect costs

Paragraph 4 of the draft recommendation identifies avoidable costs and common costs, with a manager’s salary being given as an example of a common cost. This classification ignores the existence of indirect costs, those costs which have an indirect causal relationship with delivering an increment of demand. Thus, for example, while an individual manager’s salary may not directly relate to the delivery of mobile termination services, if this increment was not required, there would be a reduction in the network infrastructure required, in the number of staff maintaining the network and hence in the number of managers required. Thus managers’ salaries can have an indirect causal relationship with the delivery of MTRs, and should be considered avoidable costs.

The Commission’s proposals, to the extent that they propose identifying indirect costs as common costs rather than avoidable costs, would underestimate the level of incremental costs.

#### 5.3.2 Bottom-up modelling

Regulatory network costing should attempt to derive a best estimate of the expected forward looking costs of an efficient operator. It should be noted that in a competitive market, the actual level of costs would be expected to be in a range around this efficient level of costs, reflecting risks associated with making investment decisions without perfect foresight.

Basing information on a bottom up model alone risks producing inaccurate estimates of the level of costs for a number of reasons:

- Inaccurate estimation of the number of network elements required, by failing to take full account of issues such as terrain and non-homogeneity of demand when estimating costs;
- Inaccurate estimation of operating costs incurred by failing to reflect country specific characteristics, such as for example terrain, required capacity and coverage in different parts of the country (e.g. to reflect

tourism flows, or seasonal demand), differing operating costs in different types of regions; and

- Not taking full account of the costs associated with migration to new technologies.

Mobile operators have generally developed their businesses in a competitive market, with strong incentives to minimise costs.<sup>56</sup> Therefore, where possible, a validation exercise should attach weight to evidence indicating the actual costs of mobile operators, compared to cost estimates produced from ‘hypothetical’ cost models.

### 5.3.3 Considering new technology

The costing exercise should take account of an operator’s need to upgrade the network over time to minimise costs. However this must consider the series of investment decisions made by operators over time rather than simply being based on the latest available technology. For example, given the constant evolution of technology, it may be more cost efficient to not deploy the latest technology, but to wait until current technology provides a material benefit and/or the existing technology is no longer fit for purpose. [An example can be seen in PC operating systems where the introduction of a new operating system, for example Windows Vista, does not result in all businesses immediately migrating to this new system].

The Modern Equivalent Asset principle within Current Cost Accounting allows this constant technological progress to be reflected in costs without requiring bottom-up models to constantly reflect cutting edge technology.

The Commission’s proposed requirement that the modelling of the core network should be based on NGNs, when such networks are only now beginning to be deployed, does not appear to fully recognise either the current cost base of operators or the existing, well established, treatment of technological evolution in Current Cost Accounting. Given the limited operating experience on NGNs, there is a strong risk that such an approach would produce inaccurate estimates.

## 5.4 CONCLUSIONS

In this chapter we examined the Commission recommendation on the regulatory treatment of fixed and mobile termination rates in the EU, as far as it relates to some key aspects of setting of appropriate mobile termination charges. We have argued that:

- The Commission’s proposal to exclude the costs of a minimum ‘coverage’ network from the costs that are recovered from call services, is not justified on cost causality principles, and is inconsistent with the pricing structures observed in competitive mobile markets for such services;

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<sup>56</sup> The fact that call termination may be considered a bottleneck does not affect this conclusion. As most assets are common between call origination and termination, the beneficial effect of competition on minimising the costs of call origination spread over call termination services.

- The Commission's proposal to exclude from the mobile termination rate, any contribution to the recovery of fixed and common costs and of indirect costs, is very unlikely to lead to an efficient pricing structure, as there is no relationship between the magnitude of such costs and the materiality of any call externality. Even in the presence of call externalities, we would expect an efficient pricing structure to require all services to make some contribution to the recovery of all these costs.
- The requirement that the modelling is based on an NGN network, when such technology is now beginning to deploy, risks to produce inaccurate estimates.



## 6 Conclusions

In this report we have analysed what would be the likely impact on consumers of drastically reducing mobile termination rates (MTRs) below efficient levels. The conclusions are as follows:

- Both the economic theory and the empirical evidence indicate that consumers can not be expected to be better off by reducing MTRs below cost.
- There is no evidence showing that efficient MTRs are below costs. In fact, existing information points to low non-internalised call externalities. Thus cost based MTRs seem to be the most reasonable benchmark to set regulated prices.
- The reduction in consumer welfare of setting inefficiently low MTRs is likely to be substantial. These losses come from the lower level of subscription compared to a counter-factual of termination rates being set at cost. The lower level of subscription is the result of higher retail prices, as the costs of incoming calls are not covered by termination revenues.
- Consistently with the economic theory, the US experience exhibits relatively low penetration and coverage and high usage. If the US price plans were applied to Europe, we estimate that heavy users would be better off, while low and medium users would be worse off. It is this reduction in value for less intensive users that explains the lower levels of penetration in the US, and the low number of prepaid users. Overall, more European customers would be expected to be worse off, as the proportion of low and medium users is higher than the proportion of high users, in Europe.
- As currently drafted, the EC recommendation on the regulatory treatment of fixed and mobile termination rates will likely underestimate the costs of terminating calls.



## Annex 1: Adjustments in MoU and ARPU

The purpose of this annex is to explain the adjustments made to the MoU and ARPU reported by the mobile operators in order to make homogeneous US-EU comparisons.

We make three adjustments

- MoU Adjustment #1: to transform billed minutes into conversation minutes in both the US and the European countries;
- MoU Adjustment #2: to control for the double counting of on-net calls in the US— as they are billed to both the outgoing and the incoming leg of the call; and
- Voice ARPU Adjustment #1: to remove termination revenues from the voice ARPU of operators in European countries because their ARPU includes M2M termination revenues twice (via retail prices charged to customers and via termination revenue charged to other operators).

### MOU ADJUSTMENT #1: FROM BILLED MINUTES TO CONVERSATION MINUTES

The billing method is different across countries: while all US operators bill by minutes, which implies that conversation time is rounded up to the next full minute increment, there is a wide range of billing methods in the EU (by seconds, by minutes, with a minimum charge of 30 or 60 seconds, etc.).

In addition, there are two other main differences in billing that must be taken into account: ring time and unanswered calls, which are always free in Europe but not in the US.

We therefore need to transform the MoU reported by the operators, which generally correspond to billed minutes, to conversation minutes. In order to do so we calculate, for each European country under study, a conversation time/billing time ratio (or Adjustment #1 ratio, A1R). This ratio is used to multiply the original MoU figure to obtain the (Partially) Adjusted MoU for each country, which reflects conversation minutes of use.

$$\text{Partially Adjusted MoU} = \text{Original MoU}^{57} * \text{A1R} \quad (1)$$

To calculate the conversation time/billing time ratio for a given country we divide the average conversation time by the average billing time.

$$\text{A1R} = \text{ACT}/\text{ABT} \quad (2)$$

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<sup>57</sup> The MoU is taken from Merrill Lynch's Q407 Global Wireless Matrix

where:

ACT = average conversation time (seconds)

ABT = average billing time (seconds)

We obtain the information regarding the average conversation time from the OECD basket for medium user (108 seconds)<sup>58</sup>. Following the standard procedure to transform billing time into conversation time, we calculate the average billing time.

$$ABT = MC + BI * e^{(-MC/ACT)} / 1 - e^{(-BI/ACT)} \quad (3)$$

where :

ABT = average billing time (seconds)

MC = minimum charge (seconds)

BI = billing increment (seconds)

ACT = average conversation time (seconds)

For Europe, we obtain MC and BI for each country from Teligen's OECD Telecoms Price Benchmarking Baskets 2006, which describes the billing methods of EU mobile operators. ACT is taken from the OECD medium-user basket (108 seconds). We therefore have data for all the variables in (3) except for ABT, which we can calculate by solving the equation above.

### Example

As explained above, Average Conversation Time (ACT) for Austria is 108 seconds. The minimum charge (MC) for an Austrian consumer is 60 seconds, and the billing increment (BI) is 30 seconds. Using equation (3) we conclude that the Average Billing Time (ABT) equals 131 seconds.

$$ABT = 60 + 30 * e^{(-60/108)} / 1 - e^{(-30/108)} \quad \rightarrow ABT = 131$$

This implies that the conversation time/billing time ratio (or Adjustment 1 ratio, A1R) equals 0.83.

$$A1R = ACT/ABT = 108/131 = .83$$

We now multiply the MoU reported by Merrill Lynch for Austria (192 minutes) by A1R to obtain the (Partially) Adjusted MoU:

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<sup>58</sup> Teligen, OECD Telecoms Price Benchmarking Baskets 2006

Partially Adjusted MoU =  $192 * .83 = 159$  minutes

We see from this last equation that the MoU adjustment for Austria is 17% (i.e.  $1 - .83$ ). The adjustment for the rest of the EU countries varies depending on the billing method and ranges from 23% for Italy and Finland to 0% for those countries that bill by second.

For the US, we use the same methodology – assuming call duration follows a negative exponential distribution – but we adapt it to take into account the fact that customers are billed for ring time and sometimes for unanswered calls. We know the formulae for the average billing times of answered and unanswered calls.

$$ABT_{AC} = MC + BI * e^{(-MC/(ACT+MRT_{AC}))} / 1 - e^{(-BI/(ACT+MRT_{AC}))} \quad (4)$$

where :

$ABT_{AC}$  = average billing time for answered calls (seconds)

MC = minimum charge (seconds)

BI = billing increment (seconds)

ACT = average conversation time (seconds)

$MRT_{AC}$  = mean ring time for answered calls (seconds)

$$ABT_{UC} = MC + BI * e^{(-MC/MRT_{UC})} / 1 - e^{(-BI/MRT_{UC})} \quad (5)$$

where :

$ABT_{UC}$  = average billing time for unanswered calls (seconds)

MC = minimum charge (seconds)

BI = billing increment (seconds)

$MRT_{UC}$  = mean ring time for unanswered calls (seconds)

We also know the formula for the (weighted) average billing time.

$$ABT = ABT_{AC} + \alpha * ABT_{UC} \quad (6)$$

where:

ABT = average billing time (seconds);

$ABT_{AC}$  = average billing time for answered calls (seconds);

$ABT_{UC}$  = average billing time for unanswered calls (seconds); and

$\alpha$  = billed unanswered calls/answered calls

All companies bill by minutes in the US, which implies that both MC and BI are 60 seconds. We assume  $MRT_{AC}$  and  $MRT_{UC}$  are 15 and 25 seconds, respectively. According to CTIA's Semi-Annual Industry Survey 2007, ABT for the US is 204 seconds.  $\alpha$  is the product of two elements: the percentage that unanswered calls represent over answered calls and the percentage of unanswered calls that are billed to customers. We assume unanswered calls represent 15% of answered calls and we calculate the percentage of calls that are billed to customers taking into account the different policies of US operators. Specifically, Verizon Wireless and AT&T charge for all unanswered calls with ring time exceeding 60 and 30 seconds, respectively. Sprint never charges for unanswered calls. As we did not find information for the other operators, we have conservatively assumed that the rest of operators do not charge for unanswered calls. Using the operators market shares reported in *Q407 Global Wireless Matrix*, we conclude that 21% of unanswered calls are billed to customers. This implies that billed unanswered calls are 3% ( $15\% * 21\%$ ) of answered calls, i.e.,  $\alpha = .02$ .

We now have 3 equations with three unknowns ( $ACT$ ,  $ABT_{AC}$  and  $ABT_{UC}$ ), so we are able to solve the system and obtain  $ACT$ , which is equal to 157. This way we can calculate the Adjustment 1 ratio for the US and apply it to the MoU reported by Merrill Lynch to obtain the (Partially) Adjusted MoU.

$$A1R = ACT/ABT = 157/204 = .77 \quad (7)$$

$$\text{Partially Adjusted MoU} = \text{Original MoU} * A1R = 812 * .77 = 624 \quad (8)$$

In other words, US reported MoU should be reduced by 23% (i.e.  $1 - 0.77$ ) to reflect true conversation minutes.

## MOU ADJUSTMENT #2: ON-NET CALLS

The number of billed minutes differs between RPP countries and CPP countries. In RPP countries on-net minutes are billed twice, both to the person who makes the call and to the person who receives it. However, under CPP on-net minutes are billed once, only to the person who makes the call. As the next table shows, billed minutes for the other types of calls are the same under both systems.

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\* We take the original MoU from Merrill Lynch's Q407 Global Wireless Matrix

	CPP minutes	RPP minutes
<b>F2M</b>	1	1
<b>M2M on-net</b>	1	2
<b>M2M off-net</b>	2	2
<b>M2F</b>	1	1
<b>M2International</b>	1	1
<b>Received in mobile abroad</b>	1	1
<b>Others</b>	1	1

**Table 7: Billed minutes under RPP and CPP**

*Source: Frontier Economics*

By using the traffic distribution shown in the next table (which corresponds to Spain<sup>59</sup> as we did not have data for the US) we estimate that 1 conversation minute is counted 1.23 times in CPP countries<sup>60</sup>, i.e. EU countries, and 1.74 times in RPP countries<sup>61</sup> such as the US. The ratio between these two values gives us a conversion factor (A2R) equal to 0.71 which is to be applied to RPP minutes.

In other words, we know each minute is counted 1.74 times in RPP countries but only 1.23 times in CPP countries. Therefore, if we want to adjust the MoU in a RPP country in order to compare it with the MoU in a CPP country we need to divide the original MoU by 1.74 and multiply it by 1.23 or, equivalently, multiply the original MoU by 0.71.

<sup>59</sup> CMT, Annual Report, pp. 198, 221

<sup>60</sup>  $1.23 = 10\% * 1 + 51\% * 1 + 23\% * 2 + 11\% * 1 + 1\% * 1 + 1\% * 1 + 3\% * 1$  (see table 2)

<sup>61</sup>  $1.74 = 10\% * 1 + 51\% * 2 + 23\% * 2 + 11\% * 1 + 1\% * 1 + 1\% * 1 + 3\% * 1$  (see table 2)

	Call distribution	CPP minutes	RPP minutes
<b>F2M</b>	<b>10%</b>	<b>1</b>	<b>1</b>
<b>M2M on-net</b>	<b>51%</b>	<b>1</b>	<b>2</b>
<b>M2M off-net</b>	<b>23%</b>	<b>2</b>	<b>2</b>
<b>M2F</b>	<b>11%</b>	<b>1</b>	<b>1</b>
<b>M2International</b>	<b>1%</b>	<b>1</b>	<b>1</b>
<b>Received in mobile abroad</b>	<b>1%</b>	<b>1</b>	<b>1</b>
<b>Others</b>	<b>3%</b>	<b>1</b>	<b>1</b>
<b>Billed calls</b>	<b>100%</b>	<b>1.23</b>	<b>1.74</b>
<b>Conversion factor RPP to CPP</b>	= 1.23/1.74 = 0.71		

**Table 8: RPP minutes/ CPP minutes ratio**

**Source: Frontier Economics**

We apply this adjustment to the Partially Adjusted MoU to obtain the Adjusted MoU.

$$\text{Adjusted US MoU} = \text{Partially Adjusted US MoU} * A2R \quad (8)$$

$$\text{Adjusted US MoU} = 624 * .71 = 442 \quad (9)$$

As on-net traffic is free in the US, the proportion for this type of traffic is presumably higher in the US than in Spain, which would produce a lower conversion factor. By taking the proportion of on-net traffic for Spain we are underestimating the double-counting problem and overestimating the difference in MoU between US and Europe.

### **VOICE ARPU ADJUSTMENT #1: TERMINATION REVENUES**

CPP operators include wholesale termination revenues in the ARPU figures. As the price of outgoing M2M off-net calls also includes termination payments, these are counted twice. This problem does not arise in the US as M2M interconnection is settled by using B&K. We therefore subtract the wholesale termination revenues (TR) obtained by European operators from their original ARPU data.



$$\text{Adjusted Voice ARPU} = \text{Original Voice ARPU}^{\bullet} - \text{TR} \quad (10)$$

We estimate TR by multiplying M2M Termination Minutes by the Mobile Termination Rate (MTR) in each country.

$$\text{TR} = \text{MTR} * \text{M2M Termination Minutes}$$

M2M Termination Minutes for each country are obtained multiplying the MoU by the Proportion of M2M Off-net Traffic.

$$\text{M2M termination minutes} = \text{Adjusted MoU} * \text{Proportion of M2M Off-net Traffic} \quad (11)$$

Finally, the proportion of M2M off-net traffic (.19) is taken from public data of the Spanish market<sup>62</sup>, as shown in the following table.

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<sup>•</sup> We calculate the Original Voice ARPU using data from Merrill Lynch's Q407 Global Wireless Matrix

<sup>62</sup> CMT, Annual Report, pp. 198, 221

	Spain call distribution	CPP minutes	RPP minutes
<b>F2M</b>	<b>10%</b>	<b>1</b>	<b>1</b>
<b>M2M on-net</b>	<b>51%</b>	<b>1</b>	<b>2</b>
<b>M2M off-net</b>	<b>23%</b>	<b>2</b>	<b>2</b>
<b>M2F</b>	<b>11%</b>	<b>1</b>	<b>1</b>
<b>M2International</b>	<b>1%</b>	<b>1</b>	<b>1</b>
<b>Received in mobile abroad</b>	<b>1%</b>	<b>1</b>	<b>1</b>
<b>Others</b>	<b>3%</b>	<b>1</b>	<b>1</b>
<b>Billed calls</b>	<b>100%</b>	<b>1.23</b>	<b>1.74</b>
<b>M2M termination adjustment</b>	= 23%/1.23 = .19		

**Table 9: RPP minutes/CPP minutes ratio**

**Source: Frontier Economics**

### Example

We have calculated above the Adjusted MoU for Austria, which is 148 minutes. We can therefore calculate M2M termination minutes.

$$\text{M2M termination minutes} = 148 * .19 = 28 \quad (12)$$

Average Mobile Termination Rate for Austria on July 1<sup>st</sup> 2007 was €.09, which equals US\$.11 after applying the exchange rate in *Q407 Global Wireless Matrix*. Termination revenues are therefore US\$3.1.

$$\text{TR} = .11 * 28 = 3.1 \quad (13)$$

Voice ARPU for Austria is US\$28.3. If we subtract the termination revenues we obtain the Adjusted Voice ARPU for Austria.

$$\text{Adjusted Voice ARPU} = 28.3 - 3.1 = 25.2 \quad (14)$$

## Annex 1: Adjustments in MoU and ARPU

This adjustment implies an 11% reduction of Austria's voice ARPU. The reduction for the rest of the European countries ranges from 10% for Belgium to 20% for Poland.

## Annex 2: Details on the results of modelling

### INTRODUCTION

In this chapter we offer details on the modelling exercise of the potential impact of reducing MTRs below cost on consumers. This includes the impact on

- overall average prices paid;
- mobile market penetration; and
- the total value obtained by consumers from using mobile telephony.

The methodology adopted for this analysis is based on a simulation model of competition between mobile operators following the standard “Hotelling type” differentiated Bertrand model adopted in most of the academic literature on the topic of mobile pricing and the impact of mobile termination rates.

This model allows for subscribers to choose between competing networks, based on the relative value that each network offers to its subscribers. This value, the per capita consumer welfare, is measured as the difference between the value that a consumer gets for the product he/she consumes, in this case the value of making and receiving calls, less any charges made by the mobile operator to which he/she is subscribed. The model also simulates the impact of changes in the level and structure of prices on the likely levels of mobile penetration.

The model abstracts from the existence of network externalities. These externalities arise when existing subscribers of a network benefit from new subscribers joining the network. In mobile markets the presence of additional subscribers generates a positive externality on existing ones since it gives the possibility of calling additional people. The implication of this is that, in the presence of network externalities, the desirable level of the termination rate is expected to be above cost, as described in Section 2. We have decided not to model network externalities explicitly, in the interest of keeping the simulation and results more transparent (and tractable). This implies that the results do *not include* the negative impact on welfare from setting a termination charge below cost, in the presence of network externalities.

This approach involves a significant amount of calibration and a certain degree of judgement. The greatest sensitivities relate to the assumed scale of any existing call externality. By call externality we refer to the relative value that a consumer gets when he/she receives a call, compared to the value this consumer gets when making a call.

### THE MODEL

The model has been used to analyse the impact of lowering MTRs on a typical Western European market and also for the impact on a typical Central and Eastern European one. In each case the demand for mobile to mobile (M2M), fixed to mobile (F2M) and mobile to fixed (M2F) calls have been calibrated at existing call prices so that per capita demand is typical for current experience of

the market in question. The model was also calibrated to approximate the LRIC costs for call origination and call termination.

The model analyses the impact of altering MTRs on the volume of M2M and F2M calls. The model assumes in all cases that MTRs for M2M and F2M calls are equal. The model also analyses the effect of reducing MTRs under two structures of retail tariffs, one where networks do not charge for receiving calls and the other where networks do charge reception charges. In this last case called parties pay a price for receiving calls.

In the model it is also assumed that the demand for calls has a constant elasticity (rather than linear demand). This is because linear demand functions can produce erratic and unpredictable results as retail prices move a long way from their current levels, due to the impact such a change has on price elasticities. The elasticity of demand for calls and the elasticity of participation were calibrated by reference to US data, allowing the differences in participation and call charges to be reasonably reflected in the sensitivity of demand.

In the absence of evidence on the scale of call externalities the impact of reducing MTRs has been estimated for a range of possible externality values.<sup>63</sup> In our view it is likely that call externalities not already internalised within particular user groups, are likely to be relatively small. Hence in the consideration of our results we consider that scenarios with low call externalities are intrinsically more plausible than those with larger call externalities.

Finally, we have sought to model the impact of changing MTRs and call structures on mobile penetration. In our basic model it is assumed that all subscribers behave in the same way (as regards call volumes) and differ only insofar as they have different search costs in choosing to join one of the two networks. In reality of course subscribers are very varied in their calling behaviour and this will mean that reductions in the *average* value that consumers get from mobile communications will result in some subscribers (who make relatively few calls) finding that it is no longer in their interests to continue being mobile subscribers. These customers will quit the network, leading to a fall in overall mobile penetration. We have calibrated mobile participation as a function of overall average consumer welfare based on the evidence that we have from different mobile markets.

## Retail tariffs

The model treats subscribers as contract customers, paying call charges and a fixed periodic subscription charge.<sup>64</sup> This assumption seems reasonable given the prevalence of packages in the US offering large “buckets” of minutes.

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<sup>63</sup> The scenario of low call externalities implies that the ratio between the benefit received by the called party and that of the calling party is 0.1. In the high call externality, this value is 0.7

<sup>64</sup> The model assumes that consumers are offered a single contract by each mobile operator, abstracting from the existence of post-pay and pre-pay customers with a potential heterogeneity in terms of the call externality.

The model assumes uniform on-net and off-net pricing, which follows the predictions in Jeon *et al* (2004). In the absence of reception charges networks will set call charges at the average cost of on-net and off-net calls. Hence call charges fall as the MTR declines.<sup>65</sup> The reason is that lower MTRs translate in lower off-net cost for call originating networks, while the cost of on-net calls does not depend on the level of MTRs. As a result the average cost of on-net and off-net calls falls, and so do call retail call prices, as MTRs decline.

Jeon *et al* (2004) also predict that with competitively set charges for receiving calls (in both off-net and on-net calls), optimal outbound charges will equal the cost of off-net calls (equal for on-net calls) and so outbound call charges fall faster as MTRs decline than in the absence of reception charges. Now, in addition to off-net call costs falling as MTRs decline, the net costs of on-net calls also decline due to the reception charge earned by the originating mobile operator in on-net calls. In this scenario, competitively set charges for receiving calls are fixed to recover any shortfall in costs due to interconnection charges being set below cost.

### Factors affecting the results

Without reception charges the effect of reducing call charges on M2M and F2M calls is to increase the average volumes of calls made per subscriber. In isolation this is obviously beneficial to subscribers. However, in the absence of reception charges, reducing MTRs *also* causes competing networks to increase their fixed subscription charges to subscribers so as to recover the losses made on calls. Remember that, without reception charges, all networks will fail to fully recover the cost of on-net calls through call charges, while they are also making a loss on terminating off-net calls on their own networks because the MTR is below cost.

The increase in subscription charges caused by reducing MTRs has a detrimental effect on consumer welfare, which offsets the effect of cheaper calls. The net effect on consumer welfare depends on the balance of these two effects.

In contrast, if reception charges are permitted then networks do not make losses on calls (on average) so the pressure to increase fixed subscription charges is alleviated. However, the introduction of reception charges has a mixed effect. On subscribers, provided the reception charge is small (or the value of the call externality is large), reception charges will have no effect on call volumes, while the reduction in MTRs, and consequently lower call charges, will result in an increased average volumes of calls made per subscriber. This would unambiguously make consumers better off. However, if reception charges become large (or the value of the call externality is small), high reception charges cause subscribers to refuse to accept calls, which may reduce the average volume of calls made. This can seriously reduce subscribers overall welfare, because of its impact on total call volumes. The overall impact on consumer welfare depends on the trade off between these factors.

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<sup>65</sup> US evidence shows that mobile operators do not price off-net calls below on-net calls, even in the presence of B&K. This would be the prediction of the model with network-based price discrimination.

These factors, as well as influencing average per capita consumer welfare, also translate into changes in the mobile participation rate, as increases (or decreases) in the average benefit granted to mobile consumers will, at the margin, lead to low value subscribers joining (or leaving) the market.

The following sections present sequentially the results obtained on a typical Western European market and for the impact on a typical Central & Eastern European one.

## WESTERN EUROPE RESULTS

### *Without reception charges*

In the case where networks do not charge for receiving calls, the effect of reducing MTRs results in higher volume of calls, due to cheaper call charges, but also higher subscription charges per subscriber (to compensate for networks making losses on calls). Remember that without reception charges the uniform call charge induces network operators to make losses on on-net calls and on terminating off-net calls on their own networks, with MTRs below cost.

As the volume of calls that a typical subscriber would make increases, so the value consumers get from being on the network also rises and, other things being equal, penetration would rise. This effect on the value of consumers joining the network is larger the larger is the call externality on the receivers. On the other hand the value for a consumer in joining the network decreases as subscription charges increase.

We find that the reduction in call charges could increase Average Minutes of Use (AMoU) significantly, by up to 1.6 times when MTRs equal 2€ cents. The effect on AMoU are shown in the following Table 1.<sup>66</sup> Under this caller party pays scenario, the effect of reducing MTRs on AMoU does not depend on the size of the call externality.

We have evaluated the total value for a typical consumer of joining the mobile network as the MTRs decrease. Absent reception charges, and depending on the magnitude of the call externality, we find that reducing MTRs could reduce consumer benefits in Western Europe. At MTR equal to 2€ cents the average consumer welfare per subscriber could decrease by between 3%, if call externalities are assumed to be low and by less than 1% if large call externalities are assumed. The fall in per subscriber consumer welfare is due, in the current scenario, to an increase in subscription charges, which more than offsets the increase in consumer welfare due to higher volumes of calls (due to lower call charges).

The model treats the likelihood of participation in the market to be a function of the average consumer welfare offered by each network. Hence, as the consumer welfare per subscriber falls when MTRs decrease, so does participation in the

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<sup>66</sup> Without reception charges the volume of calls and the level of the subscription charge do not depend on the value of the call externality.

market and mobile penetration rates. The reduction in consumer surplus with MTRs equal to 2€ cents could lead to a reduction in mobile penetration of up to 9%, when call externalities are small, and up to 1%, when call externalities are large. This is shown in Table 1.

The combination of these factors – the decrease in per subscriber consumer welfare and lower levels of penetration with lower MTRs - implies that total consumer surplus could fall up to between 1% and 11% if MTRs are set equal to 2€ cents, with drastic more reductions with MTRs eventually going to 1€ cent.<sup>67</sup>

WE CPP		Average Minutes of Use (% of AMoU with MTR at cost)	Per subscriber Consumer Surplus (% of CS with MTR at cost)		Penetration		Total Consumer Surplus (% of CS with MTR at cost)	
			Low Call Externality	High Call Externality	Low Call Externality	High Call Externality	Low Call Externality	High Call Externality
MTR (€ cents)	2	162%	97%	100%	91%	99%	89%	99%
	1	198%	95%	99%	84%	96%	81%	94%

Table 10: Average Minutes of Use, Per subscriber Consumer Surplus, Penetration and Total Consumer Surplus. Western Europe - Without reception charges

Source: Frontier Economics

### *With reception charges*

In the case where networks do charge for receiving calls, the effect of reducing MTRs has a mixed effect. At the beginning, the volume of calls rises as MTRs are reduced below the cost of termination, provided that reception charges are small or the value of the call externality is large. The effect of a larger volume of calls is due to cheaper call charges, for MTRs below, but still close to, termination cost levels and consequently, relatively low reception charges. However as MTRs are reduced further, and reception charges become high relative to the call externality), the volume of calls decline, as high reception charges cause subscribers to refuse to accept calls. In the case where networks do charge for receiving calls subscription charges do not increase as MTRs fall. The reason for subscription charges being kept constant is that with reception charges, networks do not make losses on calls. The effective call charges in the event of a call, paid by the caller and the receiver, cover exactly the cost of such call.

The impact on AMoU, when networks charge for receiving calls, is highly sensitive to the call externality. For small values of the call externality reducing MTRs to 2€ cents could result in AMoU falling to 32% of the level achieved at cost based MTRs. This effect is mainly due to the effect of high reception charges on the subscribers' willingness to receive calls. For low call externalities

<sup>67</sup> Total consumer surplus aggregates the consumer surplus of all subscribers in the market.



subscribers will start not answering their phones, even for low reception charges (or what is the same for relatively high MTRs). With large call externalities, MTRs equal to 2€ cent lead to 50% increase in the volume of call minutes per subscriber.

As before, we have evaluated the total value for a typical consumer of joining the mobile network as the MTRs decrease. With reception charges, and depending on the magnitude of the call externality, we find that reducing MTRs could reduce average consumer benefits in Western Europe. At MTR equal to 2€ cents the average consumer surplus per subscriber could decrease by 12% (if call externalities are assumed to be low) or increase by 1% (if call externalities are assumed to be large). As shown in Table 2Table 11, for assumed large call externalities, consumer surplus per subscriber may rise very slightly from the reduction of MTRs to 2€ cent.

As before, the model also treats the likelihood of participation in the market to be a function of the average consumer surplus offered by each network, hence as consumer surplus per subscriber falls, so does the mobile penetration rate. The reduction in consumer surplus per subscriber when reducing MTRs at 2€ cents could lead to a 37 % reduction in penetration, when call externalities are small, or increase it by 2%, when call externalities are large.

The combination of these factors, the decrease in per subscriber consumer welfare and lower levels of penetration with MTRs equal to 2€ cents, implies that total consumer surplus could fall up to 45% or increase by 3% when MTRs are lowered to 2€ cent.

WE RPP		Average Minutes of Use (% of AMoU with MTR at cost)		Per subscriber Consumer Surplus (% of CS with MTR at cost)		Penetration		Total Consumer Surplus (% of CS with MTR at cost)	
		Low Call Externality	High Call Externality	Low Call Externality	High Call Externality	Low Call Externality	High Call Externality	Low Call Externality	High Call Externality
MTR (€ cents)	2	32%	150%	88%	101%	63%	102%	55%	103%
	1	30%	143%	87%	100%	60%	100%	52%	100%

Table 11: Average Minutes of Use, Per subscriber Consumer Surplus, Penetration and Total Consumer Surplus. Western Europe - With reception charges

Source: Frontier Economics

## CENTRAL AND EASTERN EUROPE RESULTS

We have also calibrated our model for a typical Central or Eastern European mobile market.

In general we find that the results are very similar to those for Western Europe in terms of the impact on call volumes, mobile and consumer welfare, albeit starting from a base of lower AMoU and penetration.

### *Without reception charges*

The reduction in call charges could increase AMoU significantly, by up to 1.6 times. This is shown in the following Table 3. Remember that without reception charges the uniform call charge induces network operators to make losses on on-net calls and on terminating off-net calls on their own networks, with MTRs below cost.

Absent reception charges, and depending on the magnitude of the call externality, we find that reducing MTRs to 2€ cents could reduce per capita consumer surplus in CEE by 2% if call externalities are assumed to be low, and keep it invariant if call externalities are assumed to be large. As shown in Table 3 per capita consumer surplus may fall further as MTRs reduces to 1€ cent. The overall fall in consumer surplus is due, in the current scenario, to an increase in subscription charges, which more than offsets the increase in consumer welfare due to higher volumes of calls.

The reduction in consumer surplus at MTRs equal to 2€ cents could lead to a reduction in penetration of up to 9%, when call externalities are small, or remain constant for large call externalities. This is shown in Table 3.

The combination of these factors implies that total consumer surplus could fall by 10% when call externalities are assumed to be small. However, for large call externalities we estimate that total consumer surplus would remain invariant as MTRs are equal to 2€ cents although it would be reduced if MTRs reduce further. This is shown in Table 3.

## Annex 2: Details on the results of modelling

CEE RPP		Average Minutes of Use (% of AMoU with MTR at cost)	Per subscriber Consumer Surplus (% of CS with MTR at cost)		Penetration		Total Consumer Surplus (% of CS with MTR at cost)	
			Low Call Externality	High Call Externality	Low Call Externality	High Call Externality	Low Call Externality	High Call Externality
MTR (€ cents)	2	167%	98%	100%	91%	100%	90%	100%
	1	206%	97%	99%	84%	97%	81%	96%

Table 12: Average Minutes of Use, Per subscriber Consumer Surplus, Penetration and Total Consumer Surplus. Central and Eastern Europe - Without reception charges

Source: Frontier Economics

### *With reception charges*

As we have already noted, the impact on AMoU is highly sensitive to the call externality. For small values of the call externality reducing MTRs to 2€ cents could result in the Average Minutes of Use falling to 33% of the level achieved at cost based MTRs. This effect is mainly due to the effect of high reception charges on the subscribers' willingness to receive calls. For low call externalities subscribers will start not answering their phones, even for low reception charges (or what is the same for relatively high MTRs). With large call externalities the total volume of calls might increase by 53%. Table 4 shows the results for small and large call externalities.

The overall impact on consumer welfare, which translates in participation rates, depends on the trade off between these various factors. Depending on the magnitude of call externalities, we find that reducing MTRs to 2€ cents could reduce per capita consumer surplus by 13%, if call externalities are small, or raised it by 1% if call externalities are large. If call externalities are low the effect of reception charges is to reduce per capita consumer surplus significantly for any reduction in MTRs. This is shown in Table 4. The overall fall in consumer surplus is due, in the current scenario, to a decline in the volume of calls and the lower value that subscribers get from receiving calls when the MTRs decline, and consequently reception charges rise.

The reduction in consumer surplus with MTRs equal to 2€ cents could lead to a reduction in penetration of up to 37%, when call externalities are small. This is shown in Table 4. When call externalities are assumed to be large reducing MTRs to 2€ cents may induce a 3% increase in penetration.

The combination of these factors implies that total consumer surplus could fall up to 45% for small call externalities. However, for large call externalities we estimate that total consumer surplus could be fractionally higher.

CEE RPP		Average Minutes of Use (% of AMoU with MTR at cost)		Per subscriber Consumer Surplus (% of CS with MTR at cost)		Penetration		Total Consumer Surplus (% of CS with MTR at cost)	
		Low Call Externality	High Call Externality	Low Call Externality	High Call Externality	Low Call Externality	High Call Externality	Low Call Externality	High Call Externality
MTR (€ cents)	2	33%	153%	87%	101%	63%	103%	55%	103%
	1	31%	146%	86%	100%	59%	100%	51%	101%

Table 13: Average Minutes of Use, Per subscriber Consumer Surplus, Penetration and Total Consumer Surplus. Central and Eastern Europe - With reception charges

Source: Frontier Economics

## Annex 3: Cost modelling concepts

To date so called “LRIC” regulatory cost models, attribute total network costs to services including a share of common corporate costs, across the range of network services provided. This allocation is carried out through a two stage process

1. An LRIC exercise to estimate the costs of an efficient network;
2. An Element Based Costing (EBC) approach to allocate the overall network cost to individual services, for example mobile termination.

Under an EBC approach the cost of each component is then attributed to the services using the component on the basis of a common metric, such as call minutes, which reflects the cost driver for the component. The unit cost for a given component allocated to a service is the average unit cost per measure of volume multiplied by the average number of times the service uses the component (the ‘routing factor’). Due to this averaging process, such models are sometimes termed Long Run Average Incremental Cost models (LRAIC).

There are a number of advantages to a LRAIC approach:

- As the allocation of component costs to services is a fully allocated cost approach, there is no need for an additional stage of mark ups to recover fixed and common costs;
- As component costs, including any fixed costs, are allocated on the basis of a consistent metric to all services, the allocation of costs is transparently non-discriminatory;
- As component costs are only allocated to those services that use the components, the principle of unbundling is maintained;
- The overall level of costs can be robustly estimated through a combination of bottom up engineering models and top down information on actual network dimensions; and
- The allocation of costs between services is not dependent on the accurate calculation of cost volume relationships.



## Annex 4: Support tables for the analysis of the US experience

Country	%	Country	%
Austria	86%	Lithuania	83%
Belgium	84%	Luxembourg	92%
Bulgaria	68%	Malta	88%
Cyprus	91%	Netherlands	94%
Czech Republic	92%	Poland	79%
Denmark	92%	Portugal	82%
Estonia	89%	Romania	66%
Finland	93%	Slovakia	81%
France	81%	Slovenia	91%
Germany	78%	Spain	80%
Greece	86%	Sweden	91%
Hungary	82%	UK	87%
Ireland	90%	EU	83%
Italy	91%	US	75%
Latvia	88%		

**Table 14: Percentage of households with at least 1 mobile phone**

Source: For the US: Blumberg SJ, Luke JV. Wireless substitution: Early release of estimates from the National Health Interview Survey, July - December 2007. National Center for Health Statistics. Available from: <http://www.cdc.gov/nchs/nhis.htm>. For Europe: European Commission: Sondage sur les communications électroniques. Eurobaromètre Spécial 293. Novembre – décembre 2007 (available at [http://ec.europa.eu/information\\_society/policy/ecomms/doc/library/ext\\_studies/household\\_07/eb68\\_2\\_ecomm\\_full\\_rep\\_fr.pdf](http://ec.europa.eu/information_society/policy/ecomms/doc/library/ext_studies/household_07/eb68_2_ecomm_full_rep_fr.pdf))

Country	Original value	Adjusted value	Country	Original value	Adjusted value
<b>Austria</b>	192.0	159.1	<b>Italy</b>	139.0	107.1
<b>Belgium</b>	157.0	139.3	<b>Netherlands</b>	151.0	151.0
<b>Czech Republic</b>	115.0	102.1	<b>Poland</b>	96.0	96.0
<b>Denmark</b>	180.0	180.0	<b>Portugal</b>	119.0	103.4
<b>Finland</b>	307.0	236.6	<b>Spain</b>	162.0	162.0
<b>France</b>	249.0	249.0	<b>UK</b>	185.0	185.0
<b>Germany</b>	102.0	90.5	<b>WE</b>	165.3	155.1
<b>Greece</b>	151.0	146.0	<b>CEE</b>	111.2	105.5
<b>Hungary</b>	165.0	144.7	<b>Europe</b>	158.1	148.5
<b>Ireland</b>	239.0	239.0	<b>US</b>	812.0	441.6

**Table 15: Minutes of use (MoU) before and after adjustments to control for non-conversation time**

*Source: Frontier Analysis from Merrill Lynch's information*



Country	Original value	Adjusted value	Country	Original value	Adjusted value
<b>Austria</b>	19.5	17.3	<b>Italy</b>	16.7	14.5
<b>Belgium</b>	23.2	20.8	<b>Netherlands</b>	23.1	19.8
<b>Czech Republic</b>	15.6	13.6	<b>Poland</b>	9.6	7.7
<b>Denmark</b>	22.3	19.0	<b>Portugal</b>	17.1	14.9
<b>Finland</b>	24.4	21.3	<b>Spain</b>	26.2	23.2
<b>France</b>	28.6	25.0	<b>UK</b>	23.7	20.8
<b>Germany</b>	13.5	11.9	<b>WE</b>	21.2	18.5
<b>Greece</b>	20.1	17.0	<b>CEE</b>	11.7	9.6
<b>Hungary</b>	15.6	12.9	<b>Europe</b>	19.9	17.4
<b>Ireland</b>	31.7	27.1	<b>US</b>	29.0	29.0

**Table 16: Average Revenue per User (ARPU) comparison between US and European countries (€)**

*Source: Frontier Analysis from Merrill Lynch's information*

Country	Original value	Adjusted value	Country	Original value	Adjusted value
Austria	0.10	0.11	Italy	0.12	0.14
Belgium	0.15	0.15	Netherlands	0.15	0.13
Czech Republic	0.14	0.13	Poland	0.10	0.08
Denmark	0.12	0.11	Portugal	0.14	0.14
Finland	0.08	0.09	Spain	0.16	0.14
France	0.11	0.10	UK	0.13	0.11
Germany	0.13	0.13	WE	0.13	0.12
Greece	0.13	0.12	CEE	0.11	0.09
Hungary	0.09	0.09	Europe	0.13	0.12
Ireland	0.13	0.11	US	0.04	0.07

**Table 17: Revenue Per Minute (RPM) comparison between US and European countries (€)**

*Source: Frontier Analysis from Merrill Lynch's information*

Country	Original value	Adjusted value	Country	Original value	Adjusted value
<b>Austria</b>	0.119	0.127	<b>Italy</b>	0.148	0.167
<b>Belgium</b>	0.174	0.176	<b>Netherlands</b>	0.174	0.149
<b>Czech Republic</b>	0.280	0.276	<b>Poland</b>	0.202	0.199
<b>Denmark</b>	0.113	0.111	<b>Portugal</b>	0.224	0.225
<b>Finland</b>	0.091	0.102	<b>Spain</b>	0.202	0.179
<b>France</b>	0.126	0.110	<b>UK</b>	0.152	0.134
<b>Germany</b>	0.148	0.148	<b>WE</b>	0.155	0.148
<b>Greece</b>	0.197	0.173	<b>CEE</b>	0.214	0.210
<b>Hungary</b>	0.194	0.183	<b>Europe</b>	0.163	0.156
<b>Ireland</b>	0.143	0.123	<b>US</b>	0.051	0.094

**Table 18: Revenue per Minute (RPM) comparison between US and European countries (PPP - International US\$)**

*Source: Frontier Analysis from Merrill Lynch's information*

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FRONTIER ECONOMICS EUROPE

BRUSSELS | COLOGNE | LONDON | MADRID

Frontier Economics Ltd 71 High Holborn London WC1V 6DA  
Tel. +44 (0)20 7031 7000 Fax. +44 (0)20 7031 7001 [www.frontier-economics.com](http://www.frontier-economics.com)



**Frontier Economics Report: 'A  
literature review of papers on MTRs  
with relevance to B&K'**



# **A literature review of papers on MTRs with relevance to B&K**

A REPORT PREPARED FOR VODAFONE

August 2009



## A literature review of papers on MTRs with relevance to B&K

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## **A literature review of papers on MTRs with relevance to B&K**

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## Executive summary

There is a considerable debate in the economic literature and amongst practitioners on the appropriate level of mobile termination rates (MTRs). In this debate, the relative merits of setting zero MTRs (i.e. Bill and Keep - 'B&K') are often discussed. In this context, Vodafone has commissioned Frontier Economics Europe to undertake a review of the academic literature relating to the efficient setting of MTRs, with specific reference to the efficiency of B&K.

Economic theory on MTRs reflects that cost-based pricing is generally efficient (i.e. welfare maximizing). Departures from this benchmark are usually justified by the existence of call or network externalities. Thus the presence of network externalities supports the imposition of above-cost MTR whereas call externalities require below-cost MTRs.

In this context B&K is efficient only under very specific conditions. It requires the absence of network externalities, the presence of call externalities and, that the cost of origination equals the cost of termination and that the value of calls is shared evenly among senders and receivers. Therefore, the existence of call externalities is a necessary but not a sufficient condition for B&K to be optimal.

It is also important to consider that call externalities are partially internalised by customers through their repeated interaction with other subscribers. In contrast to what is traditionally assumed in the literature, outgoing and incoming traffic are not independent. Outgoing calls usually generate a number of incoming calls. This pattern of reciprocity helps to (partially) internalise call externalities and should be considered in the efficiency of MTRs. That is, only un-internalised call externalities should be relevant for the analysis of efficient MTRs.

While the focus of the discussion of MTRs is often around costs and the existence or otherwise of call and network externalities, it is important to understand that the literature also shows that the level of MTRs has an important impact on inter-network competition, which provides another route by which the level of MTRs may impact on consumer welfare. In particular, excessively low MTRs may be an indication of collusion among operators. If MTRs are set at too low a level then competition between networks may be softened. Specifically, if mobile operators compete in two-part tariffs and price discriminate based on the terminating network, a reduction in MTRs has the effect of increasing the equilibrium subscription fees (alternatively, reducing mobile handset subsidies). This effect is known as the "waterbed effect" and has been empirically tested for the mobile sector. In such circumstances consumers may be left worse off by the imposition of below-cost MTRs.

Given these caveats and that the existing evidence points towards low call externalities, it is quite difficult to support the desirability of B&K on efficiency grounds.

It is frequently argued that B&K could help reduce the gap between large and small operators by reducing existing off-net/on-net price differentials. Such pricing policies generate tariff-mediated network externalities that it is alleged are damaging small operators and even deterring potential entry. The economic

literature indicates that the strategic use of the off-net/on-net price differential in a context with call externalities cannot be avoided with B&K. This is confirmed by the experience in “B&K countries” such as the US, where off-net/on-net price discrimination is common.

There are also models analysing the potential for entry deterrence of high MTRs. However, they do not imply that B&K is efficient. The efficient MTR will mainly depend on the existence of un-internalised network and call externalities.

In conclusion, unless there is empirical evidence on the specific conditions under which it is efficient, B&K is likely to result in a loss in market efficiency.

# 1 Introduction

This report presents an overview of the literature on mobile termination rates (MTRs) and then assesses the implications of this literature for the debate on B&K.

The initial contributions focused on efficiency and operators' incentives to set MTRs in a symmetric context of competition. **Section 2 reviews the basic model considered in this early literature and some recent extensions.**

The basic model analyses competition between two horizontally differentiated operators in the absence of (network or call) externalities. Welfare is maximised when MTRs are cost oriented whereas the MTR that maximises operators' profits may be above or below cost depending on the price structure observed at retail level. A high MTR is profitable only under linear prices and in the absence of on-net/off-net price discrimination. The introduction of non-linear pricing (two-part tariffs) and, in particular, discrimination based on the terminating network reverses operators' incentives. In the latter scenario, a reduction in MTRs is likely to result in higher subscription prices.

The introduction of **call and/or network externalities** exert an impact on both efficiency and operators' behaviour. This is **covered in section 3 of the report.**

*Call externalities* are present when called parties obtain benefits from receiving calls. Whereas *network externalities* exist when subscribers obtain benefits from a larger network, because they have more people to call/communicate with.

The efficient MTR is above cost when network externalities are present. The opposite happens under call externalities. The combination of both may lead to above or below cost efficient MTRs. The lack of contributions analysing the interaction of these two effects does not permit the drawing of a clear conclusion on how efficiency is affected by the level of MTRs. This is important because in most real situations call and network externalities will co-exist, although the call externality will tend to be internalised.

An interesting property present in the models with call externalities is that operators have a strategic incentive to raise their off-net prices, reducing the positive externality exerted to the customers of rival networks. In this context, there is a number of contributions focused on the **potential effect of the on-net/off-net price differential on competition.** **Section 4** reviews the main papers in this area.

In this regard, it is usually argued that B&K will reduce the gap between large and small operators by lessening the extent of off-net/on-net price differentials. However, this is not supported by the economic literature analysing the strategic use of off-net/on-net price differentials. For example, under the model of Hoernig (2007), which is covered in more detail in section 4, a large operator may strategically set retail prices to damage the smaller operators even with MTRs below cost.

Moreover, B&K is also not justified by the models that analyse the strategic use of MTRs to deter entry. In these models the efficient level of MTRs will depend,



as in the basic context, on costs and the presence of un-internalised call and network externalities. Further, a common feature of these theories is that the use of a high MTR is only profitable in the successful scenario in which entry has been deterred. If entry took place operators would have incentives to lower MTRs.

**Section 5 analyses the implications for B&K.** Here we show that B&K is likely to result in a efficiency loss and may imply a less intense competition among networks.

Finally, section **6 concludes.** All the references used in the report are contained in section 7.

## 2 The basic Hotelling model

### 2.1 MAIN ASSUMPTIONS

The basic model, developed in Armstrong (1998) and Laffont, Rey and Tirole (1998a, 1998b) considers competition for subscribers between two differentiated networks (A and B) where there are no network or call externalities. The degree of differentiation between the two networks is inversely related to the intensity of competition.

*Horizontal differentiation:* is usually modelled *à la* Hotelling such that the two operators, located at the extremes of a segment representing the market, compete for a share of the consumer base which is taken to be distributed uniformly on a line between the locations of the two suppliers<sup>1</sup>. The transportation cost that consumers have to incur to reach each of the operators is a proxy for the degree of differentiation between the operators.<sup>2</sup> In the absence of transportation costs both operators would be perfect substitutes as far as consumers are concerned.

*Consumers:* choose a supplier on the basis of which provides them with the highest level of utility. This is measured by the value that the consumer gets from the product less any charges made by the supplier. In the absence of call externalities, consumers' utility depends only on the number of calls originated, not on incoming calls.

*Operators:* provide subscription and call services to consumers. The marginal cost of a call, denoted by  $C$ , is made up of the cost of origination  $C_O$  and the cost of termination  $C_T$ . The sum of these two costs is the marginal cost of an on-net call. The cost of an off-net call is a function of the termination charge to be paid to the receiver's network, denoted by  $a$ .

$$C_{\text{on-net}} = C_O + C_T$$

$$C_{\text{off-net}} = C_O + a$$

In addition, mobile operators face a fixed cost per subscriber, denoted by  $k$ .<sup>3</sup>

### 2.2 RETAIL PRICES

*Retail pricing:* there are several alternatives to consider. If operators can charge separate prices for subscription and usage, operators will set call charges at marginal cost and then compete with each other over the level of the subscription charge. The profit maximizing subscription charge will be inversely related to the intensity of competition/degree of substitution. In the extreme

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<sup>1</sup> The basic model assumes that all consumers in the base will choose either network. There are no consumers which choose not to consume.

<sup>2</sup> The models usually assume linear transportation costs, such that the cost of walking distance  $x$  is  $t \cdot x$ , where  $t$  is the unit cost of transport.

<sup>3</sup> These costs may represent the costs of including the subscriber in the data base, etc.

case where operators are perfect substitutes (no transportation costs) the fixed fee would equal the cost of subscription,  $k$ .

If networks can discriminate (i.e. charge different prices) between on-net and off-net call charges, then:

$$P_{\text{on-net}} = C_O + C_T$$

$$P_{\text{off-net}} = C_O + a$$

If networks cannot price discriminate between on-net and off-net call, the usage price will be a weighted average of the cost of the call, which takes the following form if customers are evenly distributed between both operators:

$$\text{Price}_{\text{Blended}} = C + (1/2)(a - C_T) = (1/2)C + (1/2)(C_O + a)$$

If networks cannot charge two-part (or non-linear) tariffs as shown above, but rather charge “linear tariffs” then call charges will be set above marginal cost and will increase as the intensity of competition declines.

### *Efficiency*

In this simple framework in which call and network externalities are absent and penetration is fixed and complete, optimal retail prices follow the CPP principle, termination fees are cost oriented. Thus, efficiency requires:

$$a_{\text{efficient}} = C_T$$

## 2.3 OPERATORS' INCENTIVES

There is a wide body of literature that addresses the incentives of operators when deciding the level of MTRs. Armstrong (2002) provides an extensive review of the main results considering the setting of FTM and MTM MTRs when these are decided independently from each other. As we will see below, the incentives of operators are radically different in these two scenarios. Armstrong and Wright (2008) contribute to the literature by analysing the joint determination of FTM and MTM MTRs.

### 2.3.1 FTM termination rates

If each mobile customer holds only one cellular phone, and assuming CPP at retail level, then FTM termination involves a competitive bottleneck as emphasised by Armstrong (2002), Armstrong and Wright (2008) and Houpis and Valletti (2005) among others. The key is that each mobile network is a monopolist over delivering calls to its subscribers. Hence, the profit maximizing FTM will be set at the monopoly level even if competition is strong at retail level.

To illustrate, consider the simple model in Armstrong (2002) with the following assumptions:

- Assumption 1. All calls made from mobile networks are terminated on the fixed sector;
- Assumption 2: Mobile subscribers gain no utility from receiving calls (no call externalities);

- Assumption 3: Mobile subscribers do not care about the welfare of the people who call them;
- Assumption 4: Mobile subscribers do not pay anything for receiving calls made to them (Consumer Party Pays or CPP);<sup>4</sup>
- Assumption 5: The mobile sector is perfectly competitive.

Let  $Q(a)$  be the demand for FTM call for a given MTR of  $a$ .

The cost structure for mobile operators is as described in section 2.1. Further, suppose that mobile operators charge two-part tariffs with a usage price of  $p$ . Assumption 5 implies that in equilibrium mobile operators will make no profits<sup>5</sup> and will set their retail prices to maximize subscriber utility subject to a break-even constraint. Because of assumptions 2, 3 and 4 usage prices will be set at marginal costs and the fixed fee will be set to drive profits to zero.

In this context, even though competition leads mobile operators' economic profits to zero, each mobile network has incentives to maximize its termination profits, given by:

$$(a - C_T) Q(a)$$

Therefore, in equilibrium  $a$  is set at its monopoly level ( $a^{mon}$ ). By maximizing access revenue from received fixed calls, mobile operators can compete harder for subscribers subsidizing subscription.

### 2.3.2 MTM termination rates

In the case of MTM MTRs the literature has focused on the joint determination of MTRs as a way to affect competition at retail level.<sup>6</sup> A classical result is that of Gans and King (2001), which shows that operators can relax the intensity of competition by agreeing on a very low MTR. This result is obtained under the basic framework described in section 2.1 when operators compete in two-part tariffs and price discriminate based on the terminating network.

The intuition for this result is that given the equilibrium prices under two-part tariffs,<sup>7</sup> there is a direct relationship between MTRs and off-net call prices and the difference between on-net and off-net prices is given by the mark-up implied by the MTR. In the particular case when the MTR is below cost (negative access mark-up) customers prefer to join smaller operators over larger ones, since the price for off-net calls is below the price for on-net traffic. This creates an incentive for operators to raise their subscription fees since being small is valued by customers. In this way, a reduction in MTRs allows operators to relax the intensity of competition for subscribers. The effect that MTRs exert on other

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<sup>4</sup> The alternative scenario where the receiving party also pays for the call is usually known as RPP.

<sup>5</sup> That is, not profits above the economically efficient level.

<sup>6</sup> See Armstrong and Wright (2008).

<sup>7</sup> Usage prices based on perceived costs and fixed tariffs inversely related to the level of competition.

prices in the operator's bundle, fixed fees in this case, is known as the 'waterbed effect.'<sup>8</sup>

The literature has, however, shown that this result may be sensitive to the prevailing retail price structure. Under linear pricing, high access prices result in the 'raising each other cost effect' which reduces consumer welfare.<sup>9</sup>

However, "*this effect partially or totally disappears when providers can operate a price discrimination between on-net and off-net calls (Laffont et al. (1998b)) or when they compete in non-linear prices (Laffont et al. (1998a)). (...) The collusive power of access charges totally disappears in two part tariffs*"<sup>10</sup>.

In practice, mobile operators do not usually ask for a reduction of MTRs, which raises the question as to whether the linear pricing model; or the two-part pricing model is the most relevant benchmark. Below we consider several papers that provide alternative rationales for mobile operators' behaviour; resulting in higher MTRs which do not necessarily rely on the imposition of linear and non-discriminatory prices at retail level.

### 2.3.3 MTM and FTM termination rates

Armstrong and Wright (2008) extend the basic model of Hotelling competition among mobile operators in order to consider the joint determination of MTM and FTM termination rates. In particular, the paper analyses what would be the profit maximizing MTR if mobile operators set a uniform termination charge for both services (FTM and MTM).<sup>11</sup> When this is the case, operators' incentives to lower MTRs are much reduced because of the effect that this reduction has on the revenues of calls from fixed networks.

The model considers a similar framework to that of Gans and King (2001) for MTM calls.<sup>12</sup> On the other hand, FTM termination enjoys a bottleneck as described in section 2.3.1 As we have already seen before, under these modelling assumptions, if set separately operators will set the FTM MTR at its monopoly level ( $a_{mon}$ ), whereas the MTM MTR will be below cost ( $a_{below}$ ).

If operators decide on a uniform price for MTM and FTM MTRs the resulting MTR will be below cost as in the case of equilibrium MTM MTRs when set separately. The intuition for this result is that profits are neutral with respect to the FTM MTR<sup>13</sup>, but not with respect to MTM: "*Therefore, firms' incentives are*

<sup>8</sup> See Schiff (2007) for an theoretical analysis of the waterbed effect.

<sup>9</sup> See the analysis under *linear non-discriminatory pricing* contained in section 4.2.3 of Armstrong (2002).

<sup>10</sup> Baranes and Flochel (2004), page 2.

<sup>11</sup> Armstrong and Wright (2008) explains this constraint by the possibilities of wholesale arbitrage, meaning that "*a mobile network cannot maintain a high FTM termination charge together with a low MTM termination charge, since the fixed network could then "transit" its calls via another mobile network and so end up paying the lower MTM rate (plus a small transit charge)*". Armstrong and Wright (2008), page 3.

<sup>12</sup> Model described in section 1.1 under two-part tariffs and network discrimination.

<sup>13</sup> That is, these are not affected by the level of this charge. This implies a 100% waterbed effect.

*exactly as if there is only MTM traffic.*<sup>14</sup> However, when there is potential for market expansion (see section 3.1.1, below), so that the base of mobile customers is endogenously determined in the model instead of being constant, then operators will choose a MTR that lies between  $a_{below}$  and  $a_{mon}$ . The key for this result is that in the context with market expansion profits are no longer neutral with respect to FTM MTR, presenting a direct relationship with this price. This creates incentives for operators to ask for a high FTM MTR. In this case, the equilibrium MTR may be above *or* below the efficient level depending on a range of factors. Namely, the potential for market expansion and the importance of FTM calls in relation to MTM traffic.

An alternative scenario where operators will have incentives to set too high MTRs is that in which MTM and FTM MTRs are uniform and set unilaterally by each operator.<sup>15</sup> Hence, despite the fact that a high MTR intensifies network competition, thereby reducing operators' profits, operators' incentives to raise the MTR in order to maximize their revenues from call termination and gain market share - due to the impact that MTRs have on rivals' off-net prices, lead to a MTR above the efficient level but below the monopoly threshold.

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<sup>14</sup> Armstrong and Wright (2008), page 21.

<sup>15</sup> The result that mobile operators have incentives to set above cost MTM MTRs if these are decided unilaterally is also observed in Gans and King (2001).



## 3 Model's extensions

### 3.1 NETWORK EXTERNALITIES

Network externalities arise when existing subscribers of a network benefit from a new subscriber joining the network. In mobile markets the presence of additional subscribers generates a positive externality to existing subscribers, because it creates the possibility of calling additional people and of being called by these new subscribers.

The literature shows that, in the presence of network externalities, the efficient termination rate should be set above cost. A higher termination rate induces operators to lower their subscription prices, thus promoting network participation at a level consistent with the social interest.

The above result is observed in a number of contributions. For example, Armstrong (2002)<sup>16</sup> and Valletti and Houppis (2005) in the context of FTM call termination. The intuition provided by the former being that: *“a higher termination charge raises the equilibrium mobile subscriber utility via handset subsidies and the like, this in turn increases mobile subscription, which in turn raises the utility of fixed network subscribers because of the network externality effect.”*<sup>17</sup>

#### 3.1.1 Market expansion of the mobile market

In an extension of their model Armstrong and Wright (2008) consider the possibility that the mobile market can be expanded by relaxing the assumption that the number of mobile customers is constant.<sup>18</sup>

Given the way the FTM market is modelled<sup>19</sup> again, in equilibrium, operators will set the FTM MTR at its monopoly level ( $a_{mon}$ ). Now, the welfare maximizing MTR is above cost since this induces extra mobile subscription, benefiting all users. Nevertheless, the efficient level is still below  $a_{mon}$ .<sup>20</sup> An important difference with respect to the case without market expansion is that now the profit neutrality result with respect to FTM MTRs no longer holds. This implies that operators have incentives to cooperatively choose a high FTM MTR.

With regards to MTM MTRs, as in the case without market expansion, operators have incentives to set this price below cost, in order to relax network competition. However, now the efficient MTM MTR is above cost also due to its positive effect on mobile subscription.

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<sup>16</sup> Section 3.1.3.

<sup>17</sup> Armstrong (2002), page 343.

<sup>18</sup> In particular, they consider the so-called ‘Hotelling model with hinterlands.’

<sup>19</sup> The base of fixed line customers is given and the traffic flows only from fixed to mobile customers which do not face call externalities.

<sup>20</sup> This result is also obtained in Armstrong and Wright (2002) and Valletti and Houppis (2005).



In the numerical analysis contained in section 2.4 of the paper Armstrong and Wright (2008) show that with market expansion the efficient MTR for MTM and FTM services will differ and will be above the cost of call termination.<sup>21</sup> As already commented on above, if operators are constrained to set a uniform MTR for both MTM and FTM calls then the profit maximizing MTR will lie between the profit maximizing MTM MTR and the MTR that maximizes FTM profits (i.e., between  $a_{below}$  and  $a_{mon}$ ).

In a related paper, Schiff (2001) considers the effect of partial consumer participation on operators' incentives to set MTM MTRs and efficiency. Schiff (2001) presents a variant of the basic model with two-part tariffs and uniform prices for on-net and off-net calls. He considers an endogenous customer base and a variant with network externalities.<sup>22</sup>

Endogenous participation is modelled by assuming that potential subscribers have an option value associated with joining the market, which is randomly distributed. Once the decision to subscribe is made, based on expected benefits from joining, the subscriber chooses network in the same way as in the basic model with Hotelling competition. In the absence of network externalities all subscribers still make the same volume of calls. Schiff (2001) models network externalities assuming that the calls made by each subscriber are a linear function of the number of subscribers.

In all these models, Schiff (2001) finds that it is still efficient to price calls at marginal cost and compete over the level of the rental charge. Schiff finds that an endogenous market size without externalities intensifies competition relative to the basic model (because networks compete for new subscribers as well as for market share) but profits, consumer surplus and hence total welfare are maximised by cost-based access charges.

With regards to the profit maximizing MTR, Schiff (2001) shows that an endogenous market size increases the incentive for networks to price reciprocal access at cost.

In the presence of network externalities Schiff (2001) shows that the networks will profit maximise by pricing access below marginal cost (even though they are charging uniform on-net and off-net prices), while consumer surplus is maximised by pricing access above marginal cost. The intuition of this result is that externalities make competition even fiercer in a non-linear way. Adding a customer, when access is priced above cost, creates profits directly and increases the volume of calls by existing customers, which multiplies the profit. The networks would choose to mitigate competition by setting the price of access

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<sup>21</sup> The efficient FTM MTR will be above the efficient MTM MTR when market expansion possibilities are large (see table 7 of Armstrong and Wright (2008)).

<sup>22</sup> The former is modelled by assuming that potential subscribers have an option value associated with joining the market, which is randomly distributed. Once the decision to subscribe is made, based on expected benefits from joining, the subscriber chooses network in the same way as in the other models discussed here. All subscribers still make the same volume of calls. Schiff models network externalities assuming that the calls made by each subscriber are a linear function of the number of subscribers.

(and calls) below cost to offset the effect of the network externality. Total welfare on the other hand is maximised with access priced above marginal cost, because this leads to a lower rental charge, which in turn drives up the penetration rate.<sup>23</sup>

## 3.2 CALL EXTERNALITY EFFECT

In the basic models the value of a call accrues entirely to the caller, i.e., the receiver does not benefit from receiving calls. Recently, the economic literature has extended the basic model to include call externalities, i.e. by considering the more realistic scenario in which the recipient of the call also benefits. Therefore, under call externalities calls generate value to both callers and recipients.

In the basic setup with call externalities<sup>24</sup> a call is assumed to generate a value  $\mu$  to the sender and  $\beta\mu$  to the receiver, with  $\beta > 0$ <sup>25</sup>. Thus  $\beta$  is the ratio between the recipient and the caller's valuation of a call.

Under this model, efficient network utilisation implies that the total costs of the call should be recovered from both parties in proportion to the benefits each receive. This means that with call externalities operators should charge both callers and receivers, and RPP becomes efficient.<sup>26</sup>

The efficient retail prices in this case will be a function of the total cost of the call and the call externality ratio. In particular,

$$P_{\text{Caller}} = C/(1+\beta)$$

$$P_{\text{Receiver}} = \beta C/(1+\beta)$$

It is important to note that the parties share the total costs of the call in proportion to the benefits. This could imply, for instance that the receiver pays a retail price above the costs of terminating the call but overall, the retail price would just recover the total costs of the call. Thus it should be noted that for the purpose of determining optimal retail charges and hence optimal MTRs the actual cost of termination may be of limited relevance as the more important factors are the total cost of calls and the size of the call externality.

### 3.2.1 Optimal MTRs

If operators set retail call prices at costs, either because of regulation or as a consequence of competition, then the efficient termination fee would be:

$$a_{\text{efficient}} = C_T - \beta C/(1+\beta)$$

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<sup>23</sup> Dessein, W. (2001) shows that the welfare result is not completely general, but is true provided that two duopolists offer a larger net surplus to customers than a monopolist.

<sup>24</sup> See Jeon, Laffont and Tirole (2004).

<sup>25</sup> Note that in the absence of call externalities  $\beta = 0$ .

<sup>26</sup> Note that the caller also pays a part of the call costs according to the benefits he/she gets, so the optimal charging scheme is not pure Receiver Party Pays.

In this case the efficient termination fee is below cost and *decreases* as the call externality becomes larger. The intuition for this result is that as the call externality increases the receiver should pay a larger fraction of the cost of the call and this is achieved by setting a lower termination fee. In other words, an increase in the call externality has a positive impact on the willingness to pay of the receiver and thus the terminating network needs to charge a lower termination fee in order fully to recover its costs.

Notice that in the analysis above we have disregarded the *effects of competition between operators on the efficient MTR*. The literature shows that in the presence of call externalities the characterisation of the welfare maximizing MTR may be extremely complicated and the results may be sensitive to the assumptions of the model. This is, for example, the case with linear tariffs as shown by the analysis of Berger (2004). In this case, the welfare maximizing MTR is found only through a graphical analysis as it is not possible to solve the problem analytically. This analysis reveals that the welfare maximising termination charge is lower than the profit maximising charge and may be below zero.

Berger (2005) considers competition with two-part tariffs. In the symmetric case, i.e. when both operators share the market evenly, the welfare maximizing MTR decreases with the size of the call externality. As in the case of linear tariffs, the efficient MTR may be below cost. In the context of this model, operators have incentives to set below cost termination rates -even below the welfare maximizing MTRs.

Baranes and Flochel (2004) consider a slightly different model from the ones commented on above, by assuming that networks are vertically differentiated, such that they differ in their quality. Further, operators compete in non linear pricing and can discriminate between on-net and off-net prices. In this model, consumers face call externalities, such that they have the same valuation for the calls they send and receive. The aim of the paper is to analyse the incentives of operators *when deciding on their MTRs unilaterally*.<sup>27</sup>

Baranes and Flochel find that, although in equilibrium the access charge chosen by operators is above the terminating cost,<sup>28</sup> the incentives to set high MTRs are reduced in order to internalise off-net call externalities for its customers. That is, by setting a lower MTR consumers receive more off-net calls from the alternative network. In the presence of call externalities, this raises the value of the network allowing it to charge higher subscription fees. This contrasts with previous results found in the literature when considering incentives of operators when setting MTRs unilaterally, like in the context of proposition 1 of Gans and King (2001). The intuition is that, in the presence of call externalities, operators' incentives to raise MTRs to maximize their access revenues are countered by the negative

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<sup>27</sup> In contrast with the papers considered above, Baranes and Flochel (2004) do not impose reciprocity on the access charge. Instead, MTRs are unilaterally decided by each operator.

<sup>28</sup> Because of the double marginalisation effect faced by providers, which is the main effect in proposition 1 of Gans and King (2001).

impact that MTRs exert over the off-net price charged by other operators which reduces the call externality enjoyed by their own subscribers.

DeGraba (2003) considers a model in which operators compete for two customers that face call externalities, in particular, the value of the call is evenly shared among both parties. Operators compete offering usage prices for on-net/off-net outgoing and incoming calls and face the same cost for originating and terminating the call. In this simplified framework, DeGraba (2003) finds that B&K is efficient. It should be noted however that this result is mainly driven by the assumptions considered in the model on the size of the call externality and terminating costs.<sup>29</sup> Further, in one of the extensions of the model, considering a random allocation of the value of the call, DeGraba (2003) finds that if one of the parties receives most of the benefit from the call then “*imposing all of the cost on the calling party will be relatively more efficient*”<sup>30</sup> than B&K. This is an essential observation, because, as we show below, existing evidence shows an uneven distribution of the call value in favour of the calling party.<sup>31</sup>

### 3.2.2 Connectivity breakdown

An interesting result of the literature on call externalities is that their presence may lead to a “**connectivity breakdown**” given their effect on operators’ incentives to set retail tariffs. That is to say, operators may have incentives to set the prices in such a way that calls to rival networks are prohibitively costly.

The issue of connectivity breakdown has been analysed under CPP and RPP retail tariff regimes. Here we will focus on CPP.

**Connectivity breakdown in a CPP context:** Jeon, Laffont and Tirole (2004) provide the basic model to understand why call externalities may generate a connectivity breakdown.<sup>32</sup> In the Jeon, Laffont and Tirole (2004)’s model with CPP the equilibrium prices for on-net and off-net calls take the following form:<sup>33</sup>

$P_{\text{on-net}} = (C_0 + C_T)/(1 + \beta)$ , the same for both operators; and,

$P_{\text{off-net}}^i = (1 - s_i)(C_0 + a)/(1 - s_i(1 + \beta))$ , for operator  $i$ , with market share  $s_i$

In contrast to the case without call externalities, the price of off-net calls depends on the size of the network. The larger network sets higher off-net prices.<sup>34</sup>

<sup>29</sup> The value of the call is evenly distributed among senders and receivers; and the cost of terminating a call equals the cost of origination.

<sup>30</sup> DeGraba (2003), page 18.

<sup>31</sup> See section 5.1.

<sup>32</sup> The models considered by Berger (2005) and Armstrong and Wright (2007) are also illustrative.

<sup>33</sup> These are the equilibrium prices under a two-part tariff structure and off-net/on-net price discrimination. Berger (2004) analyzes linear prices.

<sup>34</sup> The derivative of the off-net price with respect to the market share of the operator can be written as

$$\frac{\partial P_{\text{off-net}}^i}{\partial s_i} = \frac{\beta(c_0 + a)}{(1 - s_i(1 + \beta))^2} > 0 \text{ if } \beta > 0 \text{ and } (C_0 + a) > 0.$$

Furthermore, if the network externality is large enough,  $\beta > ((1/s_i) - 1)$ , connectivity breakdowns since operators would set an infinite price for off-net prices. The reason is that the existence of call externalities generates incentives to increase off-net prices in order to reduce the numbers of off-net calls and thus damage the rival network, if their customers value highly incoming calls.

This connectivity breakdown's result is common to most models including call externalities.

### 3.2.3 Call propagation

Cambini and Valletti (2008) consider a more realistic approach to modelling consumers' behaviour and include the possibility of "reciprocal" communication patterns, such that each outgoing off-net call results in a fraction  $x$  of incoming calls. Comparing their results with Jeon et al. (2004), the authors show that networks will have reduced incentives to use off-net/on-net price discrimination to induce a connectivity breakdown when outgoing and incoming calls are complements.

In a symmetric equilibrium without reception charges, the off-net price takes the following form:

$$P_{\text{off-net}} = (C_0 + a - x(a - C_T))(1 - \beta(1-x))$$

Note that if propagation ( $x$ ) is close enough to 1, then the effect of call externalities may become rather insignificant. So when discussing the importance of call externalities, one should consider this call propagation effect which does tend to diminish the significance of call externalities.

The paper also analyses the incentives of operators when setting MTRs and shows that, under some circumstances operators may "*achieve first-best allocations via negotiated access charges that internalize externalities.*"<sup>35</sup>

## 3.3 NETWORK AND CALL EXTERNALITIES

In reality, both types of externalities will be present to some extent and the regulator will have to weigh the importance of each. However, no paper combines access and network externalities in a model. So *a priori* it is unsure what result/effect would be when both are present. An interesting point raised by Armstrong and Wright (2007) is that:

*"the presence of call externalities will amplify the impact of network externalities, since users will receive more calls when there are more mobile subscribers."*

This suggests that the combination of both network and call externalities could result in above-cost MTRs. In other words, despite the fact that call externalities, when considered alone, lead to below cost MTRs, call externalities widen the importance of network externalities, which require higher MTR.

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<sup>35</sup> Cambini and Valletti (2008), page 17.

Notwithstanding this, in the absence of a more rigorous analysis it is difficult to assess the potential impact on MTRs when call and network externalities co-exist.

## 3.4 HETEROGENEITY

### 3.4.1 Consumers

In the models described above, under two part-tariffs it is efficient for networks to price calls at (perceived) marginal cost and for them to compete over the level of the rental charge. However, this may change as we relax the assumption that all subscribers are homogenous, with the same demand to make calls once they have joined a network characteristics. If subscribers differ, either in terms of the volume of calls they would make at a given call price, or in terms of the volume of calls they receive, then it no longer is the case that it will be efficient for networks to price calls at marginal cost.

This is an aspect of pricing dealt with by Dessein (2001) and by Valletti and Houpis (2005). The specific insight that these papers bring is that they show that when the marginal subscriber makes fewer calls than the average caller then it will be efficient to price calls above marginal cost and reduce rentals.

Both Laffont, Rey and Tirole (1998a, 1998b) and Armstrong (1998) argue (without formal proof) that once customers are heterogeneous in their consumption and access prices differ from marginal cost then the market outcome may resemble the collusive outcome created by linear pricing, even if two-part tariffs are used in practice. Dessein (2001), however, demonstrates that this is not always the case. He shows that the profit neutrality result holds even in the presence of customer heterogeneity. Moreover, he extends Schiff's (2001) result by showing that in the presence of customer heterogeneity and externalities, networks would choose to price access below marginal cost while welfare is maximised by pricing access above marginal cost. Valletti and Houpis (2005) note specifically that results are sensitive to the way in which heterogeneity is modelled. If the differences between subscribers are additive then marginal cost pricing will remain efficient, while other formulations tend to result in pricing calls above marginal cost.

Schiff's paper is a good example of this. An endogenous participation rate is explained by customers having an "option value" from subscription which is randomly distributed, but unrelated to the calls they make if they become subscribers because of the additive structure that Schiff has chosen. Hence in Schiff's model, even in the presence of externalities, the marginal customer makes the same number of calls as the average customer, so the conditions for marginal cost pricing still hold. By contrast, in Dessein (2001)'s model, customers are split into low and high calling (and receiving) behaviour. Inevitably marginal customers are drawn from the low-use group. In these circumstances it becomes efficient to raise call charges above marginal cost and lower rental charges.



### 3.4.2 Operators

The basic model and its extension including call and network externalities assume that operators are horizontally differentiated. There are only few models that consider further asymmetries among operators. Therefore, it is still unclear how the introduction of asymmetries among operators may affect market outcomes.

Baranes and Flochel (2004), which was described above in the context of call externalities, depart from the standard assumption of horizontal differentiation and consumers' homogeneity, by considering vertical differentiation à la Mussa and Rosen (1978) and heterogeneous consumers. In this context the high quality operator has higher incentives to distort (upwards) both the off-net price and the access price. The reason is that in the (separating) equilibrium characterized by Baranes and Flochel (2004) high quality consumers adopt the high quality network whereas low quality consumers subscribe to the low quality network. This implies that in equilibrium both operators face slightly different conditions in order to keep their targeted consumers. In particular, the high quality network has to set prices such that high type consumers are better off subscribing to the network than (1) staying out of the market (individual rationality constraint) and (2) subscribing to the low quality network. The relevant constraint for the low quality network is only the first (individual rationality).

As a consequence, the low quality network does not have incentives to distort the off-net price upwards in order to reduce the call externality faced by high quality customers. Its only incentive to raise the MTR comes from the maximisation of access revenues. By contrast, the high quality network has an additional effect when deciding its off-net prices and access charge. By increasing off-net prices it reduces the positive externality received by clients of the lower quality network.

Carter and Wright (2003) combine vertical and horizontal differentiation. In their model callers do not take into account the different on-net and off-net prices and base their decisions on a weighted-average price. In such scenario, a reciprocal termination charge above cost benefits the smaller operator relative to the larger one.

The key to understanding this result is that since smaller firms face a bigger proportion of off-net calls, above cost MTRs, make their customers face higher per-minute prices. This means that their callers will tend to call less than callers on the bigger network. Hence, there is an outflow of calls from the bigger network which generates an access deficit.

Section 4 describes some more papers on asymmetry in the context of the potential anti-competitive effect raised by off/on-net price differentials.

## 4 On-net/off-net price differential as an anti-competitive tool

There are a number of contributions that focus on the potential use of on-net/off-net price differentials to distort competition. Below we comment two well-known papers are those of Hoernig (2007) and Calzada and Valletti (2008). We will also cover the recent contribution by Lopez and Rey (2008).

In Hoernig (2007) a large and a small operator compete for mobile customers in the presence of call externalities. In equilibrium, either with linear or two-part tariffs, the off/on-net price differential increases with the termination charge. The off-net equilibrium price under two-part tariffs is as in Jeon, Laffont and Tirole (2004) shown above:

$$P_{\text{off-net}}^i = (1 - s_i)(C_0 + a)/(1 - s_i(1 + \beta)), \text{ for operator } i, \text{ with market share } s_i$$

The expression above indicates that the off/on-net price differential is mainly driven by the presence of call externalities, represented by parameter  $\beta$ . Even if the MTR is zero (B&K) the on-net/off-net differential would be present.

It is also important to emphasize that the above strategy is not anti-competitive, as it is not designed to damage rivals regardless of one's own profitability. Rather the on-net/off-net price differential arises as the optimal profit-maximising strategy for each operator, small or large, when individually setting its own prices.

The paper also considers the possibility that the large firm engages in predatory behaviour by increasing (decreasing) the off/on-net price differential above (below) the equilibrium level if the termination fee is above (below) cost. Hence, the predatory outcome is not conditional upon the MTR being above cost or even positive, as **the crucial element is the existence of call externalities** rather than a positive MTR. Hoernig (2007) does not analyze the welfare maximizing MTR.

Gabrielsen and Vagstad (2008) focus on the role of access charges to create tariff-mediated network externalities and induce a collusive outcome. The paper challenges the contributions of Gans and King (2001), and Laffont et. al. (1998b) questioning the incentives of operators to set low termination charges. Gabrielsen and Vagstad show that, in a setting where operators can create tariff-mediated network externalities, there are exogenous switching costs and calling clubs, then a high access charge increases the perceived switching costs which allows operators to impose a higher subscription price. In their model efficiency dictates cost-based MTRs since they do not consider neither call nor network externalities.

Calzada and Valletti (2008) analyze the question of whether incumbent operators may coordinate on a high reciprocal access charge in order to deter entry. The key for this strategy is that in their model a high access charge reduces profits for all operators (not only for the smaller ones), which makes entry less attractive. **If entry took place, incumbent operators would have incentives to reduce**



**access charges, even below cost, resulting in higher profits for the whole industry.** Thus, the strategy to set high termination charges in order to deter entry is only rational from an ex-ante view point. If allowed to re-negotiate, incumbent operators would reduce MTRs once entry has taken place.

Lopez and Rey (2008) analyze a related question, whether an incumbent operator may strategically set the MTR in order to prevent entry. In this model all consumers are initially attached to the incumbent operator who faces potential competition from an entrant. The incumbent and the entrant are horizontally differentiated *à la* Hotelling and there are switching costs, which creates a certain preference for the incumbent operator. In this paper consumers do not experience either network or call externalities. However, tariff-mediated network externalities may be created by the on-net/off-net price differential.

Lopez and Rey (2008) find that under certain conditions the incumbent operator may impose an access mark-up in order to make entry unprofitable. However, the paper also finds the opposite, i.e., market foreclosure by subsidizing termination.<sup>36</sup> Further, the model presents a number of **temporal inconsistencies**:

- It is strange that a monopolistic mobile operator uses the interconnection charge in order to deter entry. In the pre-entry stage, the access charge is redundant since there is only one active network. Thus, it is difficult to understand how the entrant observes the access charge.
- One can suppose that the access charge may be announced by the incumbent once the entrant has communicated its entry into the market. Given the entry barriers existing in mobile markets it is not credible that an operator that has invested in spectrum is going to exit the market just because the existing monopolist threatens with a high MTR.
- Moreover, once the new operator has entered the market the incumbent would have an incentive to reduce the access charge, since a high access charge is only profitable provided it successfully keeps the entrant out of the market.<sup>37</sup>

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<sup>36</sup> See proposition 4 of Lopez and Rey (2008).

<sup>37</sup> This point is emphasized in the abstract of the paper.

## 5 Implications for B&K

In the above sections we have provided a descriptive overview of the literature on MTRs. This section considers the implications of these models for B&K.

### 5.1 B&K IS UNLIKELY TO BE EFFICIENT

As we have seen above, departures from cost-based pricing are only justified by the existence of call or network externalities. If there are call externalities and these are not internalized in other ways,<sup>38</sup> sharing the total costs of the call between the called and the calling party (i.e. RPP) becomes the efficient pricing mechanism at the retail level. In this case, optimal call termination prices would be below cost, with B&K (i.e. MTRs equal to zero) optimal under very specific assumptions. For example, in the simple context considered in section 3.2.1, a zero MTR is efficient when the ratio of the cost of termination to the cost of originating the call equals the ratio between the recipient and the caller's valuation of a call as shown in Figure 1.

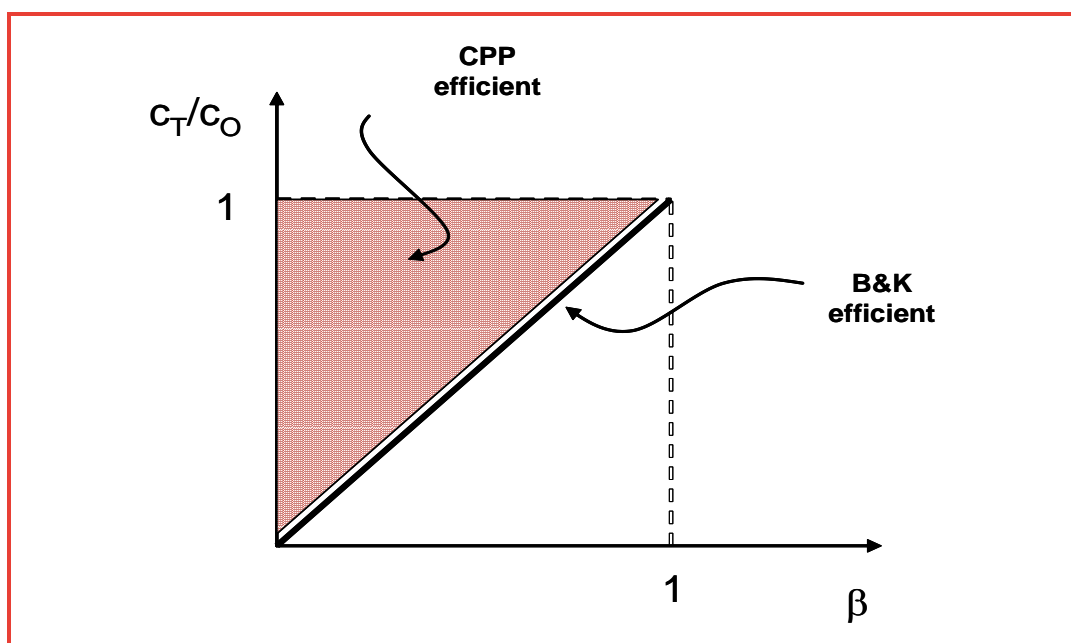


Figure 1: Efficiency of B&K

$c_T/c_O$  is the ratio of the cost of termination to the cost of origination

Source: *Frontier Economics*

Thus, the optimality of B&K requires information on origination and termination costs and on the average relative valuation of a call for both the calling and called parties. B&K cannot therefore be justified solely on the existence of call externalities.

<sup>38</sup> For example, through reciprocal calling patterns as considered in Cambini and Valletti (2008).

There is not much public information regarding the importance of call externalities. A study by Ofcom in 2005<sup>39</sup> showed that, in their decision on network subscription, consumers do not assign much value to the possibility of being called. Only 2% of responders considered the price of others to call them in their choice of the network. This evidence suggests a low call externality.

In a recent paper, Sandbach and Van Hooft (2008) test the empirical importance of residual call externalities<sup>40</sup> by matching the predictions of the models<sup>41</sup> with data on retail prices. They find that the estimated size of the call externality is small, not being statistically different from zero.

In addition, while B&K may reduce some transaction costs (for instance the need to bill for interconnection), it also creates other costs. For instance, in order to avoid the “hot potato” problem (i.e. the incentive of the initiating network to deliver the call at the point of interconnection closest to the originating customer) the regulator may need to specify the interconnection points and set regulated charges in the case traffic is delivered at different locations.

B&K may also generate an inefficiently high level of traffic, which could even generate negative call externalities. This is because low termination rates and low off-net call prices help proliferation of certain type of calls which actually harm consumers (for instance marketing calls or SPAM<sup>42</sup>). In this respect, mobile customers in the US have recently filed a lawsuit against 6 mobile-phone carriers and a top mobile virtual operator in Mississippi federal court due to the imposition of charges for unsolicited messages received by subscribers<sup>43</sup>.

## 5.2 B&K MAY DAMPEN COMPETITION

A further feature identified in the economic literature on MTRs is that it has been found that the intensity of competition among existing operators may be affected by the level of the MTR, because of the impact that MTRs may have on the profitability of marginal customers, therefore, on retail prices.

In section 2.3 we have seen that under quite general assumptions, a decrease in MTRs is going to result in higher retail prices for other mobile services (e.g. subscription fees in case of two-part tariffs or on-net prices in case of linear tariffs with network discrimination). Since B&K implies a reduction of MTRs a movement towards this system will probably result in higher subscription/other retail charges and lower consumer welfare.

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<sup>39</sup> Ofcom (2005), Annex F.

<sup>40</sup> “The external value which the parties themselves cannot internalise”, Sandbach and Luke van Hooft (2008), page 3.

<sup>41</sup> They consider an extension of Armstrong and Wright (2007) allowing for the existence of limited calling circles.

<sup>42</sup> A study by Ofcom carried out in 2003 found that 36% of mobile subscribers at least occasionally chose not to answer calls from an unrecognized or unidentified source (Ofcom, 2003. Page 10).

<sup>43</sup> See RCRWireless News. May 16, 2008.

In this sense, Genakos and Valletti (2008) have empirically analysed the effect of MTRs on the cost of representative usage bundles using a cross-country panel database, finding that “*a regulated percentage reduction in fixed-to-mobile termination rates is associated with an almost equal percentage increase in the expenditure necessary to buy a given usage bundle.*”<sup>44</sup>

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<sup>44</sup> Schiff (2007), page 412.

## 6 Conclusions

In this report we have provided a broad overview of the literature on MTRs and analysed its implications for B&K. Our conclusions can be summarised in the following points:

- In the *basic model*: the efficient MTR is cost oriented but a high MTR will intensify competition as long as operators price discriminate among on-net and off-net calls. And a below cost MTR may dampen retail competition and damage the consumers' welfare.
- The introduction of *call and or network externalities* make the efficient MTR depart from costs. Network externalities increase the efficient MTR whereas call externalities ask for a reduction in the access charge. In this context, B&K is efficient only under very specific conditions that require detailed information about the size of call externalities.
- It is important to consider only call externalities that are not internalized through *reciprocal communication patterns*. Otherwise, estimated call externalities will be biased upwards.
- Recently, a number of papers have emerged analyzing the use of *on-net/off-net price differentials* as a way to distort competition in a asymmetric context. These papers show that such differentials may exist even if there are not interconnection payments (B&K). The evidence of the USA, where off-net/on-net price differentials are observed in a B&K context, supports this result.
- There are also some contributions focused on the *potential role of MTRs as an instrument for entry deterrence*. Nevertheless, these models do not show that B&K is efficient. They also present an inconsistency problem: high MTRs are not commercially possible unless they guarantee exclusion. If entry took place, incumbent operators would have incentives to re-negotiate the access charge.

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**'Using on net / off-net price differential to measure the size of call externalities and its implications for setting efficient MTRs'**

# Using on-net / off-net price differential to measure the size of call externalities and its implications for setting efficient MTRs

Jonathan Sandbach,<sup>1</sup> Luke van Hooft<sup>2 3</sup>

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## **ABSTRACT**

*This paper discusses the significance of call externalities on efficient mobile termination pricing in the two-sided mobile market. It shows by intuitive argument that call externalities should be largely internalised by subscribers and hence should not influence efficient platform pricing. This proposition is then tested by confronting the economic theory of on-net/off-net price discrimination with observed pricing behaviour of mobile network operators (MNOs). Economic theory suggests, to the extent that there exists a positive residual call externality (the un-internalised benefit accruing to subscribers from the calls they receive), MNOs will price on-net calls below marginal costs and off-net calls to competing networks above marginal costs. This allows the perceived strength of the residual call externality to be observed from MNO tariffs. If this theory is correct, we confirm that the residual call externality is small and that below-cost termination rates are not welfare maximising.*

## **INTRODUCTION**

It has long been accepted that the efficient level of mobile termination rates (MTRs) is in part influenced by the relative size of the access externality and call externality. The literature has traditionally assumed an access externality when examining the efficient level of MTRs. However, recent papers have assumed the presence of a call externality and no access externality.<sup>4</sup> Not

surprisingly, papers in the two different camps come to different conclusions about the efficient level of MTRs. Papers assuming an access externality conclude that MTRs should be above cost, and those assuming a call externality conclude MTRs should be below cost.

The results from papers assuming a call externality have been interpreted as suggesting that efficient MTRs need to be set below costs whenever the receiving party benefits from receiving a call.<sup>5</sup> However, such a conclusion misinterprets the meaning of the externality factors within the theoretical models, and has been made without reference to empirical evidence on the existence or size of any call externality.

This paper examines the significance of call externalities on pricing in the two-sided mobile market in two ways: first, by clarifying the interpretation of the externality factor in economic models in the existing literature and, second, by measuring the size of any residual call externality using observed retail pricing by MNOs. We seek to show that the residual call externality is sufficiently small such that regulators are correct to continue with their existing practice of ignoring it for the purposes of setting MTRs.

This paper is structured as follows: Section 2 looks at the roll of call externalities in pricing mobile termination; Section 3 examines the conceptual considerations when assessing the level of residual call externality; Section 4 highlights existing regulatory views on the size of call externality; Section 5 analyses retail pricing of MNOs using an on-net/off-net framework to estimate the observed size of the call externality; and Section 6 provides concluding remarks.

## ROLE OF EXTERNALITIES IN PRICING MOBILE TERMINATION WITHIN A TWO-SIDED MARKET

Efficient pricing in two-sided markets takes into account the effect pricing on one side has on the other side of the market. This has two aspects: first, the elasticity of demand on one side of the market influences the price to be charged on the other side, so that the more elastic one side of the market is, the higher the price the other side will pay. Second, platform pricing also internalises the inter-group externalities, so that the price faced by one side is influenced by the benefit the other side gains from the first side's presence.<sup>6</sup>

This implies that the side of the market which is (i) more competitive (has higher elasticity) and (ii) causes a larger benefit to the other group than vice versa, will face the lowest price. This may result in that side being subsidised to participate. The classic example is the night club market, where females receive free entry and males face the full cost of providing services to both sides.<sup>7</sup>

The economic literature addressing the issue of welfare maximising termination charges, using a two-sided market framework, shows that the relationship of these rates to the average incremental cost is centrally determined by the existence and size of the access externality and the call externality, amongst other factors.<sup>8</sup>

The literature initially focused on estimating the efficient termination rate in the presence of an access externality – or where the access externality is larger than the call externality. In such a case, the literature agrees that the efficient level of termination rate is above the cost of providing the service. In effect, the calling side of the market assists in the subsidisation of the acquisition and retention of mobile subscribers.<sup>9</sup>

Some of these papers have noted that when call externalities are introduced into the analysis, the welfare maximising level of the MTR falls back towards cost. Recently, there has been a growing number of papers focusing on the efficient level of termination rates in the presence of call externalities, assuming that access externalities are zero<sup>10</sup>. These papers conclude that the efficient termination charge is below the cost of termination in the presence of call externalities and put into question the rationale of regulating mobile termination rates<sup>11</sup>.

Some have interpreted the literature as implying that if the receiving party gets a benefit from answering a call, the efficient MTR is necessarily below cost.<sup>12</sup> However, this view misunderstands the role of a platform and the concept of externalities in two-sided markets.

The role of platforms in two-sided markets is to internalise the cross-group externalities that the members of each group are not able to internalise themselves (residual externalities).<sup>13</sup> At one extreme, where all cross-group externalities are internalised by parties, and the parties can agree on an optimal price structure which maximises joint benefit, the market is one-sided. But where this does not occur, there is a role for the intermediary platform to bring the two sides together and to assist in facilitating efficient trading.

The purpose of a platform in a two-sided market is to act as an intermediary between the two sides and coordinate their transactions. In essence, the platform seeks to internalise the external value that the parties cannot do so themselves and sets the price structure so as to maximise the joint welfare of the two sides of the market. If one side receives a large benefit from the participation of the other side, the platform will recover more fees from the first side.

We call the external value which the parties themselves cannot internalise the residual external value. It is the relative size of the residual externality effects which determines whether there is a net access or call externality effect.

## CONCEPTUAL CONSIDERATIONS WHEN ASSESSING LEVEL OF RESIDUAL EXTERNALITY

Before progressing onto an empirical assessment of on-net pricing to see whether it shows the presence of call externalities, we first need to look at the relevant conceptual factors that determine the extent that any call externality will be internalised, and as a result, the size of the residual call externality.

A sub-optimal level of network usage (here assumed to be minutes) will only occur where the parties cannot negotiate to internalise the call externality themselves. The necessary conditions for this to occur are shown in Figures 1 and 2.

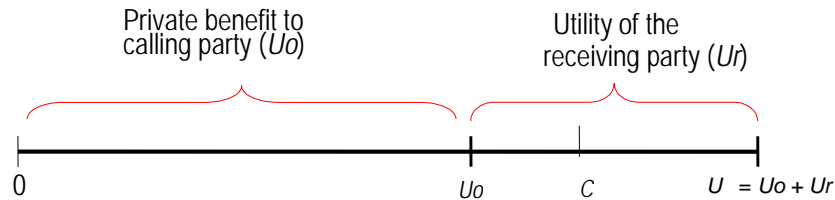


Figure 1 Utility and cost of a marginal minute – no need for internalisation

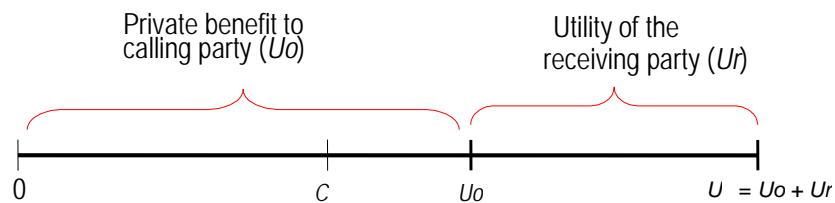


Figure 2 Utility and cost of a marginal minute – need for internalisation

Figures 1 and 2 show the utility to both the calling party ( $U_o$ ) and to the receiving party ( $U_r$ ) of an extra minute of a call. The total utility of an extra minute is the combination of the utility of the calling and receiving parties ( $U = U_o + U_r$ ). Where the cost of the extra minute falls below the private benefit of the calling party ( $C \leq U_o$ ) there is an optimal level of call minutes and no need to internalise the receiver's call externality. This is the case shown in Figure 1. However, Figure 2 shows the case where the cost of the extra minute is greater than the private benefit to the calling party ( $C > U_o$ ).



When this occurs the calling party (who incurs the cost of the extra minute) will end the call, even though the joint utility of an extra minute is greater than the cost ( $U > C$ ). It is this foregone utility which gives rise to an inefficient consumption of minutes and a welfare loss.

However, the parties themselves could negotiate to internalise this externality. This will occur when the utility of the extra minute to the receiving party is greater than or equal to the cost differential including the transaction costs<sup>14</sup> ( $Ct$ ), that is  $Ur \geq C + Ct - Uo$ <sup>15</sup>. Only when such negotiated internalisation cannot occur is there any impact on efficient platform pricing.

There are, therefore, two necessary conditions that must hold for there to be a residual call externality:

- (i)  $C > Uo$ , i.e. the cost of an extra minute exceeds the utility to the caller.
- (ii)  $C + Ct > U > C$ , i.e. the total utility of an extra minute is bounded above by the call cost including transaction cost, and below by the call cost excluding transaction cost.

When these conditions hold, the value of the residual call externality is given by  $C + Ct - U$ .

An assessment of the likelihood of internalising call externalities is assisted by separating calls into three types. The first type is calls within a closed-user group with a single bill payer. This typically is an immediate family unit (e.g., parent paying the phone bill of children) or company phone (where the company pays the bill of its employees). The second type is calls within a closed-user group (CUG), with frequent calling patterns. Examples include groups of friends, or colleagues, or categories of users (such as students). The third call type is calls made outside CUGs.

The likelihood of internalisation of the call externality for these three call types is summarised in Table 1.

*Table 1 Likelihood of internalisation of call externalities*

	Size of group	Call frequency	Likelihood of internalising the call externality
<b>CUG with single bill payer</b>	Very small	Very frequent	Very likely
<b>CUG</b>	Small to large	Frequent	Likely
<b>Non-CUG</b>	Very large	Infrequent	Unlikely

The first consideration to note for all call types is that the cost to the calling party of a marginal minute is likely to be quite low for most calls made. The marginal cost could be zero, for minutes within a bundle, or for calls to a selected number of friends. The cost of a minute outside of a bundle is typically quite low as well – less than 20 €/minute.

Call externalities for calls made within CUGs with a single bill payer are most likely to be internalised by the parties to the call. This is because:

- The utility of the calling party is likely to be high. This implies that there would be few minutes where the cost is higher than the utility gained by the calling party. So condition (1) will not be satisfied.
- For minutes where calling party utility is less than the cost, it is likely the utility gained by the receiving party would also be very high and the transaction costs would be very low. Parties within sole-payer CUGs have reciprocal, close and repeat relationships, not requiring any search costs to be incurred. Repeat and reciprocal relationship also facilitates easy negotiation between parties – the calling party can be compensated in many ways, the simplest being an arrangement whereby one party pays the cost of calls of the other party; for instance, a business providing a work phone to an employee or parents paying the mobile bills of their children. So condition (2) will not be satisfied.

Calls externalities within CUGs are also likely to be internalised by the parties to the call, because:

- The utility of the calling party and the receiving party would be high, meaning that the total utility is large. Only when the cost of the call and the transaction costs of internalisation ( $C+C_t$ ) is greater than the total utility of the call ( $U$ ) can intervention be justified.
- Transaction costs ( $C_t$ ) would be low. Subscribers within CUGs have repeat and reciprocal calling patterns. Search costs are low, as are negotiation costs. The repeat and reciprocal nature of relationships enable a variety of simple yet effective ways through which a receiving party can 'compensate' the calling party for incurring the total cost of the marginal minute. The simplest example being that the parties agree to call each other half of the time, ensuring that they share the total cost of calls. While enforcement costs would be higher than within a sole-payer CUG, the costs would be still be relatively low – constant offenders risk social exclusion from a group of friends, and business colleagues/suppliers/clients may choose not to deal with constant offenders.

Call externalities generated from calls received from subscribers outside of the receiving party's CUGs would not likely be internalised. Subscribers have infrequent and often one-way calling relationships with other callers outside their CUG, and so the search and negotiation costs would be relatively high. There are also no effective enforcement mechanisms through which callers could enforce any deal. In the absence of informal social

enforcement mechanisms, parties have only the option to rely on formal dispute mechanisms (e.g. court proceedings) which are an unrealistic option given the value of the bargain. However this by itself is not necessarily an issue of concern. Many calls made to and received from callers outside one's CUG may not derive a high level of total utility. Thus, while the cost of the marginal minute may be greater than the utility of the caller (and hence the marginal minute will not take place), it may also be above total utility of both consumers. Hence it is efficient for the marginal minute not to be consumed.

Of course, a negative call externality is also a possibility in individual cases, especially outside of a CUG, e.g. a call from a telesales agent who interrupts dinner, but is unlikely to be a universal phenomenon.

Call externalities are likely to be internalised by the parties to a call for calls made between members of frequent call circles, or CUGs. This represents the majority of call volumes carried over mobile networks. However, for calls received from parties outside subscribers' CUGs, there is limited ability to internalise any call externality. Consequently, one may expect to see a small residual call externality effect.

However, it does not follow that the possible existence of a residual call externality for some subscriber relationships results in an overall residual call externality effect, or that efficient MTRs are below cost. The access externality effect also needs to be taken into account, and ultimately though, it is an empirical question to determine which effect will dominate.

## EXISTING REGULATORY VIEWS ON SIZE OF CALL EXTERNALITY

It is commonly recognised that the UK Competition Commission and the telecommunications regulator (Ofcom and now Ofcom) analysed the extent of the access externality in the context of setting welfare optimising termination charges in 2003, 2004 and 2007.<sup>16</sup> This was done using a model developed by Dr Jeffrey Rohlfs (the Rohlfs model). It is less commonly recognised, however, that the Rohlfs model acknowledged the existence of, and accounts for a small call externality, through the derivation of the externality factor.<sup>17</sup>

The Rohlfs model dealt with externalities through the use of a gross network externality factor (gross Rohlfs-Griffen or R-G factor). The gross R-G factor is the 'ratio of the total social value of subscription to the private value that accrues to the marginal subscriber'.<sup>18</sup> The gross R-G factor includes both usage (call) and membership (access) externality effects. Rohlfs' commenting on Ofcom's assumed range of 1.3 to 1.7, stated:

This range of the externality factor should be interpreted to include cross-elastic, as well as other, externalities. The logic that justifies this range relates to total

consumer benefit and does not distinguish between cross-elastic and other externalities.<sup>19</sup>

In deciding to use a range for the gross R-G factor of 1.3 to 1.7, Oftel was of the view that while users can internalise most of the call externality, uninternalised call externalities may still be significant – especially for calls received from callers outside of the receivers’ closed user groups.<sup>20</sup> The UKCC approved the use of an R-G factor of 1.5.<sup>21</sup> The same value was used by Ofcom in its 2007 decision on mobile termination rates<sup>22</sup>. It should also be noted that the analyses undertaken by the UK Competition Commission in 2003 and Ofcom in 2007 focused on residual externality effects. The issue of internalisation was analysed in depth by the UKCC and its conclusions have been adopted since by Ofcom<sup>23</sup>.

As such, the surcharge should therefore be interpreted as being the residual externality surcharge taking into account the level of residual call externalities due to calls received from parties outside the receivers’ CUGs. The approach adopted by UKCC and Ofcom is consistent with the theoretical approach outlined in this paper. Namely, that the overall externality effect is determined by the relative size of the residual access externality and the residual call externality.

## EMPRICAL ESTIMATION OF CALL EXTERNALITIES

The theory of on-net/off-net price discrimination in telecommunication networks has been analysed in a series of papers starting with Laffont, Rey and Tirole (1998b), and further developed by Gans and King (2000b), using a Bertrand model of competition, with a Hotelling-type differentiation between two competing networks. These papers include a basic result: in a two-part tariff structure (i.e. fixed monthly fees plus usage related charges) mobile network operators (MNOs) will price usage at perceived marginal cost. Therefore, on-net calls will be priced at the marginal cost of originating and terminating calls on the MNO’s own network, whilst off-net calls will be priced at the marginal cost of call origination plus an interconnection charge for call termination on another network.

The basic model used in these papers has subsequently been extended to include call externalities, whereby subscribers gain utility not just from calls they make, but also from calls they receive. The analysis for the two-part tariff structure is very well developed by Berger (2004), Hoernig (2007) and Armstrong and Wright (2007). These papers predict that if an MNO believes a positive call externality exists, on-net calls will be priced below marginal cost and off-net calls to competing networks priced above marginal cost. The intuition for this prediction is simply that the receiver’s benefit of on-net calls

is internalised within the same network, and so MNOs will charge a lower call price for on-net calls, but also will be able to charge a higher subscription price to reflect the benefit from receiving on-net calls. In the case of off-net calls, however, the externality benefit accrues to the subscribers of the receiving MNO, and so enhances its ability to compete. Thus, the MNO originating off-net calls will want to increase the price to mitigate this loss. For example, Vodafone Ireland's pre-pay "Advantage Plus" tariff charges 29c/minute for calls within the Vodafone network or to fixed networks, but 39c/minute for calls to other mobile networks – a difference of 10c. The mobile termination rate is about 7.8c (while the fixed termination rate is about 0.6c<sup>24</sup>), suggesting that factors other than pure costs may be at work encouraging MNOs to discount on-net prices and/or charge a premium for off-net calls (e.g. the call externality). In contrast, however, the pre-pay packages of Vodafone UK make no distinction between on-net and off-net calls, with simply a 20p/minute charge for calls to all networks, despite a mobile termination rates of around 4.7p on mobile networks (and 0.2p on fixed networks<sup>25</sup>). The explanation for these differences must lie in the different market positions between the two countries.

It is clear, therefore, that the existence and magnitude of a call externality should have an important role in pricing and, consequently, we should be able to observe MNOs' perceptions of the strength of the call externality in actual pricing plans. However, the complexity of mobile pricing plans mean that direct observations of the differences between on-net and off-net tariffs will often be contradictory, and a richer model and more sophisticated methodology is necessary. This is the objective of this section.

We take as a starting point the call externality specification of Armstrong and Wright (2007), where the call externality is modelled as a fixed amount per call received irrespective of volume, in contrast to the models of Berger (2004) and Hoernig (2007) where the call externality is modelled as a fixed proportion of the utility of making calls which diminishes with volume. Armstrong and Wright provide justification for their approach by arguing that generally subscribers have little control over the calls they receive, and so each received call can be considered to have a random value drawn from a distribution of fixed mean.

We also introduce a simple modification to the model whereby our pricing equations holds not only in the case of evenly distributed calling patterns between networks (as is usually analysed in the literature), but also for the case where a higher proportion of traffic is on-net, consistent with the existence of limited calling circles<sup>26</sup> where consumers in each circle cluster on the same network. In such a situation a network can attract the full membership of a calling circle, especially where it offers on-net discounts. When combined with retail competition, such a strategy has been used successfully by smaller operators to attract subscribers.<sup>27</sup> Other network

models capture exogenous customer groups and market segmentation, e.g. Jullien (2001), Banerji and Dutta (2005), and Ambrus and Argenziano (2004).

The derivation of the pricing equations we use is shown in Appendix 1, for the case of calling party pays with two-part tariffs.<sup>28</sup> The pricing equations for on-net and off-net calls respectively are:

$$p_{iit} = rc_t + 2nc_t - \gamma \quad (1a)$$

$$p_{ijt} = rc_t + nc_t + a_t + \gamma \frac{\phi(1-\phi) + s_{it}}{(1-\phi)^2 - s_{it}} \quad (1b)$$

where:

- $p_{iit}$  is the price of an on-net call on mobile network  $i$  in country  $t$  ;
- $p_{ijt}$  is the price of an off-net call from mobile network  $i$  to another mobile network in country  $t$  ;
- $rc_t$  is the marginal retail cost of call origination on a mobile network in country  $t$  ;
- $nc_t$  is the marginal network cost of call origination or termination on a mobile network (assumed to be the same<sup>29</sup>) in country  $t$  ;
- $\phi$  is the proportion of calls that are on-net irrespective of market share (as may happen with limited calling circles or CUGs);
- $a_t$  is the interconnection charge for termination on mobile networks in country  $t$  ;
- $\gamma$  is the residual call externality<sup>30</sup> in country  $t$  ;
- $s_{it}$  is the market share of network  $i$  in country  $t$  .

Note that equations (1) split out retail and network costs. However, since there is no reason to suppose retail costs will differ between on-net and off-net calls, we can eliminate the need to consider these costs by taking the differential price:

$$p_{ijt} - p_{iit} - a_t = -nc_t + \frac{(1-\phi)\gamma}{(1-\phi)^2 - s_{it}} \quad (2)$$

Empirical estimation of equation (2) is best done by introducing a residual term to capture variations in network costs between countries, and other unaccounted factors that influence pricing. We write:

$$p_{ijt} - p_{iit} - a_t = -nc + \frac{(1-\phi)\gamma}{(1-\phi)^2 - s_{it}} + u_{it} \quad (3)$$

where we assume  $u_{it} \sim N(0, \sigma)$ . Equation (3) can be estimated by non-linear least squares. The parameters to be estimated are  $nc$  (the network cost),  $\phi$  (the proportion of traffic on-net irrespective of market shares), and  $\gamma$  (the call externality). All three should be interpreted as the average level across all networks and subscribers in the same countries. In the case of the network cost national variations are explicitly allowed for through the residual term,  $u_{it}$ . We would expect the call externality and the proportion of calls within a CUG to be different for each subscriber. What we are attempting to measure is the average levels across all customers of the network operator.<sup>31</sup>

### Data

The dataset analysed consisted of prices for two MNOs in each of 22 European countries, giving a total of 44 MNOs in total. For each MNO we calculated on-net and off-net (to other mobile networks) call charges using each of pre-pay and contract tariffs, giving a total of 88 sets of prices in all.

The data used is described in more detail in Appendix 2. Network operators have numerous different tariff packages available to subscribers and on-net and off-net price differentials will vary accordingly. In order to get typical prices we took a basket of 1,000 calls split equally between on-net calls, off-net calls to other mobiles, and calls to fixed lines. This split is a good rough approximation to the calling pattern in most European countries. We calculated the incremental bill saving if each category of call were individually subtracted from the basket (e.g. removing only the on-net calls from the basket), and divided this saving by the number of subtracted call minutes. This allows calculation of the effective price per minute for each of (a) on-net calls, and (b) off-net calls to other mobile networks, on the assumption that subscribers choose the most appropriate tariff. In this way we are able to measure the typical difference in price between on-net and off-net calls, reflecting the network operators' assessment of the "average" call externality.

Mobile termination rates were taken from the European Regulators Group (ERG) benchmarks. The marginal network cost of termination on a mobile network was assumed to be  $5c$ , although lower estimates of  $1-2c$  have been suggested. We present a sensitivity using a marginal cost of  $3c$  and  $1.5c$ .

Generally, the lower the estimate of the marginal network cost, the lower the implied estimate of the call externality.

### Analysis

Equation (3) was estimated by the non-linear least squares algorithms of LIMDEP. Three models were estimated:

- Model A: contract tariffs only (allowing 44 observations);
- Model B: all tariffs (allowing 88 observations), estimating separate coefficient values for  $\phi$  (the proportion on traffic on-net irrespective of market shares) and  $\gamma$  (the call externality) for each of contract and pre-pay subscribers. The network cost,  $nc$ , will be the same;
- Model C: all tariffs (allowing 88 observations), constraining  $\phi$  and  $\gamma$  to be the same for both contract and pre-pay subscribers.

Results are shown in Table 2. Although overall the models explain only a small proportion of the variation in on-net and off-net price differentiation – indicating that other localised factors are important in pricing - many of the estimated coefficients are statistically significant at the 1% level.

Although only Model A (contract tariffs) is strictly consistent with the two-part tariff, doubling the sample size does have some empirical benefits and, as argued above, the model is likely to also provide a good approximation to pre-pay tariffs.

The constraints imposed on Model C are not statistically significant at the 5% level,<sup>32</sup> and so we have a preference for accepting Model C compared to model B.



**Table 2: Model results**

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<b>Model A: Contract tariffs only</b>				
Numbers of observations		44		
Degrees of freedom		41		
Standard error of residuals		0.0475		
Adjusted R <sup>2</sup>		0.0838		
	Coefficient	Standard Error	<u>Coefficient</u> Standard Error	P- value
<i>nc</i>	0.0794	0.0201	3.940	0.0001
$\phi$	0.1932	0.0392	4.928	0.0000
$\gamma$	0.0032	0.0065	0.495	0.6204

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<b>Model B: Contract and pre-pay tariffs – unconstrained</b>				
Numbers of observations		88		
Degrees of freedom		83		
Standard error of residuals		0.0634		
Adjusted R <sup>2</sup>		0.0552		
	Coefficient	Standard Error	<u>Coefficient</u> Standard Error	P- value
<i>nc</i>	0.0821	0.0269	3.048	0.0023
$\phi$ contract	0.1889	0.0559	3.377	0.0007
$\gamma$ contract	0.0041	0.0095	0.430	0.6674
$\phi$ pre-pay	0.1382	0.0931	1.485	0.1376
$\gamma$ pre-pay	0.0148	0.0164	0.905	0.3655

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<b>Model C: Contract and pre-pay tariffs – constrained</b>				
Numbers of observations		88		
Degrees of freedom		85		
Standard error of residuals		0.0634		
Adjusted R <sup>2</sup>		0.0551		
	Coefficient	Standard Error	<u>Coefficient</u> Standard Error	P- value
<i>nc</i>	0.0783	0.0294	2.664	0.0077
$\phi$	0.1725	0.0687	2.512	0.0120
$\gamma$	0.0072	0.0125	0.578	0.5636

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There is a large degree of similarity between all three models. In all cases the network cost is estimated to be around 8€/minute, and is statistically significant at the 1% level. Similarly the proportion of traffic on-net irrespective of market share is estimated to be around 17-19%.<sup>33</sup> In all cases, however, this parameter is statistically significant at the 1% level.

Crucially for this paper, although all models estimate a positive residual call externality, in no cases is this statistically significant even at the 10% level. We must conclude, therefore, that the magnitude of any call externality is small.

## CONCLUSIONS

Economic theory predicts that MNOs will price on-net and off-net calls taking account of marginal costs (including interconnection costs), and any perceived residual externality effects. The model examined in this paper focus on the residual call externality effect. In so far as a residual call externality is present, this will lead to lower margins on on-net calls, but higher margins on off-net calls to competing networks. The empirical evidence of this paper suggests that this differential is not as large as we might expect, and so we conclude that the residual call externality is generally low.

Of course, a negative call externality is a possibility in individual cases, e.g. a call from a telesales agent who interrupts a dinner party, but is unlikely to be a universal phenomenon. Therefore, it is more likely that the call externality is often internalised (as discussed in this paper), and although the average residual call externality is positive, it is very small.

These empirical results have implications for the application of the theoretical literature surrounding efficient MTRs. The literature shows that efficient MTRs can be above or below cost – depending on whether there is a net residual access or call externality effect - ultimately an empirical question. Based on the empirical results in this paper, it is not appropriate to apply the findings of papers assuming a net residual call externality effect, such as Hoernig (2007), Jeon, Laffont, Tirole (2004), Berger (2005), to the regulation of MTRs. Setting MTRs below cost is likely to lead to welfare-reducing outcomes.

## APPENDIX 1 DERIVATION OF PRICING EQUATION

For simplicity we assume two mobile networks compete within a Bertrand pricing framework, with Hotelling differentiation. The basic theory behind this model is laid out in the paper by Laffont, Rey and Tirole (1998a). We also assume a one-period model, in which networks maximise profits with respect to prices (in a two-part pricing structure).

Subscribers are assumed to be distributed uniformly along a segment  $[0,1]$ , differentiating the two networks. We represent the consumer surplus that an individual subscriber would receive from network  $i$  as:

$$w_i - tx \tag{A1}$$

where  $t$  is the loss of utility to the subscriber for each unit of distance from network  $i$ .

The market share of network  $i$ ,  $s_i$ , is found by determining the value of  $x$  at which subscribers are indifferent between the fixed and mobile networks, thus:

$$s_i = \frac{1}{2} + \frac{w_i - w_j}{2t} = \frac{1}{2} + \sigma(w_i - w_j) \tag{A2}$$

where  $\sigma = 1/(2t)$  is an index of substitutability between the two networks.

We can further write:

$$w_i = \alpha_i [v(p_{ii}) + \gamma q_{ii}] + \alpha_j [v(p_{ij}) + \gamma q_{ji}] - F_i \tag{A3}$$

where:

- $\alpha_i$  is the proportion of on-net calls;
- $q_{ij}$  is the number of calls from network  $i$  to network  $j$ ;
- $v(p_{ij})$  is the variable consumer surplus from these calls, where  $p_{ij}$  is their price;
- $\gamma$  is the utility the subscriber gains from each call received; and
- $F_i$  is the fixed monthly payment network  $i$ .

Furthermore, we will model the percentage of on-net calls as the sum of a fixed proportion of calls irrespective of network size (perhaps due to limited calling circles or CUGs),  $\phi$ , with the remainder evenly distributed according to market share. Thus

$$\alpha_i = \phi + \frac{s_i}{1-\phi} \quad (\text{A4})$$

Substituting (A3) and (A4) into (A2) gives:

$$\begin{aligned} (1-\phi)\alpha_i - \phi(1-\phi) &= \frac{1}{2} \\ + \sigma \{ &\alpha_i [v(p_{ii}) + \gamma q_{ii}] + \alpha_j [v(p_{ij}) + \gamma q_{ji}] - \alpha_j [v(p_{ji}) + \gamma q_{jj}] - \alpha_i [v(p_{ji}) + \gamma q_{ij}] \} \\ - F_i + F_j & \end{aligned} \quad (\text{A5})$$

This is essentially a relationship between the proportion of calls that are on-net ( $\alpha_i$ ), closely related to market share through equation (A4), and prices (both  $p_{ii}$ ,  $p_{ij}$  and  $F_i$ ). The network would normally choose both  $p_{ii}$ ,  $p_{ij}$  and  $F_i$ , with the later determining market share and hence  $\alpha_i$ . However, for algebraic convenience we equivalently assume that the network chooses  $p_{ii}$ ,  $p_{ij}$  and  $\alpha_i$ , consequentially determining the implied level of  $F_i$ . Therefore, differentiating with respect to  $p_{ii}$  and  $p_{ij}$  whilst holding constant  $\alpha_i$  we have:

$$\frac{\partial F_i}{\partial p_{ii}} = -\alpha_i q_{ii} \left( 1 + \frac{\gamma \varepsilon}{p_{ii}} \right) \quad (\text{A6a})$$

$$\frac{\partial F_i}{\partial p_{ij}} = -\alpha_j q_{ij} + \alpha_i \frac{\gamma \varepsilon q_{ii}}{p_{ij}} \quad (\text{A6b})$$

where  $\varepsilon$  is the price elasticity of calls defined as  $\varepsilon = -\frac{\partial q}{\partial p} \frac{p}{q}$ .

We write network  $i$ 's profit function as:

$$\pi = s_i \left[ \alpha_i (p_{ii} - rc - 2nc) q_{ii} + \alpha_j (p_{ij} - rc - nc - a) q_{ij} + \alpha_j (a - nc) q_{ij} + F_i - f \right] \quad (\text{A7})$$

where:

$rc$  is the marginal retail cost of a call on a network;

$nc$  is the marginal network cost of a call originated or terminated on a network;<sup>34</sup>

$a$  is the interconnection charge for terminating calls on a network; and

$f$  is the marginal cost of a network subscription (excluding calls).

Maximising  $\pi_i$  with respect to  $p_{ii}$  and  $p_{ij}$  whilst holding constant  $\alpha_i$  gives first order conditions:

$$p_{ii} = nr + 2nc - \gamma \quad (\text{A8a})$$

$$p_{ij} = nr + nc + \frac{\gamma\alpha_i}{1-\alpha_i} = nr + nc + \gamma \frac{\phi(1-\phi) + s_i}{(1-\phi)^2 - s_i} \quad (\text{A8b})$$

## APPENDIX 2 DATA AND SOURCES

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Monthly subscriptions	We used the Teligen T-Basket database to estimate call prices. MNOs offer numerous tariff options and bundles, and subscribers will choose a tariff (or migrate between tariffs) according to which is cheapest for their particular usage. Although MNO tariffs are published, the number of subscribers on each tariff is commercially confidential information. It is necessary, therefore, to make an assumption about how subscribers choose between tariff options. The Teligen T-Basket software calculates, for a pre-defined call basket, the cheapest tariff available. For the purposes of this analysis we assumed a bundle of 1,000 outgoing calls/year at 1.8 minutes each, split equally between on-net calls, off-net calls to other mobiles, and calls to fixed lines. This split is a good rough approximation to the calling pattern in most European countries. We calculated the incremental bill saving if each category of call were individually subtracted from the basket (e.g. removing only the on-net calls from the basket), and divided this saving by the number of subtracted call minutes (33.33% x 1,000 x 1.8 minutes). This allows calculation of the effective price per minute for each of (a) on-net calls, and (b) off-net calls to other mobile networks, all on the assumption that subscribers choose the most appropriate tariff. The Teligen data relates to May 2008.
Price of call minute:	
• On-net;	
• Off-net to other mobile networks	
Interconnection charges	For mobile termination rates we took the European Regulators Group's (ERG) snapshot benchmarks for January 2008.
Market share	Subscriber market share of each operator at Q2 2008. Source: Wireless Intelligence.

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## NOTES

- <sup>1</sup> Head of Regulatory Economics, Vodafone Group, e-mail: [jonathan.sandbach@vodafone.com](mailto:jonathan.sandbach@vodafone.com)
- <sup>2</sup> Economist, Vodafone Group, e-mail: [luke.vanHooft2@vodafone.com](mailto:luke.vanHooft2@vodafone.com)
- <sup>3</sup> The views expressed in this paper are those of the author, and should not necessarily be attributed to Vodafone.
- <sup>4</sup> E.g. Berger (2004), Hoernig (2007).
- <sup>5</sup> See, for example, EC *Draft Recommendation on the Regulatory Treatment of Fixed and Mobile Termination Rates in the EU*; and ARCEP *Les référentiels de coûts des opérateurs mobiles en 2008*.
- <sup>6</sup> Armstrong (2006); Richot and Tirole (2003, 2006).
- <sup>7</sup> See Armstrong (2006).
- <sup>8</sup> For a full discussion of the literature surrounding efficient termination rates, see Ordovery (2008).
- <sup>9</sup> See Armstrong, (2002), Wright (2002), Gans and King (2000a), and Hausman and Wright (2006).
- <sup>10</sup> Hoernig (2007), Jeon, Laffont, Tirole (2004), Berger (2005). See also Hermalin and Katz (2006), who model benefits to both callers and calling parties in a one-way access setting.
- <sup>11</sup> See Baranes and Flochel (2008).
- <sup>12</sup> See, for example, ARCEP (2008) and EC (2008).
- <sup>13</sup> Richot and Tirole (2006) note that the failure of the Coase Theorem is a necessary condition for a two-sided market. In addition, the structure of prices must also matter for a market to be two-sided.
- <sup>14</sup> There are three broad categories of transaction costs: search, negotiation, and enforcement costs. See Dahlman (1979) and Williamson (1981).
- <sup>15</sup> Coase (1960) demonstrated that where transaction costs are zero all externalities will be internalised by the parties. Transaction costs do not equal zero in the real world, but the key insight from this seminal work was that the size of the transaction costs determines the ability to internalise externalities.
- <sup>16</sup> See Ofcom (2004, 2007) and UK Competition Commission (2003).
- <sup>17</sup> See Rohlfs (2002a, 2002b).
- <sup>18</sup> Rohlfs (2002a) *ibid.*, p.3.
- <sup>19</sup> Rohlfs (2002b), *supra*, p.7.
- <sup>20</sup> *Ibid.*, p.2-3.
- <sup>21</sup> UKCC (2003), *supra* note 14, p.88.
- <sup>22</sup> Ofcom (2007), *supra* note 14, p. 342.
- <sup>23</sup> See, UKCC (2003), *supra* note 14, chapter 8.
- <sup>24</sup> Approximate average for single transit termination of a 2 minute call on the Eircom network.
- <sup>25</sup> Approximate average for single transit termination on the BT network.
- <sup>26</sup> The limited calling circle is also likely to be a CUG, described in Section 3 of this paper.
- <sup>27</sup> For a more complete discussion of TMNE and on-net discounts, see Vodafone (2008). This coefficient measures the effect on network traffic of adopting such pricing strategies.

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- <sup>28</sup> An equivalent mathematical formula for linear tariffs (per minute charges) is more difficult to specify, and depends on the price elasticity of calls. Berger (2004) and Hoernig (2007) give analytical results that link Lerner Index margins to the call externality, market shares and price elasticities, and provide numerical simulations of the relationship. Broadly, however, we would expect similar results, but with prices exceeding their respective marginal costs in order to cover subscriber specific costs. In any event, the two-part tariff model probably provides a better overall approximation to the actual price structure whereby the average price will be decreasing in usage.
- <sup>29</sup> In actual fact termination has a higher cost than origination due to the need to locate the subscriber on the network and transport the call to that location (compared to origination where the call is simply transported to the nearest point on interconnect).
- <sup>30</sup> This coefficient will be measuring only the residual externality, i.e. the call externality that is not internalised by the parties to a call. As shown above, it is the un-internalised value which influences efficient platform pricing.
- <sup>31</sup> The model used explains any observed differences in retail prices in terms of changes in interconnection and network costs, with a call externality factor accounting for the remaining differences. However, real world pricing decisions account for many other factors. For example, mobile number portability, whereby callers' knowledge of whether a call is on-net or off-net may become inaccurate, would reduce the rationale for an MNO to offer reduced on-net pricing, consistent with the findings of this paper. That is, where subscribers are unable to tell which network another subscriber belongs to, MNOs are less able to use reduced on-net pricing to internalise any residual call externality or tariff-mediated network effect. Also it is possible that a large operator may attempt to use on-net pricing as an anti-competitive predatory tool to "tip" the market in its favour. This would result in a larger than predicated on-net/off-net price differential. Hoernig (2007), however, shows that this is an inefficient strategy, and also counter to the finding in this paper of on-net/off-net price differentials being lower than would predicted by competitive models.
- <sup>32</sup>  $F_{2,83} = 1.5528$ .
- <sup>33</sup> Although this drops to 14% when separately estimated for pre-pay customers alone, this difference is not statistically significant, and more generally the equality constraints on contract and pre-pay coefficients imposed in model C are statistically acceptable.
- <sup>34</sup> In practise the network cost of terminating a call is slightly higher than that of originating a call, but we ignore this difference for the sake of simplicity.

# **'Recovering Fixed and Common Costs for Mobile Networks in Europe'**



# RECOVERING FIXED AND COMMON COSTS FOR MOBILE NETWORKS IN EUROPE

JANUSZ A. ORDOVER<sup>\*</sup>

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## I. INTRODUCTION

Mobile termination rates (“MTRs”), the rates charged by mobile networks for terminating calls on their networks, have long been debated by economists, policymakers and industry participants in the European Community (“EC”) and elsewhere. Under the commonly used Calling-Party-Pays (“CPP”) pricing scheme, MTRs are paid by the network originating the call – that is, by its subscribers – to the network terminating the call. In the past, the apparently high levels of unregulated MTRs for fixed-to-mobile (“F2M”) calls, and the resulting high F2M retail prices, raised concerns that Mobile Network Operators (“MNOs”) were setting these rates at “monopoly” levels despite the evident competition among the MNOs.<sup>1</sup> This outcome was attributed to the “bottleneck monopoly” held by each network over its customers for calls terminating on that network. Similarly, the regulators were concerned that MNOs were using high MTRs for mobile-to-mobile calls as means of implementing elevated off-net mobile-to-mobile (“M2M”) rates. These concerns resulted in the regulation of MTRs in many countries.

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<sup>\*</sup> Professor of Economics, New York University, New York, and Special Consultant, Compass Lexecon, Washington, D.C.

<sup>1</sup> Mark Armstrong aptly described this situation as that of “competitive bottlenecks.” *See, e.g.*, M. Armstrong, “Competition in Two-Sided Markets,” *RAND J. Econ.*, vol. 37 (2006).

In the EC countries, national regulators are required to set MTRs based on costs. While many different cost standards are possible, the general approach has been to set the mobile termination rates based on long run average incremental cost (“LRAIC”).<sup>2</sup> Costs are calculated by first identifying the efficient costs that are incremental to traffic and then allocating a proportion of these costs to termination based on network routing factors. Termination costs also have included a mark-up over LRAIC of termination to recover costs that are not incremental to traffic, such as common costs relating to non-network business overheads and to the provision of minimum network coverage as well as spectrum costs. These non-incremental costs are allocated to termination costs on a proportional basis.

The European Commission is currently consulting on a Recommendation which proposes an alternative approach regarding the recovery of fixed and common costs.<sup>3</sup> Under this approach, MTRs would continue to be set by national regulators based on the LRAIC model but MTRs would not be used to contribute to the recovery of fixed and common costs. Instead, MNOs would have to recover these costs solely from the unregulated retail side of the market, essentially from prices charged to their own subscribers. The Commission claims that this approach will improve efficiency and decrease competitive distortions in the mobile telecommunications market.

In this paper, we examine the proposed regulatory scheme and whether it constitutes an efficient solution for the recovery of fixed and common costs in the European mobile telecommunications market. We find that the proposed regulatory scheme errs by assuming that efficiency dictates that prices for inputs, such as

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<sup>2</sup> See, “EC Recommendation on Interconnection in a liberalised telecommunications market,” Recommendation (98/195/EC) and IRG, “Principles of implementation and best practice regarding FL-LRIC cost modelling,” Best Practice Paper (2000).

<sup>3</sup> See, “Draft Commission Recommendation on the Regulatory Treatment of Fixed and Mobile Termination Rates in the EU,” European Commission (2008) and “Draft Commission Staff Working Document Explanatory Note: Accompanying Document to the Commission Recommendation on the Regulatory Treatment of Fixed and Mobile Termination Rates in the EU,” European Commission (2008).

termination, should be set at marginal cost (or LRAIC). This paper first recalls that setting retail prices equal to marginal cost does not result in welfare maximizing outcomes in one-sided markets for either single product or multi-product firms when total revenues calculated at marginal cost prices do not cover total costs.<sup>4</sup> Such a pricing scheme does not necessarily result in welfare maximizing outcomes in two-sided markets either. We then extend this discussion to the pricing of termination in such settings and also conclude that economic efficiency calls for marking up of inputs sold to rivals, here the input being termination, in a variety of settings.

Given these results, we find that some portion of fixed and common costs should continue to be recovered from both the retail and the wholesale termination sides of the market as in the current regulatory scheme. We find that in order for the recovery of all fixed and common costs of an MNO from its retail prices to possibly be an efficient pricing outcome, call externalities must be relatively larger than access externalities, in the sense that the aggregate benefits to mobile subscribers from receiving calls on the network (call externalities) outweigh the aggregate benefits to call originators from being able to reach a larger base of mobile subscribers on the network (access externalities) — that is, in the sense that the un-internalized call externality effect dominates the access externality effect. We do not think that this is likely to be true in the mobile sector and it is inconsistent with existing regulatory views on the relative magnitudes of the call and access externality effects.

This paper is structured as follows: Section II discusses the economic theory of efficient retail pricing for single product firms in one-sided markets, multi-product firms in one-sided markets, and firms in two-sided markets. Section III considers efficient pricing for mobile termination services provided in either a one-sided or a two-sided market. Section IV analyses the efficiency of the Commission's proposed regulatory scheme. Section V concludes.

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<sup>4</sup> This is a standard definition of increasing returns to scale for single- and multi-product firms.

## II. EFFICIENT PRICING RULES FOR SINGLE- AND MULTI-PRODUCT FIRMS: THE BASICS

It appears that a recommendation to set MTRs at the incremental or marginal cost of providing terminating service is based on the view that marginal cost pricing of inputs (“termination”) is the efficient price level. While this is certainly correct in the first-best welfare sense, i.e., where any revenue shortfalls from marginal cost pricing can be made up via lump-sum taxes, this is certainly not the case where such lump-sum taxes are unavailable and the operators must break even. Consequently, in order to examine the appropriate regulatory treatment of termination fees, we need to clearly describe the environments in which the actual retail and wholesale prices are set, as well as consider the fixed and common costs that have to be recovered for the MNOs to remain viable over the long-haul.

Before we proceed with a more detailed discussion, we note that the major reason against marking-up input prices – here the price of termination – does not directly apply in the current context. This aversion stems from the fact that marking-up input prices above their marginal costs leads to *production* inefficiency because buyers of the input will substitute away from the marked-up input to an input that is provided at undistorted (or relatively less distorted) prices.<sup>5</sup> In the context we focus on, the possibilities for such substitution are non-existent inasmuch as one minute of termination is required for every minute of an F2M call, or an M2M call, and access-seekers have no ability to bypass the terminating network’s facility. Put another way, marking-up the price of termination on a mobile network does not induce inefficient substitution to another termination technology on a given mobile network and is not likely to induce construction of another access

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<sup>5</sup> See, e.g., P. A. Diamond and J. A. Mirrlees, “Optimal Taxation and Public Production I: Production Efficiency,” *Am. Econ. Rev.*, vol. 61(1) (1971) and “Optimal Taxation and Public Production II: Tax Rules,” *Am. Econ. Rev.*, vol. 61(3) (1971). Of course, when the producer of the input cannot break-even at marginal cost prices, it will have to mark up input prices appropriately. See, e.g., J. A. Ordover and J. C. Panzar, “On the non-linear pricing of inputs,” *Intl. Econ. Rev.*, vol. 23 (1982).

facility to the network's subscribers. Consequently, inefficiencies, if any, from marking-up termination costs must come from the suppression of overall F2M (or M2M) call volumes that such above-LRAIC pricing must induce. If shortfalls in total costs instead have to be made up in mobile retail prices, this would result in a suppression of retail activity either in terms of fewer calls being made by mobile network subscribers or from fewer subscribers or both. It is not clear *a priori* why one form of suppression of calling volumes is preferable to another.

In the next section we look at the efficient pricing rules for three market scenarios: single-product firms in one-sided markets, multi-product firms in one-sided markets, and firms in two-sided markets. Importantly, we find that the simple rule that price equals marginal cost does not apply in any of these market settings.

#### A. SINGLE- AND MULTI-PRODUCT FIRMS IN ONE-SIDED MARKETS

The simple economic precept that price ought to equal marginal cost only holds in the benchmark setting when there are not scale or scope economies or when any budgetary deficits for market participants resulting from marginal cost pricing can be covered with non-distortionary (lump-sum) taxes. Given that cost functions for telecommunications services are generally characterized by scale and scope economies and given that lump-sum taxes are not available to recover the shortfalls that would result from deviations from such pricing, marginal cost pricing is simply not feasible in the mobile telecommunications industry. This general point is well-recognized in economic literature and serves as a foundation for the theory of second-best (Ramsey-Boiteux) pricing.<sup>6</sup>

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<sup>6</sup> See, e.g., W. J. Baumol and J. G. Sidak, *Toward Competition in Local Telephony*, MIT Press (1994) for a non-technical discussion. See also, W. J. Baumol, J. C. Panzar, and R. D. Willig, *Contestable Markets and the Theory of Industry Structure*, Harcourt Brace Jovanovich, rev. ed. (1988) and J.-J. Laffont and J. Tirole, *Competition in Telecommunications*, MIT Press (2000) for more technical expositions.



For a single-product firm operating in a one-sided market, the second-best pricing formula simply leads to the prescription that price must equal average total cost. For multi-product firms operating in a one-sided market, optimal retail prices deviate from their underlying marginal costs in a manner that is determined by the elasticities of demand for each of the products as well as by the cross-elasticities of demand among the products of the multi-product firm. In the simplest case where these cross-elasticities are zero, individual product mark-ups are simply inversely related to the own elasticities of demand. This is the standard Ramsey-pricing formula under which products that have low elasticities of demand ought to bear higher percentage mark-ups above marginal cost as compared to products that have higher demand elasticities (where all these elasticities are calculated at the Ramsey-optimal vector of retail prices).<sup>7</sup> The obvious intuition is that such a pricing scheme minimizes the dead-weight cost of recovery of fixed and common costs because it minimizes the necessary suppression of output from the first-best levels while ensuring cost recovery. What this formulation also reveals is that exempting some products or services from such mark-ups merely puts an additional burden of responsibility for generating contributions toward the recovery of the joint and common costs on the remaining products. Unless there are sound economic or public policy reasons, no products or services should thus be exempt from bearing some responsibility for the recovery of total costs.

One way by which firms (or regulators) can ameliorate the inefficiencies from marking-up usage exclusively above marginal cost is by means of multi-part pricing, say a typical two-part tariff comprising a fixed entry (subscription) fee and a uniform usage fee. Such two-part tariffs do not solve the inefficiencies resulting from pricing above marginal cost, unless all potential customers are identical. This is because the positive fee for the right to purchase the product (i.e., entry or subscription fee) discourages some

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<sup>7</sup> W. J. Baumol and D. Bradford, "Optimal Departures from Marginal Cost Pricing," *Am. Econ. Rev.*, vol. 60 (1970) as well as papers cited above. For a path-breaking analysis of Ramsey pricing in industries with network externalities, see, R. D. Willig, "The Theory of Network Access Pricing," in H.M. Trebing (ed.), *Issues in Public Utility Regulation*, Michigan State U.P. (1979).

customers from buying the service in the first place. Consequently, *ceteris paribus*, the higher the entry fee the smaller number will subscribe. On the other hand, a positive entry fee enables a lower usage fee, if overall profits are held constant, so that usage is less repressed by those who join the network. Hence, the optimal structure of a two-part tariff must inevitably reflect a Ramsey-like trade off (driven by the respective elasticities) between distortions on the extensive margin (participation) and the intensive margin (usage).<sup>8</sup> Put another way, whatever the set of instruments used to raise sufficient revenues to recover the total costs and earn the permissible profit, the structure of prices will always reflect, at least in part, the underlying elasticities of demand for the service. In fact, in telecommunications markets, we observe extensive reliance on complex pricing schemes that reflect these tradeoffs (as well as other considerations as we note below).

In sum, regulators have extensive experience in analyzing prices for multi-product firms when there are significant joint and common costs including markets in which these costs are common to both regulated and non-regulated services. Indeed, the principles of Ramsey pricing have been endorsed by regulators in various industries, at least as a proper basis for setting rates. However, despite its theoretical acceptance, in many cases the informational requirements for Ramsey pricing are too formidable for it to be implemented in practice<sup>9</sup> and rule-of-thumb allocation principles such as EPMU are applied instead.<sup>10</sup> Even with this caveat, it is important to keep the Ramsey-like

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<sup>8</sup> See, e.g., R. D. Willig, "Pareto-Superior Nonlinear Outlay Schedules," *Bell J. Econ.*, vol. 9 (1978) and J. A. Ordover and J. C. Panzar, *supra* note 5. The latter paper provides a model of input pricing with negative inter-customer externalities which shows that in the presences of such externalities, the input is always sold at above marginal cost.

<sup>9</sup> Other practical impediments to using Ramsey prices include the political unattractiveness of implementing the skewed distribution of prices across products that often results from Ramsey principles and the inability to use Ramsey prices to make comparisons between countries or operators. See, e.g., M. Canoy, P. de Bijl and R. Kemp, "Access to Telecommunications Networks," in P.-A. Buiques and P. Rey (eds.), *The Economics of Antitrust and Regulation in Telecommunications*, Edward Elgar Publishing (2004), p. 157.

<sup>10</sup> The EPMU (or Equal Proportionate Mark-up) differs from Ramsey pricing in that the mark-up for common costs is proportional to the incremental costs of the product or service and does not include the willingness to pay

perspective when considering the soundness of the proposals for the reform of MTRs since these principles also inform the rules for the recovery of fixed and common costs in the market scenarios we examine next.

## B. FIRMS IN TWO-SIDED MARKETS

We now consider the matter of access pricing and joint and common cost recovery in a more complicated setting, namely where firms operate in two-sided markets, that is, a market in which a firm supplies a product (or products) to two separate but interrelated groups of consumers—one on each side of the market. Firms operating in two-sided markets face additional considerations when determining the efficient prices for the products they supply on the two sides of the market. In particular, pricing in two-sided markets considers not only the total level or price charged by the two-sided platform to the two sides but also the ratio of the two prices. As we shall see, these considerations do not generally cause us to deviate from the overall conclusion that termination should be priced at above the incremental cost of termination (defined as LRAIC). In fact, the two-sided considerations can, by themselves, potentially enhance such policy conclusions.

Although there are several definitions of two-sided markets, they all boil down to the presence of inter-side externalities where the two separate groups of consumers generate membership externalities (e.g., by joining a network or buying a product) and usage externalities (e.g., by participating in the network after joining or using the product after buying it) on each other. In the base case, these two groups are unable to negotiate with one another to set prices that internalize these externalities. As a result, a platform (or intermediary) is needed in order to bring the two sides together and to set an efficient

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(...continued)

component. While this method results in lower allocative efficiency than Ramsey pricing, the distortion is minor when common costs are small relative to incremental costs. *See, e.g., id.*

price structure so as to maximize the utility of both groups of consumers subject to (at least) breaking even.<sup>11</sup>

Two-sided markets differ fundamentally from one-sided markets due to the volume of traffic being determined by both the structure of prices between the groups of consumers and the overall price level. Profit-optimizing and welfare-optimal prices (subject to break-even constraints) are determined by the magnitude of the price elasticities as well as the strength of inter-side externalities emanating on both sides of the market. Suppliers determine prices by balancing demand on the two sides of the market. Where the platform facilitates transactions between the two groups of customers, the per-unit cost of a transaction is joint and common to the two groups. Consequently, its recovery should be guided by typical Ramsey-type considerations. Indeed, in setting equilibrium prices, platform (network) operators are thus led – again consistent with general Ramsey-pricing principles – to recover more of the total network costs (including platform fixed and common costs) on the side of the market on which the consumers are less elastic and/or the side which values the participation of the other side more, so that the side that experiences higher external benefits contributes more, *ceteris paribus*. As a result, the prices which the interrelated groups of consumers face can depart very substantially from any conventional view of ‘cost.’

This is the key insight from the economic research into two-sided markets. For example, in many two-sided markets, one set of consumers may obtain services for ‘free,’ whilst the entire cost of the platform is funded by another set of consumers. Such pricing occurs, for example, with advertising-funded newspapers, or search engines on the internet. These pricing structures – in which one side appears to bear most (or all) of the cost burden – can nonetheless be highly efficient and welfare maximizing.

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<sup>11</sup> J.-C. Rochet and J. Tirole, “Two-Sided Markets: A Progress Report,” *RAND J. Econ.*, vol. 37(3) (2006).

### III.SETTING EFFICIENT MTRS

Mobile telecommunications firms operate in two-sided markets and provide multiple services to consumers in those markets. In addition, mobile telecommunications firms face significant fixed and common costs due to the need to invest heavily in infrastructure in order to achieve a minimum scale of operations. As evident from the above discussion, these features pose critical challenges for regulators trying to develop efficient pricing schemes for these markets. In particular, the two-sided market structure has specific implications for the efficient price level of mobile call termination that differ from those which would arise if mobile call termination were provided by a multi-product firm in a one-sided market.

To illustrate, assume that mobile termination services are provided in a one-sided market. The discussion above can be easily extended to the pricing of termination in a simple scenario in which the incumbent firm sells termination to its customers to rivals offering potentially differentiated products, such as long-distance service or various vertical services. In this case, often termed a “one-way” access scenario, termination is just another service (albeit a wholesale service) offered by the incumbent firm. The incumbent firm uses net revenues from all of its services to fund its fixed and common costs. From the discussion above, it readily follows that if termination is priced at marginal cost and the rivals divert sales from the incumbent, their activities will render the profit-constrained incumbent non-viable, unless a replacement source of revenues is found. Termination fees are one such source of revenues.

It is easy to show that in the benchmark case where all the products are substitutes, termination should be provided at rates exceeding the marginal cost of termination.<sup>12</sup> This policy prescription makes sense since if the incumbent could directly

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<sup>12</sup> If rivals’ products are complementary to those of the incumbent, termination may be priced below cost so as to stimulate usage of the incumbent’s services which enhances revenues and allows smaller mark-ups on these products. Again, this is entirely consistent with the Ramsey-Boiteux framework in which cross-elasticity effects modify the typical Ramsey mark-up rule.

set the rivals' retail prices, it would set them above the marginal costs of production and use the mark-up to defray some portion of its fixed costs. The actual deviation from marginal cost will depend on the bypass possibilities as well as the range of mechanisms available to the regulator but the logic underlying these results is always the same: if some deviations from marginal cost pricing are necessary, then the proper approach is to minimize the welfare losses from the necessary mark-up. "Taxing" termination may be (and generally will be) a part of such policy.<sup>13</sup>

Thus, there is sound economic reason to impose a markup on termination charges to facilitate recovery of fixed and common costs incurred by the incumbent network spanning all services, including the provision of termination, because, as noted above, it is not possible for callers to substitute to another input; the inefficiency comes from the fact that the mark-up is reflected in a higher retail price, which causes a suppression of demand. As a result, while there is no production inefficiency from a mark-up on termination costs as a source of revenue for defraying a portion of fixed and common costs, the inefficiency arises on the usage side. Consequently, regulators will have to respect the Ramsey principles and gauge the relative magnitudes of the pertinent elasticities in determining the relative mark-ups on retail services (including those arising from mark-ups on termination).<sup>14</sup>

In a two-sided market, numerous factors – which add another layer of complexity to the already challenging considerations noted above – must be accounted for in

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<sup>13</sup> Armstrong shows that where there is a possibility of some bypass, termination should be priced at cost provided the incumbent can recover the shortfall by means of a tax on the competitors' output. This result is consistent with the notion alluded to earlier that when input taxation causes productive inefficiency, it should be avoided if there are enough instruments at the disposal of the regulator. See, M. Armstrong, "The theory of access pricing and interconnection," chap. 8, in M. Cave, et al., *Handbook of Telecommunications Economics*, vol. 1, North Holland Elsevier (2002).

<sup>14</sup> It may appear that a first-best solution to the recovery of fixed and common costs could be implemented by means of a multi-part pricing imposed on users, with a fixed fee component and marginal-cost-based volume pricing. This is so only when consumers are homogenous, however. When consumers are not homogenous, the fixed fee component will create distortions by discouraging some consumers from subscribing to the network, which necessitates the careful assessment of the pertinent elasticities.

designing rules for the recovery of network costs, including the cost of termination. In the context of mobile termination, the two-sided nature of the market comes from the fact that a mobile network facilitates communications between two sets of users – the callers and those who are called. It is clear that in such a setting the rules for cost recovery can be rather complex. Moreover, the existence of competition between mobile platforms further complicates matters because it provides an independent source of constraint on retail prices.

The economic literature that addresses the issue of welfare maximizing MTRs shows that relationship of such MTRs to the marginal cost of termination is fundamentally determined by the existence and size of the access externality and the call externality, amongst other factors. Generally speaking, the welfare maximizing level of the MTR, in the presence of access externalities and no call externalities, is above the cost of providing termination. When call externalities are introduced into the analysis, the welfare maximizing level of the MTR falls back towards cost.<sup>15</sup> Indeed, Baranes and Flochel have examined the impact of call externalities on two-way access and shown that where subscribers care about the volume of calls they receive – i.e., subscribers prefer a network where they will receive a higher volume of incoming calls – and networks use multi-part pricing, call externalities will be internalized by the networks through below cost termination fees which enables the networks to charge higher fixed subscription fees.<sup>16</sup> Consequently, in a two-way access situation, the ability of networks to use termination fees to internalize call externalities removes the reason for cost-based

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<sup>15</sup> Armstrong, Wright, Gans and King, and Hausman and Wright all conclude that in the presence of access externalities, in the context of one-way access, the welfare maximizing MTR is above the cost of termination. See, Armstrong, *supra* note 13; J. Wright, “Access Pricing under Competition: An Application to Cellular Networks,” *J. Industrial Econ.*, vol. 50 (2002); J. Gans and S. King, “Mobile Network Competition, Consumer Ignorance and Fixed-to-mobile Call Prices,” *Information Econ. & Policy*, vol. 12 (2000); and J. Hausman and J. Wright, “Two Sided Markets with Substitution: Mobile Termination Revisited,” ms (2006). The existence of a call externality ameliorates this effect. For example, Armstrong, *supra* note 13, and Wright, *supra* note 15, show that allowing for call externalities lowers the welfare maximizing MTR.

<sup>16</sup> See, E. Baranes and L. Flochel, “Competition in Networks with Call Externalities,” ms (2004). See also, B. E. Hermalin and M. L. Katz, “Customer or Complementor? Intercarrier Compensation with Two-Sided Benefits,” ms (2006), who model benefits to both callers and calling parties in a one-way access setting.

regulation of MTRs because, at least in theory, such termination fees would be *below* LRAIC.

In practice, any intervention to set prices in a two-sided market must involve decisions as to how the recovery of various categories of costs should be distributed among different customers and services. Here, the magnitude of the two externality effects, alongside other factors such as the magnitude of the price elasticities for services on the respective sides of the market, determine from which side of the market the majority of the costs should be recovered. For example, all else equal, if the access externality were more significant than the call externality, then the majority of total network costs should be recovered from the termination side via MTRs whereas if the call externality were greater, then a greater proportion of costs should be recovered via retail prices.<sup>17</sup> Given these possibilities, the two-sided nature of mobile telecommunications markets could therefore suggest a structure of prices in which one or the other side of the market – either the mobile subscribers or those wishing to call the mobile subscribers – bears a larger proportion of the overall cost of the call and of the underlying network on which these calls are enabled. The question of which side of the market should bear the larger proportion of costs is ultimately an empirical question of whether the access externality effect or the call externality effect dominates. There are also additional considerations, such as those alluded to earlier, namely the extent of subscriber heterogeneity as gauged in terms of their overall benefit from joining a mobile network. As we have seen, such heterogeneity reduces the efficiency of the recovery of fixed costs

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<sup>17</sup> That is, the more relative value that consumers making calls place on being able to contact mobile network subscribers on their mobile phones, the greater MTRs tend to be in equilibrium. Higher MTRs tend to result in lower retail prices and/or higher subsidies to subscribers, enticing more consumers to join the mobile network and further increasing value of the network to calling parties. On the other hand, when called parties receive relatively more value from receiving calls, the equilibrium and welfare maximizing termination charges to fixed and off-net mobile callers tend to be lower. Lower MTRs incentivize these callers to make more calls to mobile consumers, which benefits the mobile consumers receiving these calls. *See, e.g.,* Armstrong, *supra* note 13 and Wright, *supra* note 15.



by means of lump-sum subscriber fees. This effect is especially important if, as discussed below, the access externalities are significant.

In evaluating the extent of the access and call externalities, many regulators have concluded that it is not possible to estimate the extent of these externality effects with the certainty required to ensure that any resulting cost allocation is more efficient than one based purely on efficiently incurred costs.<sup>18</sup> We are not aware of any regulators outside the UK who have attempted to quantify empirically the externality effects present in the mobile telecommunications industry.<sup>19</sup>

The UK competition regulator (UK Competition Commission) and the UK telecommunications regulator (Ofcom) have examined in detail the application of, and the size of, externalities applicable to the mobile industry.<sup>20</sup> Both of these regulators have concluded that the access externality effect is more significant than the call externality effect.<sup>21</sup> That is not to say that the called party receives no benefit,<sup>22</sup> but rather that the

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<sup>18</sup> For example, ARCEP concluded in its 2007 MTR decisions (decision nos. 04-937 & 04-938) that the complexity of measuring the level of the externality did not justify the *a priori* low impact it would have on the MTR (based on Ofcom's MTR mark-up due to the externality surcharge) and the potential to distort competition if applied incorrectly.

<sup>19</sup> However, a higher MTR due to network externality effect is allowed by the Greek NRA through a mark-up on LRAIC.

<sup>20</sup> See, Competition-Commission, *Vodafone, O2, Orange and T-Mobile: Reports on References Under Section 13 of Telecommunications Act 1984 on Charges Made by Vodafone, Orange, O2 and T-Mobile for Terminating Calls Made by Fixed and Mobile Networks*, HMSO, London (2003); Ofcom, *Wholesale Mobile Voice Call Termination: Statement*, Office of Communications, London (2004); and Ofcom, *Mobile Call Termination: Statement*, Office of Communications, London (2007).

<sup>21</sup> Ofcom estimated the size of the network externality by identifying through market research the number of non-subscribers likely to join a mobile network if subsidized, and the number of marginal subscribers who were not willing to pay the full cost of subscribing to a network. Ofcom calculated the necessary subsidy – using a net externality factor – in order to ensure that these marginal subscribers would still receive subscription subsidies. This approach was approved by the UKCC in 2003. The UK Competition Commission (2003) and Ofcom (2004 and 2007) also examined the applicability of other types of externalities – including the call externality. These externalities were discounted on the basis that (a) they are likely to be internalized and (b) the value is likely to be small and because the UKCC “did not think that [the UKCC] would be able to measure them accurately.” See, Competition-Commission, *supra* note 20, p. 226.

<sup>22</sup> Ofcom market research indicates that the benefit of receiving a call is far less significant than the benefit of making a call. Market research, conducted in 2003, shows that 28% of respondents spontaneously stated that cost of making a call was the main determinant in determining a network. This compares to 2% who said that the cost to

un-internalized benefit received by existing subscribers from the addition, or retention, of a subscriber to mobile networks, is larger than the un-internalized benefits received by mobile subscribers from being able to be called by other fixed and mobile subscribers.

In fact, while it held that the majority of call externalities would be internalized, Ofcom noted that there is likely to be some un-internalized call externality arising from calls outside of repeat calling relationships.<sup>23</sup> Importantly, the effect of this was taken into account in the economic modeling used by the UKCC in 2003 and Ofcom in 2004 and 2007 to determine the level of the optimal externality surcharge. As such, the externality surcharge implemented by Ofcom in 2004 and 2007 should be interpreted as being the net externality surcharge taking into account the level of access externalities and un-internalized call externalities.<sup>24</sup>

The regulators' finding that the access externality is more significant than the call externality is not surprising, since it is easy to see that call externalities are easier to internalize between calling parties than are access externalities which can be generated by subscribers joining the network with which the existing subscriber may have only a very weak personal link.<sup>25</sup> That is, call externalities arise from a two-person relationship, in which the ability to negotiate and internalize the external call benefits is high, while

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(...continued)

others to call them was the main factor. Available at <http://www.ofcom.org.uk/consult/condocs/wholesale/wholesale.pdf>.

<sup>23</sup> Evidence was presented that the majority of calls occur within repeat calling relationships. As such, any call externality will be internalized through the ongoing relationship between the parties. See, Competition-Commission, *supra* note 20, p. 255. It must also be acknowledged that calls from unknown parties also contain a probability that the call results in negative utility for the called party – i.e., nuisance calls. Calls from unknown parties, therefore, create the possibility that the call externality is negative.

<sup>24</sup> The key factor determining the level of the externality surcharge is the R-G Factor. Rohlfs adjusted cross-elasticities of demand estimates to take into account non-internalized call externalities. He recommended that a gross R-G Factor of 1.3 to 1.7, equating to a net factor of less than 1.1, be used. See, J. H. Rohlfs, "A Model of Prices and Costs of Mobile Network Operators," Report prepared at the request of Oftel (2002). Ofcom used a gross R-G Factor of 1.5 in calculating the optimal externality surcharge. See, Ofcom (2007), *supra* note 20, p. 342. The surcharge should therefore be interpreted as being the externality surcharge net of un-internalized call externalities.

<sup>25</sup> We are not aware of any regulator that has concluded – based on empirical studies or for other reasons – that the call externality is greater than the access externality.

access externalities are generated not only by persons in a relationship with each other but also by parties who are not in a relationship or even known to one another. In this situation, the welfare maximizing allocation of costs between the two sides is one that allocates a larger proportion of costs to the origination side of the mobile call market.

#### **IV. ANALYSIS OF THE PROPOSED REGULATORY SCHEME**

The regulatory approach adopted in Europe to date is consistent with pricing in a two-sided market in which the access externality is more significant than the call externality. Specifically, regulators have applied a ‘Calling-Party-Pays’ model to the division of costs. In this model, the network costs incurred in delivering calls are met by the initiating or calling party, being the mobile subscriber in the case of calls from the mobile network and the subscriber on the other network in the case of calls to the mobile network. In addition, regulators also have decided, to date, that the common costs of providing mobile services should be shared amongst both calling and called parties through a mark-up on all services. Other costs of the platform – marketing costs, subscriber acquisition and retention costs, and other costs associated with gaining mobile subscribers who can be called – are in principle borne entirely by mobile subscribers (the called party) rather than by those benefiting from the opportunity to call them.<sup>26</sup> Of course, when all costs need to be recovered by the network, it really does not matter in the end whether a particular element of cost is placed in one bucket versus another for the purposes of analyzing cost recovery. The allocation matters only insofar as it puts a cap on the quantum of recovery from one service versus another, e.g., retail services versus wholesale services.

As discussed above, the proposed regulatory scheme would change this approach to recover fixed and common costs on the retail side of the market only rather than from both the retail and the wholesale termination sides. The European Commission claims

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<sup>26</sup> Although the two-sided nature of the market does not mean this result is obvious – the presence of externalities in the platform means that it may be efficient for calling parties to contribute to these costs – this is explicitly provided for in Ofcom’s adoption of a ‘network externality surcharge’ on MTRs.

that the proposed scheme is preferable to apply a LRAIC approach to MTRs without any mark-up for fixed and common costs because this approach will improve efficiency and reduce competitive distortions in the mobile telecommunications market. As we have already indicated and further explain below, it is not clear that it will accomplish either of these objectives.

#### A. EFFICIENCY

In this context, improving efficiency involves reallocating costs in order to achieve more efficient retail prices in the market.<sup>27</sup> As discussed above, MTRs are not set in isolation but in conjunction with retail prices and total network costs are recovered from both sides of the market based on the relative magnitudes of the externalities on each side and other considerations. We have already discussed how difficult it is to benchmark any particular pricing proposals against an ‘optimally efficient’ benchmark for a two-sided market in which potent, but difficult to measure, externalities are key drivers of efficient pricing.

In the absence of rigorous assessment of these effects, concluding that the call externality is larger than the access externality effect, it is impossible for the Commission to recommend at this time that it is more efficient to recover all of the joint and common costs from the retail side of the market. We are not aware of any such assessment by the Commission. Thus, the Commission’s proposal to reallocate the burden of common cost recovery entirely to one side of the market can easily reduce efficiency, given that such allocation of recovery responsibilities is not a necessarily welfare-maximizing public policy in a variety of realistic market scenarios. Since it is clear that, on average, both callers and called parties derive utility from the making and receiving of calls, but existing research shows that the access externality is larger than any call externality, the

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<sup>27</sup> The issue here is not about whether inefficiencies should be captured in regulated prices, but about how (i.e., from which customers) efficiently incurred and unavoidable costs should be recovered by MNOs. We note that we strongly agree that inefficiently incurred costs should not be recovered from regulated prices – in fact, we do not think they should or would be recovered at all in a competitive market.

least distortive solution to the recovery of common costs would clearly require that they be recovered from both callers and called parties, with a potentially greater proportion allocated to the party making the call. In other words, there is no reason to believe that the proposed regulatory scheme is more efficient than the current scheme.

## B. COMPETITIVE DISTORTIONS

There are two potential competitive distortions that generally concern regulators with respect to cost recovery in mobile telecommunications markets. The first is said to arise from a (partial) transfer of responsibility for cost recovery between fixed and mobile markets, where proponents argue the effect of this transfer “has been to injure fixed customers and their operators...” and that “the transfer has also distorted competition between fixed and mobile operators.”<sup>28</sup> However, even from a narrow perspective of cost analysis, this so-called transfer is highly unlikely to constitute a cross-subsidy based on standard definitions. For example, according to Faulhaber, a service cross-subsidizes other services when the revenues from the service exceed the stand-alone cost of providing that service.<sup>29</sup> Temin extends this definition and defines a cross-subsidized price as being below the incremental cost of the associated service. Temin further notes that in the presence of joint costs, there exists a range of prices lying between the stand-alone cost and the incremental cost that are neither cross-subsidizing nor cross-subsidized. Such prices are possible because the multi-product firm realizes the benefits of scale and scope economies and is able to pass them on to consumers in form of favorable prices.<sup>30</sup> If the current MTRs entail some cross-subsidy from fixed to mobile customers, then according to these definitions, the revenues based on the current MTRs

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<sup>28</sup> See, O. Bomsel, M. Cave, G. Le Blanc, and K.-H. Neumann, “How mobile termination charges shape the dynamics of the telecom sector,” University of Warwick and WIK Consult (2003), available at <http://www.cerna.enscm.fr/Documents/OB-GLB-F2M-FinalReport.pdf>, p. 7.

<sup>29</sup> See, G. R. Faulhaber, “Cross-Subsidization: Pricing in Public Enterprises,” *Am. Econ. Rev.*, vol. 65 (1975). Of course, this definition assumes that firm’s profits are constrained.

<sup>30</sup> See, P. Temin, “Cross Subsidies in the Telephone Network after Divestiture,” *J. Regulatory Econ.*, vol. 2 (1990). Note that Ramsey prices can entail some cross-subsidy because these are benchmarked against marginal costs and not incremental costs (which may include some product-specific fixed costs).

will be greater than the stand-alone cost to an FNO of establishing its own mobile network to provide its fixed subscribers with mobile termination on F2M calls.

As noted above, the MTR under the current scheme is set at LRAIC plus a proportional mark-up for fixed and common costs. In asking whether fixed subscribers are cross-subsidizing mobile subscribers one could, following a standard practice, ascertain whether the revenues from mobile termination exceed the stand-alone cost of the mobile network. This test reflects the fact that fixed subscribers derive benefits from having a mobile network with subscribers that can be reached. Since the stand-alone cost of providing mobile termination would include all fixed and common costs associated with the operation of the network, rather than just some notional share of these costs, the current revenues calculated at current MTRs are likely less than the stand-alone cost and thus, the current MTRs are not a cross-subsidizing price.<sup>31</sup> Of course, because current MTRs exceed the incremental cost of providing mobile termination (i.e., LRAIC), MTRs are not a cross-subsidized price either. This result places the current MTRs in the range of prices that result from operating efficiencies in a multi-product firm.

As this analysis shows, the difference in FNO and MNO fixed and common costs is irrelevant with respect to whether fixed network callers are cross-subsidizing the mobile network subscribers who they call. Moreover, given that there is no evidence that current MTRs entail a cross-subsidy to the mobile side, proponents of the proposed scheme will be hard-pressed to argue that the proposed scheme will reduce a competitive distortion resulting from such a cross-subsidy.

We would further add that, as noted above, efficient pricing schemes in two-sided markets may in fact involve an allocation of costs based on elasticities and externalities that results in one side paying very little or nothing or even being paid to participate. For

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<sup>31</sup> Of course, in this hypothetical situation, the fixed network would not charge itself LRAIC for termination. It would book termination on its mobile network at marginal cost but it would have to mark-up the retail price of an “on-net” F2M call sufficiently to recover all the fixed and common costs.

example, men generally subsidize women in on-line dating clubs and newspaper subscribers are usually cross-subsidized by advertisers. This is true even if we assume away all the fixed costs of a platform. Thus, even if a cross-subsidy were proven to exist between fixed and mobile consumers, the existence of such a cross-subsidy would not be sufficient to establish that it caused a competitive distortion to exist as well.

The second claimed competitive distortion is said to occur within the mobile market itself. In this case, the customers of smaller MNOs are said to cross-subsidize the customers of larger MNOs due to the higher proportion of off-net calls, and thus the higher proportion of MTRs paid to other networks, incurred by the smaller networks. However, there is no reason to believe that the existence of different-sized MNOs results in a cross-subsidy from the smaller to the larger MNOs. The size of the MNOs does not matter as long as MTRs are equal and calling patterns between the networks are balanced—i.e., proportional to each network’s size.<sup>32</sup> In any case, in the case of two-way access, it has been shown, again consistent with the precepts embodied in the principles of the efficient component pricing rule (ECPR) or modified ECPR (MECPR) that termination fees between mobile networks should include an element of mark-up towards the recovery of mobile network fixed and common costs.<sup>33</sup>

Moreover, applying the same definitions of a cross-subsidizing price as above returns the same result as above—namely, that the current MTRs (set at LRAIC plus a proportional mark-up for fixed and common costs) are less than the stand-alone cost of providing mobile termination service to other MNOs and greater than the incremental cost of providing this service. Once again, there is no cross-subsidy causing a

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<sup>32</sup> For example, a network that has 10% of subscribers will have 90% of its subscribers’ calls be off-net calls and will receive 90% of its incoming calls as off-net calls (under a broad range of symmetry assumptions). See, P. de Bijl and M. Peitz, *Regulation and Entry into Telecommunications Markets*, Cambridge University Press (2002) for more on balanced calling patterns.

<sup>33</sup> See, e.g., Laffont and Tirole, *supra* note 6. For discussions of termination fees that reflect the MECPR principles, see, Doh-Shin Jeon “A Simple Access Pricing Rule to Achieve the Ramsey Outcome for Interconnected Networks” (2005) and Sue H. Mialon, “Pricing Access in Network Competition,” *J. Regulatory Econ.*, vol. 31(1) (2007).

competitive distortion to be reduced by the proposed scheme and therefore, no reason to implement the proposed scheme based on such a claimed benefit.<sup>34</sup>

## V. CONCLUSION

The above discussion demonstrates that there is no compelling support for the proposed regulatory scheme of recovering fixed and common costs from retail prices only instead of also through MTRs. There is abundant support in the theoretical literature for setting MTRs above cost. Moreover, the existing evidence shows that the network externality is more significant than the call externality, supporting greater cost recovery from termination side in this case. However, in the reverse case of a more significant call externality, the literature has shown that MTRs will be below cost, eliminating the need for regulation at all.

The Commission has yet to offer a convincing case regarding the benefits of the scheme. As we showed above, the Commission's key justifications, improved efficiency and decreased competitive distortions, fail under closer examination. In addition, it is unclear what effects the proposed scheme would have on welfare. As we have discussed, in two-sided markets with externalities that we cannot measure well, setting prices at cost (including fixed and common costs) is the least distortive approach and therefore the optimal second best solution. The current scheme follows this approach. Thus, there is no reason to believe that departing from this scheme would enhance welfare and in fact, given that the proposed scheme will generate welfare-decreasing as well as welfare-increasing effects, there is reason to believe that it could produce the opposite effect.

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<sup>34</sup> The real distortions between MNOs arise because regulators have allowed asymmetric MTRs, with mark-ups over cost, between MNOs for years. Elimination of these asymmetries would reduce competitive distortions. *See, e.g., Armstrong, supra* note 13.