

Final report for ComReg

Changes in the mobile
market in Ireland and the
implications for our MTR
recommendation to
ComReg

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0 Executive summary

In November 2012, Analysys Mason finalised a report entitled *Fixed and mobile termination rates in Ireland* (the ‘2012 report’) for the Commission for Communications Regulation (ComReg).¹ This report considered the pricing options for wholesale voice termination in Ireland and concluded that the pure long-run incremental costing (pure LRIC) approach was the most suitable for setting both wholesale fixed termination rates (FTRs) and wholesale mobile termination rates (MTRs) according to the assessment criteria set out in the 2012 report. The resulting pricing decision for MTRs issued by ComReg has since been appealed,² and ComReg has developed a cost model of mobile networks that is capable of deriving a unit cost of mobile termination consistent with the European Commission (EC) Recommendation of May 2009³ (EC Recommendation).

The reasons our 2012 report concluded that pure LRIC was the most appropriate basis on which to set cost-oriented MTRs included the following:

- *From an efficiency perspective*, it would lead to a higher proportion of retail revenues remaining under the control of the retail operator (as a smaller proportion of these revenues would be paid out in off-net termination charges), meaning mobile service providers (MSPs) would have opportunities to recover more of their costs from their own customers, rather than from subscribers of other networks.
- *From a competitive perspective*, it would allow some of the smaller operators – which cannot benefit as much as larger operators from tariff-based network externalities (TMNEs) – to compete more easily by offering plans with more bundled off-net minutes. In general, operators could also put together converged fixed–mobile packages including off-net call bundles.
- *From an equity perspective*, some consumers (such as fixed-only users) could pay lower prices overall. The benefits experienced by fixed-line users should be particularly significant to the older population, who are much more likely to be fixed-line users and least likely to live in mobile-only households.⁴

¹ http://www.comreg.ie/_fileupload/publications/ComReg12125a.pdf.

² http://www.comreg.ie/_fileupload/publications/ComReg12139.pdf

³ European Commission Recommendation: “The Regulatory Treatment of Fixed and Mobile Termination Rates in the EU” (2009/396/EC), dated 7 May 2009.

⁴ Furthermore, some mobile operators argued at the time of writing of the 2012 report that lowering MTRs would lead to an increase in other charges (e.g. mobile-originated calls or subscriptions) due to the waterbed effect, thereby potentially reducing their number of subscriptions. However, our own analysis suggested that mobile operators were not offering low-usage users the benefits of the lowest possible calling prices (low-usage subscribers paid significantly more per minute than high-usage users). It was also noted there were extensive sales of SIM-only packages, implying that there is a large enough pool of working handsets in Ireland for consumers to re-use their handset rather than paying for a new handset. Therefore, operators would not in theory be able to significantly

Since the start of 2013 (shortly after the 2012 report was published), Irish MTRs have been set at a maximum level of EUR2.6 cents. This was originally only an interim price on a glide path whose endpoint was set according to a (much lower) value based on a pure LRIC benchmark that would have come into force from July 2013. However, following Vodafone's legal appeal and a subsequent order made by the High Court, an interim MTR of EUR2.6 cents has continued to be in use. Accordingly, a pure LRIC costing methodology has still, as of yet, not been applied in Ireland. This means that one would not expect to have already observed since 2012 the posited benefits (or alleged drawbacks) of a move to a pure LRIC MTR rate since no such pure LRIC rate has been in place. This is an important overall point when considering any changes in the market since 2012 and their implications for the appropriateness of a pure LRIC rate.

ComReg released a new Draft MTR Model Decision⁵ in May 2014 to set MTRs from 2015 onwards according to a pure LRIC calculation.

In parallel to the process of finalising this MTR Model Decision, ComReg has commissioned Analysys Mason to revisit our relevant analyses in the 2012 report (which used 2011 data) with 2012–14 data and consider the potential impact, if any, that recent changes in the Irish mobile market have on our conclusion in the 2012 report (though recognising that a relatively short period of time has elapsed since the 2012 report was written). ComReg has provided Analysys Mason with quarterly market data from 2012 until Q2 2014 inclusive, and MSPs were issued with a Section 13D Information Request in August 2014, in accordance with ComReg's formal powers to request additional information.

Our conclusion in the 2012 report (namely that the choice of pure LRIC based MTRs was most suitable) was based on considerations from a number of perspectives, including efficiency, competition and equity. The 2012 report also considered implementation-related perspectives (e.g. issues related to the EC Recommendation, such as whether a benchmark or cost model is used), but we do not reconsider these in the present report. Our approach has been to describe recent developments in the Irish market and changes in the situation of the MSPs, and then revisit our conclusion in the context of these developments, examined from the perspectives of efficiency, competition and equity⁶. This approach is summarised below in Figure 0.1.

increase their handset/connection charges to compensate for lost MTR revenues, since consumers could exercise the option to change provider while retaining their handset.

⁵ http://www.comreg.ie/_fileupload/publications/ComReg1429.pdf

⁶ For the avoidance of doubt, in this report we use the terms LRIC(+) and LRAIC(+) according to the same definitions as set out on page iv of the 2012 report.

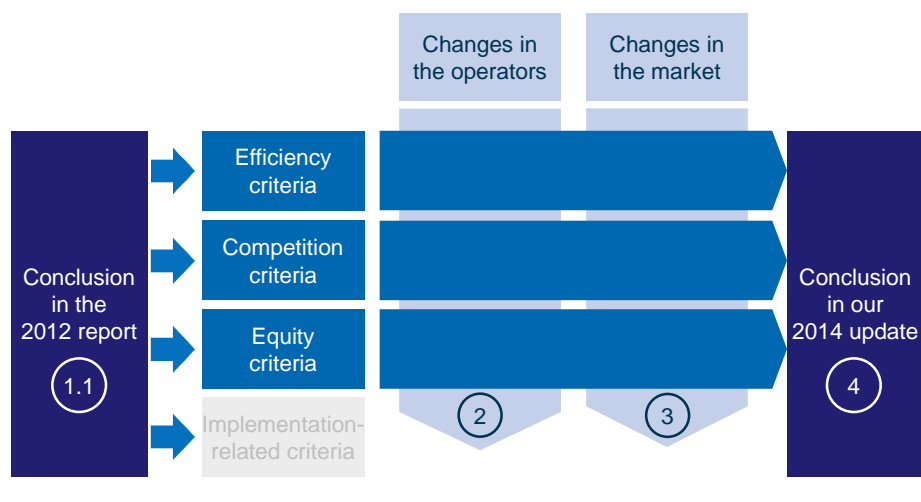


Figure 0.1:
Overview of the
structure of our
analysis [Source:
Analysys Mason,
2014]

We observe that the Irish mobile market has been in a state of uncertainty during the two-year period since the writing of the 2012 report. Firstly, there was a legal challenge to the MTR set in 2012 which meant that the benchmarked pure LRIC rate set by ComReg was not in force for the intended period of time and was replaced by an interim maximum rate of 2.6 cents per minute by order of the High Court. Second, the market has been waiting, and anticipating, ComReg's modelled pure LRIC rate. Finally, for much of that period the merger of two of the MNOs was unresolved pending EC approval.

0.1 Findings of this study

Our conclusions with regard to the three criteria of efficiency, competition and equity are summarised below in Figure 0.2. We have classified each market development as having either a *neutral*, *positive* or *negative* implication⁷ for the choice of pure LRIC based MTRs. We have presented our findings in this way – as neutral, positive or negative – with respect to choosing pure LRIC based MTRs so that we can assess overall⁸ whether we maintain⁹ our 2012 conclusion.

As can be seen, we have identified mainly positive and neutral implications for our conclusion of pure LRIC based MTRs. There are a small number of negative indicators where market changes mean that a degree of retreat, caution, risk or restraint could be applicable in the adoption of pure LRIC based MTRs. However, it is our opinion that these are significantly outweighed by the positive and neutral factors in our analysis, supporting our original conclusion in 2012 to recommend pure LRIC based MTRs to ComReg.

⁷ A positive implication is supportive of the application of pure LRIC based MTRs; a negative implication is one that does not lend support for the use of pure LRIC based MTRs

⁸ However, we have not attempted any quantitative net benefit calculation for any of these developments.

⁹ Our conclusions were formed in November 2014 on the basis of public information and ComReg market data to Q3 2014, as well as Section 13D responses to Q2 2014.

Figure 0.2: Conclusions with respect to our findings in the 2012 report [Source: Analysys Mason, 2014]

Developments with a positive implication	Developments with a neutral implication	Developments with a negative implication
Assessment from perspective of efficiency		
<ul style="list-style-type: none"> All operators now control a greater proportion of their own retail revenue, compared to the proportions calculated in the 2012 report In the context of the smaller operators, the drawbacks of tariff-mediated network externalities (TMNEs) and any on-net / off-net price discrimination, resulting from the merger of two larger operators present in Ireland would still be mitigated by lower MTRs Prior to the merger there would have been a material flow of traffic and LRIC+¹⁰ based revenues between H3GI and O₂. Each implicitly supported the common costs of the other in the '+' paid in MTRs (and similarly supported the common cost of other operators). However, after the merger, their inter-subscriber traffic becomes on-net traffic and the associated common costs must be recovered from non-interconnected services. This means that the proportion of the common cost recovery of the merged entity that relies on the '+' in LRIC+ MTRs has declined by a material amount 	<ul style="list-style-type: none"> The number of MNOs has reduced, although MVNOs are persisting (and new MVNOs are now entering the market) MNOs are continuing to invest in their 2G and 3G networks as well as new 4G networks. Investment is focused on enhancements to data services 	<ul style="list-style-type: none"> H3GI (respectively O₂) no longer need to overcome the drawbacks of the TMNEs of O₂ (respectively H3GI), by using pure LRIC MTRs for calls between their customers i.e. the merged operator now need only overcome the drawbacks of TMNEs from two other MNOs, rather than three. Before the merger, a smaller proportion of users were on the same network as other users, and subscribers of H3GI and O₂ were required to pay (benchmarked LRIC+) MTRs to each other for H3GI-O₂ calls)

¹⁰ LRIC+ based revenues given that 'benchmarked' MTRs in Ireland have not yet fallen to pure LRIC levels.

Developments with a positive implication	Developments with a neutral implication	Developments with a negative implication
Assessment from perspective of competition		
<ul style="list-style-type: none"> • Pure LRIC based MTRs would further reduce the net flow of revenues to mobile operators from fixed operators • Some converged fixed-mobile offers are now appearing • Both on-net calls, and off-net calls to fixed or mobile networks are increasingly featuring in bundles, as the risks to MSPs associated with such bundles have reduced with lower MTRs 	<ul style="list-style-type: none"> • There is now some spectrum asymmetry, but all MNOs should continue to have enough spectrum to support 2G/3G voice 	<ul style="list-style-type: none"> • None
Assessment from perspective of equity		
<ul style="list-style-type: none"> • Fixed operators are benefiting from lower MTR outpayments compared to 2012, but are still not experiencing the full benefit possible with pure LRIC based MTRs 	<ul style="list-style-type: none"> • Irish consumers increasingly prefer to use mobile phones for voice, and the number of mobile-only households is increasing • MTRs are at a lower level compared to 2012, but still some way above pure LRIC levels • The average revenue per user (ARPU) in different customer segments appears to be stable • SIM-only packages are widely available, supporting the view that there is little need to subsidise handsets 	<ul style="list-style-type: none"> • Mobile operators would experience a fall in revenues from lower MTRs (especially from fixed-to-mobile voice)

0.2 Summary of key findings

The most important and pertinent of our findings are described below. Following our revisiting of the relevant issues considered in the 2012 report in light of market developments since then, we do not believe any of them are a significant indicator that would go against our original conclusion in the 2012 report regarding the choice of pure LRIC based MTRs.

- Since the start of 2013, Irish MTRs have been at a level that, whilst well above the level that would be derived from pure LRIC benchmarking or cost modelling, are still below historical levels. Many of the benefits that the 2012 report predicted would follow a reduction in MTRs have appeared to a limited extent in the Irish mobile market, including:
 - emergence of converged fixed–mobile offers
 - larger voice bundles (also accompanied by lower monthly subscriptions)
 - and, importantly, improved offers for off-net calls within bundles.

- Should MTRs fall to pure LRIC based levels, this would continue to allow the smaller operators such as the MVNOs (which cannot benefit as much as larger operators from tariff-mediated network externalities) to compete more easily, particularly since the larger, established MVNOs – TMI and Lycamobile, already designated with significant market power in Market 7 – are now symmetrically price-regulated and therefore do not gain any benefits from asymmetric MTRs. MTRs have been set at lower, symmetrical levels since the start of 2013, although they remain some way above the levels envisaged by ComReg’s draft pure LRIC model. However, even after five quarters of symmetry, H3GI and the MVNOs are continuing to gain subscribers in the voice market.
- All operators are retaining a much higher proportion of their retail revenue compared with the situation described in the 2012 report, with reduced interconnection payments to other operators. The proportion of retail revenue retained appears to have stabilised relatively quickly following the MTR reduction to EUR2.6 cents, and there was little change between Q2 2013 and Q2 2014 in the proportion of retail revenue retained. Retaining control over a larger proportion of revenues is conducive to efficient decision-making and competitive pricing.
- Mobile prices have fallen since 2012, particularly for high-usage postpaid packages. The reduction in charges for high-usage packages could in part be due to lower MTRs reducing the risk of significant losses on subscribers engaging in high off-net voice usage (and therefore operators being able to retain a greater proportion of their retail revenue), although it could also have been induced in response to aggressive pricing from competitors. Further reduction of MTRs (such as to pure LRIC levels) will further reduce the cash-outflow risks that these offers present to the competing players.
- Offering unlimited call bundles that include off-net mobile calls requires off-net MTRs to be factored into the offered price. In this respect, lower MTRs have made it easier for operators to incorporate off-net mobile calls into larger or unlimited usage bundles on both fixed and mobile networks. Since the 2012 report was written, and MTRs fell to EUR2.60 cents, packages with increasing volumes of bundled off-net minutes have become available from operators and have been taken up by subscribers.
- The costs of 4G network deployments will not be material to voice termination in the forthcoming charge-control period because, although 4G investments for *data* services are ongoing for all the MNOs, the voice-over-LTE platforms that will carry 4G voice have still not been launched – and are probably still some way off.

As a result, we conclude that the recommendation of Analysys Mason to ComReg to apply pure LRIC based MTRs in the Irish mobile market in the 2012 report still applies.

1 Introduction

In November 2012, Analysys Mason finalised a report entitled *Fixed and mobile termination rates in Ireland* (the ‘2012 report’) for the Commission for Communications Regulation (ComReg).¹¹ This report considered the pricing options for wholesale voice termination services in Ireland, and concluded that the pure long-run incremental costing (LRIC) approach was the most suitable for setting both wholesale fixed termination rates (FTRs) and wholesale mobile termination rates (MTRs). The resulting pricing decision for MTRs issued by ComReg has since been appealed,¹² and ComReg has developed a cost model of mobile networks that is capable of deriving a unit cost of mobile termination consistent with the European Commission (EC) Recommendation of May 2009¹³ (EC Recommendation).

Our 2012 report concluded that pure LRIC was the most appropriate basis on which to set cost-oriented MTRs. In Section 7.2 of that report, we concluded that applying cost orientation using pure LRIC to MTRs best fitted the assessment criteria and the market in Ireland. The report also considered implementation-related perspectives (e.g. issues related to the EC Recommendation, such as whether a benchmark or cost model is used), but we do not reconsider these in the present report.

ComReg released a new Draft MTR Model Decision¹⁴ in May 2014 to MTRs from 2015 onwards according to a pure LRIC calculation. In parallel with the process of finalising this MTR Model Decision, ComReg has commissioned Analysys Mason to revisit the relevant analyses in our 2012 report (which used 2011 data) with 2012–14 data, and consider the potential impact that recent changes in the Irish mobile market may have had (recognising that a relatively short period of time has elapsed since the 2012 report was written). ComReg has provided Analysys Mason with quarterly market data from 2012 onwards, and operators have been issued with a Section 13D Information Request under ComReg’s formal powers to request additional data. Our approach has been to describe the relevant developments in the Irish market and then to revisit our conclusion from the 2012 report regarding pure LRIC in the context of these developments, as shown below in Figure 1.1.

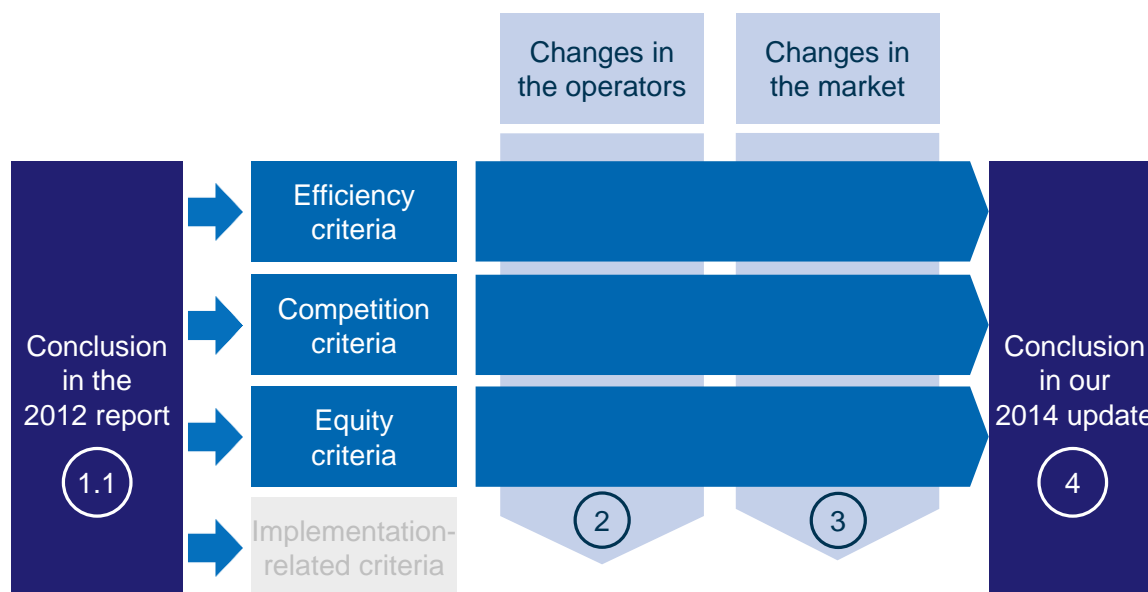
¹¹ http://www.comreg.ie/_fileupload/publications/ComReg12125a.pdf.

¹² http://www.comreg.ie/_fileupload/publications/ComReg12139.pdf

¹³ European Commission Recommendation: “The Regulatory Treatment of Fixed and Mobile Termination Rates in the EU” (2009/396/EC), dated 7 May 2009.

¹⁴ http://www.comreg.ie/_fileupload/publications/ComReg1429.pdf

Figure 1.1: Overview of the structure of our analysis [Source: Analysys Mason, 2014]



The remainder of this document sets out our analysis in more detail and is structured as follows:

- Section 1.1 summarises our original conclusions regarding efficiency, competition and equity
- Section 1.2 details the MTRs in Ireland since 2010
- Section 2 describes the evolution in the mobile operators in Ireland since 2012
- Section 3 sets out how the Irish mobile market has evolved as a whole since 2012
- Section 4 discusses how these developments affect the conclusions of our previous analysis.

Note that this report includes some commercially confidential information about the operators. Any such information is indicated with the scissor symbol (‘✂’) so that ComReg can readily redact it from any published version of this document.

1.1 Summary of our original conclusions

1.1.1 Conclusion on efficiency

Our original conclusions regarding efficiency were set out in Section 6.2 of the 2012 report. In summary, these were as follows:

- In a single-product market, *allocative efficiency* is defined as average revenue being equal to the marginal cost. Pure LRIC, which uses as the increment the whole service of termination (rather than only an additional unit) is therefore closer to that definition than LRAIC+, which allows prices to recover common costs.¹⁵ Pure LRIC is similar to LRAIC in principle, except

¹⁵ LRAIC+ – Long-Run Average Incremental Cost plus mark-up.

that the marginal cost in the case of LRAIC is “average traffic” rather the service increment in question (in this case wholesale termination).

- The non-recovery of common costs in a pure LRIC approach raises issues of allocation of common costs between retail and wholesale services. Our analysis of the effects of setting pure LRIC based termination rates on the revenue flows of the mobile operators in Ireland in the 2012 report showed that a higher proportion of retail revenues would remain under the control of the retail operator, as a smaller proportion of retail revenues would be paid out in off-net termination charges. The fact that a higher proportion of retail revenues would be retained by the operators means that operators would have opportunities to recover more of their costs from their own customers, rather than from subscribers of other networks. This would expose a greater proportion of costs to recovery in the competitive retail markets, rather than via regulated charges imposed on other operators with significant market power (SMP) in the wholesale termination markets.
- At the time of the 2012 report, operators already distinguished groups of users based on a variety of categories (prepaid, postpaid, high usage, low usage, data users, smartphone, basic phone, etc.). Through these existing market segmentations, operators were found to have the ability to manage a greater proportion of cost recovery from their own subscribers, taking into account the indicators of affordability and willingness to pay already captured in these categories. Operators also already used a wide variety of revenue recovery options for these types of subscribers, in particular the balance between free connections, paid-for connections, handsets, monthly fees, voice usage charges, non-voice usage charges, bonus credits, promotions, etc.
- Since operators are both buyers and sellers of termination¹⁶, in a competitive retail market retail activities was found to be the key driver of *productive efficiency*. If the retail market is not fully competitive, there is a weak dependency between productive efficiency and the level of the charge set based on incremental costs: low wholesale costs are to be preferred, and a termination charge based on the incremental cost of providing termination for an efficient operator would be likely to encourage operators to be efficient. For example, this situation could arise if the prospect of no longer recovering common costs from termination increased the priority given to cost control. A more effective retail market may arise from the ability of smaller operators to compete for customers, thus improving *dynamic efficiency* (due to a reduction in the incentives for tariff-mediated network externalities).

In addition, in Section 7.2 of the 2012 report, it was concluded that:

- The calculated pure LRIC should include a reasonable return on investment for those assets which contribute to the incremental cost of wholesale termination traffic. Contributions to the pure LRIC of mobile voice termination are unlikely to include material LTE/4G expenditure

¹⁶ From the analysis of the 2012 report, termination was only a small share of the revenues of Irish operators

during the time period of ComReg's next price control, as 4G was concluded to be unlikely to be a significant contributor to the efficient cost of supplying voice termination until such time as voice-over-LTE is a commonly used and efficient technology for this service. A reasonable return on investment should also be allowed in the cost calculation for all other services in the cost model (regulated and unregulated).

1.1.2 Conclusion on competition

Our original conclusions regarding competition were set out in Section 6.3 of the 2012 report. In summary these were as follows:

- Since pure LRIC only considers incremental costs, it would reduce termination even further than LRAIC+ and allow some of the smaller operators (which cannot benefit as much as larger ones from tariff-based network externalities) to compete more easily.
- One of the benefits of a pure LRIC approach is that it would help to solve the competitive drawback caused by the tariff-mediated network externalities that have arisen under the existing (primarily LRAIC+-based) wholesale regime. While on-net plans may be available in countries with low (or even zero) termination rates, the drawback of a high MTR is on the wholesale side, because of the price squeeze situation that arises when a large operator offers on-net calls below the MTR (or free of charge) with the result that a smaller network operator cannot afford to offer the same price for calls to the large operator. Pure LRIC would therefore have a positive impact on *mobile–mobile competition* in Ireland.
- The effect on *fixed–mobile competition* would be positive, by removing the revenues paid by fixed operators to mobile operators and by allowing more competitive innovations such as the inclusion of calls to mobiles in fixed call bundles. The fixed retail market in Ireland would be likely to benefit from this approach, as only around 1%¹⁷ of residential customers and 10%¹⁸ of business customers had fixed-line call bundles which included calls to mobile numbers. Pure LRIC-based MTRs would increase fixed operators' opportunities to offer these packages, according to the information obtained from the operators at the time of the 2012 report. We believed that there would also be an increase in the ability of operators to put together converged fixed–mobile packages that include (e.g. a large bundle of) calls to all off-network operators.
- Competitive dynamics and pricing in the mobile market may also change as a result of termination rates being set at pure LRIC, because mobile operators would no longer be able to rely on a net inflow of revenues from fixed operators. However, the responses to industry questionnaires provided evidence that mobile operators continue to subsidise low-end and (particularly) high-end mobile handsets, while at the same time consumers are already in

¹⁷ It should be noted, this was the percentage at the time of the 2012 report

¹⁸ It should be noted, this was the percentage at the time of the 2012 report

possession of a large number of working mobile handsets. This aspect of retail competition and pricing in the handset side of the market (i.e. consumer electronics, cameras, touch screens, mobile data) is not strongly related to competition for basic voice calling services, and so in our view could be reduced without detrimental effects on competition for voice calling.

- Mobile operators also provided free prepaid credits, typically to subscribers who top up regularly and/or top up with higher values. There was also evidence in Ireland of large amounts of free credit being offered to port in from another operator. We obtained information from some mobile operators on the amount of prepaid credit which expires. Whilst the values were typically low (EUR cents per customer), there was evidence that one operator was expiring a larger amount of credit (around EUR2 per customer per month). This suggested that this specific competitive behaviour which included significant bonus credit may not be fully valued by the end customers. On the other hand, because prepaid credits were already expiring in the market (e.g. when customers lose or cancel their prepaid connections), the magnitude of any standing charges that might be added to prepaid accounts in order to recover operators' costs could be slightly lower. Standing charges would also give consumers an incentive to reduce multiple subscriptions to mobile networks (unless they valued the benefit of dual subscriptions). This would mean that competition could focus on the primary SIM card of each user, usage per SIM would probably therefore be higher, and customer usage loyalty could be increased across all types of calls (with a corresponding impact on cost recovery).

1.1.3 Conclusion on equity

Our original conclusions regarding equity were set out in Section 6.4 of the 2012 report. In summary these were as follows:

- All subscribers who would pay lower prices overall as a result of pure LRIC MTRs would benefit, such as fixed-only subscribers.
- Some mobile operators argued that regulating mobile termination based on pure LRIC, and thus largely reducing the revenues they receive from termination, could force them to raise the price of outgoing calls, ongoing rental, or handsets (connections). As a result, they argued that this could force some prepaid customers out of the market, as they would no longer be able to afford to make mobile calls, or would at least strongly reduce the number and/or length of calls they made. Although the link between reduced voice termination charge and increased voice origination charge may seem relevant, our analysis of data for the 2012 report showed that low-usage mobile subscribers in Ireland were on average quite high spending on a per-minute basis, even after removing the effect of termination payments, so there would appear to be no strong reason for mobile operators to increase their retail prices further for this group of customers. In fact, it was found that typically higher-usage users pay the lowest price per minute in Ireland. This suggested that mobile operators were not offering low-usage users the benefits of the lowest possible calling prices. If low-usage customers reduced the number of outgoing calls they made (due to affordability issues) but remained on the network, then 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 MTRs that they pay to other operators, but directly through the (higher) retail prices they pay to their own operator.

In Section 5.3.1 of the 2012 report, we also observed that:

- in the Irish market some mobile handsets, including some prepaid packages, were subsidised at the point of sale. The handset subsidies vary from relatively low values (tens of euros) to high values (hundreds of euros for high-end smartphones). At the same time, a significant number of SIM-only packages had been sold in Ireland, which did not involve any handset subsidy.
- In the event that mobile operators sought to recover additional revenues from up-front connection costs (following a reduction in MTRs), these SIM-only packages were good evidence that there were sufficient working handsets available in the Irish market to maintain high levels of connection (effectively 100% of adults) to a telecoms network, e.g. via SIM-only subscriptions, or by customers re-subscribing to a network without taking a new (smart) handset.

In Section 6.6 of the 2012 report, it was also concluded that:

- “the fact that MTR and FTR markets are two-sided (operators are both buyers and sellers of voice termination) means that reductions in termination rates affect both costs and revenues of the players.”

1.2 Mobile termination rates

Figure 1.2 shows that at the time of the 2012 report, the mobile operators in Ireland had asymmetric rates, which differed between peak and off-peak times as well as from operator to operator.

Figure 1.2: MTRs (in EUR cents) in Ireland on 1 January 2012 [Source: BEREC six-monthly snapshot report,¹⁹ 2012]

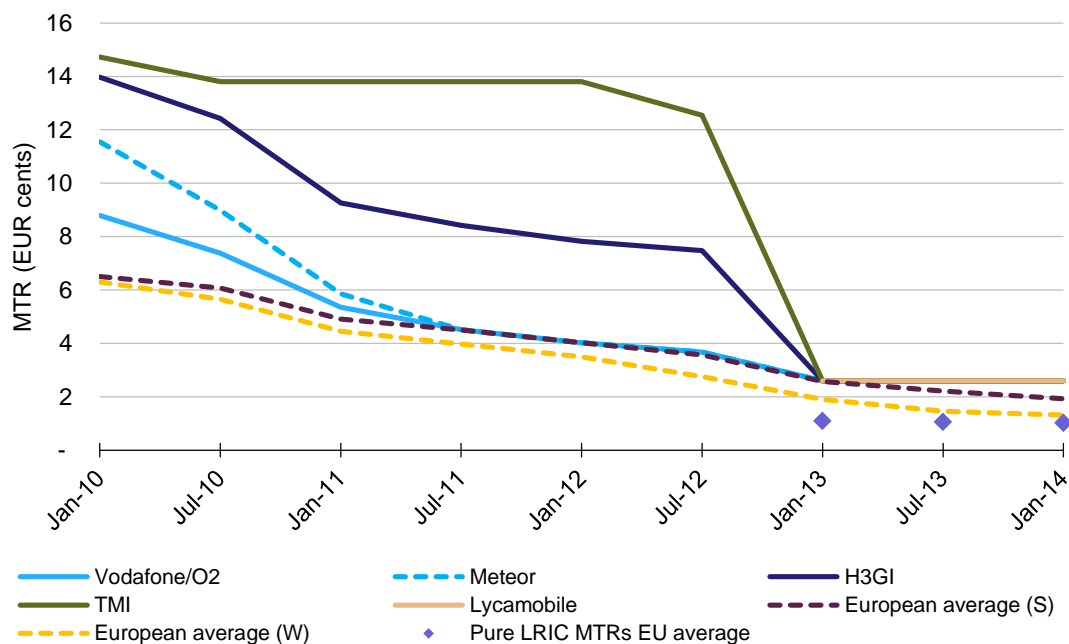
Operator	Peak	Off-peak	Weekend	Overall average
Vodafone	5.22	2.64	2.64	4.02
O ₂	5.68	2.09	2.14	4.02
Meteor	7.38	1.00	1.00	4.02
H3GI	13.88	1.00	2.00	7.82
Tesco Mobile Ireland (TMI)	17.12	12.02	9.81	13.80

¹⁹ Source: http://erg.eu.int/doc/bor_12_56_tr_integrated_snapshot_final.pdf.

Since 2013, the operators were obliged to adopt a symmetric MTR. Although Meteor²⁰ still differentiates the price between peak and off-peak, the blended average MTR is supposed to be the same across all MNOs and MVNOs and was supposed to follow the glide path set by ComReg in its 2012 Decision. ComReg proposed an intermediate MTR of EUR2.6 cents per minute from 1 January 2013 to 30 June 2013, and a further reduction to EUR1.04 cents from 1 July 2013 until ComReg had completed its bottom-up pure LRIC model.²¹ The value of EUR2.6 cents per minute was the midpoint between the prevailing MTR at the time and the expected endpoint of EUR1.04 cents per minute. However, Vodafone appealed to the High Court against ComReg's decision. As a result of a subsequent High Court Order in that appeal a maximum MTR of EUR2.6 cents has been in use.²² The pure LRIC benchmark value of EUR1.04 cents was only in place for a period of a few weeks in the second half of 2013.

Figure 1.3 below demonstrates the evolution of MTRs in Ireland since 2010 based on data from BEREC snapshots. We have also included two plots showing averages across Europe, taken from the BEREC snapshots: the plot marked "S" is the straight average, and the one marked "W" is the subscriber-weighted average. For the last three and a half years, we have also determined the straight average of MTRs in Europe that were set using a pure LRIC calculation (excluding pure LRIC benchmarks).

Figure 1.3: MTR evolution in Ireland and average values across Europe since 2010 [Source: Analysys Mason, 2014, based on BEREC MTR snapshot reports of the dates shown²³ and CIRCABC]



²⁰ According to <http://www.meteor.ie/about/interconnect/>, although the most recent BEREC snapshot indicates no differentiation.

²¹ See paragraph 7.70, http://www.comreg.ie/_fileupload/publications/ComReg12125.pdf.

²² See paragraph 1.11, http://www.comreg.ie/_fileupload/publications/ComReg1429.pdf.

²³ http://berec.europa.eu/eng/document_register/subject_matter/berec/reports/.

In Ireland the decline in MTRs across the period 2010-2014 was EUR1.6 cents for Vodafone, O₂ and Meteor, with more significant reductions for H3GI and the MVNOs due to their previously asymmetrically higher MTRs. Vodafone, O₂ and Meteor had previously experienced (several) larger absolute reductions in earlier MTR pricing decisions.

Figure 1.4 below focuses on the change in MTRs since July 2012. As can be seen, the current value of EUR2.6 cents is still higher than the European average, and much higher than the average of the pure LRIC-based MTRs in the EU. In their latest consultation report, ComReg have set out two scenarios (A and B) of mobile data traffic and have not formed a preliminary view as to which scenario is most appropriate. These two scenarios lead to pure LRIC-based MTRs of EUR0.71 cents and EUR 0.67 cents respectively. For the purposes of this report, we assume that the proposed maximum MTR for Ireland for 2015 would be EUR0.71 cents. If the final MTR set by ComReg was to take one of these two values, then Irish operators could expect a further drop of EUR1.89–1.93 cents from the current level.

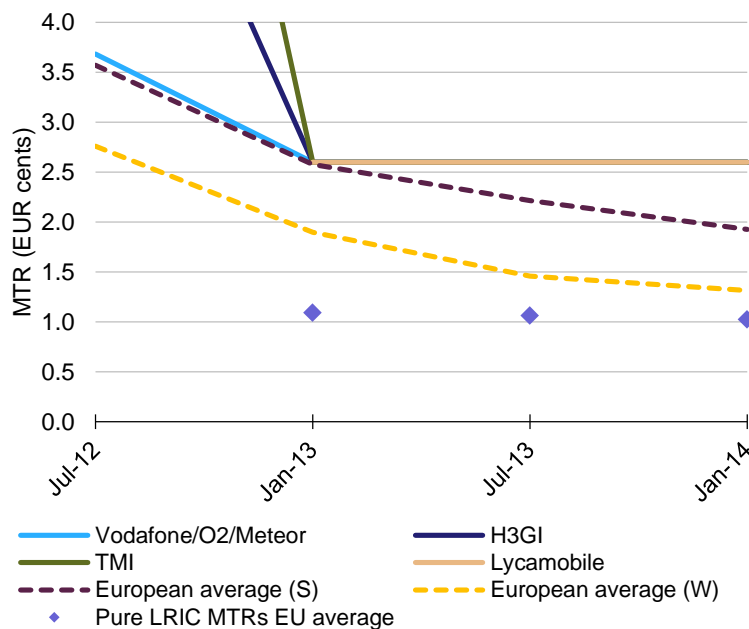


Figure 1.4: MTR evolution in Ireland and average values across Europe since July 2012 [Source: Analysys Mason, 2014, based on BEREC MTR snapshot reports of the dates shown and CIRCABC]

2 Changes in the operators

This section describes how the major players in the Irish mobile market have evolved since the 2012 report was written. In particular:

- Section 2.1 describes which players have entered and exited the market
- Section 2.2 outlines how spectrum assignments have changed since 2012
- Section 2.3 sets out the developments in network deployments
- Section 2.4 focuses on the 4G deployments and investments made by the MNOs.

2.1 Changes in players in the market

At the time of the 2012 report there were four mobile network operators (MNOs) – Vodafone, O₂, Meteor and H3GI – and three MVNOs established and active in Ireland.²⁴ The mobile virtual network operators (MVNOs) were Postfone (which was and remains very small), TMI and Lycamobile. Since that time, two more MVNOs have been launched (Blueface during 2012 and PermaNET during 2013). In early 2013, eircom announced it would scale back its eMobile business.²⁵

In June 2013, there was a significant development: H3GI announced its intention to purchase O₂'s mobile business, subject to merger control approval by the European Commission (EC). The EC cleared the merger in May 2014 following its review.²⁶ To address concerns expressed by the EC, which could have otherwise caused it to prevent the merger from happening, H3GI made commitments to:

- ensure the entry within the short term of two MVNOs, with an option for one of them to become a full MNO by acquiring some of the merged entity's spectrum at a later stage (by H3GI divesting five blocks of spectrum in the 900, 1800 and 2100MHz bands, and making them available for 10 years from 2016 onwards)
- make up to 30% of the merged company's network bandwidth available to two MVNOs in Ireland on fixed payment terms
- offer eircom the option to continue the network-sharing agreement it had with O₂ (the revised terms of which were agreed at the end of August 2014).

²⁴ Specifically, we mean MVNOs not wholly owned by MNOs, or alternative brands like eMobile for eircom and 48 Months for O₂.

²⁵ <http://www.independent.ie/business/irish/eircom-set-to-scale-back-its-emobile-operations-29090501.html>.

²⁶ http://europa.eu/rapid/press-release_IP-14-607_en.htm.

UPC and Carphone Warehouse have already announced MVNO agreements with H3GI, and both are set to launch services in 2015²⁷. In particular, this will allow UPC the opportunity to offer quad-play bundled services, since it is already an established fixed operator.

Based on the published version of the EC's decision of May 2014²⁸, the Herfindahl-Hirschman Index (HHI) for the Irish mobile market (in subscriber terms) was determined to increase by 620 points to 3486 as a result of the merger. According to the EC guidelines on horizontal mergers,²⁹ since the post-merger HHI will be above 2000 and the delta more than 150, this was a reason for investigating how this would affect competition in the Irish mobile market.

The merger reduces the number of Irish MNOs (and therefore prospective MVNOs' options for host networks), which is one of the reasons the EC insisted on the merged entity providing two MVNOs with access to substantial capacity. Following the merger, H3GI and Vodafone will be approximately equal in size in subscriber terms³⁰, with eircom (Meteor) third. Although the market has lost a network-based competitor, three relatively strong network competitors still remain. The two largest MNOs will both still enjoy benefits from their economies of scale. Also, the third operator Meteor will still be able to benefit from network sharing with the merged H3GI/O₂ entity, which should mean (in the EC's view) that it can maintain its ability to adequately compete in the market. Meteor still has a significant market share of around 20% (see Figure 3.3 on page 23) and, as part of the eircom group, is the Irish MNO that can benefit from the most significant fixed-mobile synergies.

We observe that, following the EC's announcement of its final decision in May 2014, ComReg itself announced that it will still closely monitor the mobile market and its radio spectrum management plans following the merger of H3GI and O₂.³¹ In October 2014, Vodafone brought judicial review proceedings against ComReg aimed at requiring it to outline more precisely how it would intervene in relation to the new merged entity³².

New MVNOs will soon be entering the Irish market using the merged entity's network. This means in particular that UPC may be able to innovate in the bundles it offers, bundling mobile services with its fixed-service portfolio. Given that the existing MVNOs have continued to increase the size of their subscriber bases, there will still be three robustly competing mobile operators in Ireland, and new MVNOs (backed by established companies such as UPC) will be entering the market.

²⁷ <http://www.telegeography.com/products/commsupdate/articles/2014/06/17/carphone-warehouse-to-become-irish-mvno-following-hutch-deal/>

²⁸ See http://ec.europa.eu/competition/mergers/cases/decisions/m6992_20140528_20600_4004267_EN.pdf; EC document C(2014) 3561 final, as published in December 2014, paragraph 222

²⁹ [http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52004XC0205\(02\)&from=EN](http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52004XC0205(02)&from=EN), paragraph 20.

³⁰ As can be seen in EC document C(2014) 3561 final, table 14

³¹ http://www.comreg.ie/_fileupload/publications/ComReg1453.pdf.

³² <http://www.irishtimes.com/business/sectors/retail-and-services/vodafone-brings-action-against-comreg-over-competition-concerns-1.1961969>

Furthermore, if MTRs were to fall further to pure LRIC based levels in the future, then this would continue to allow the smaller operators such as the MVNOs (which cannot benefit as much as larger operators from tariff-based network externalities) to compete more easily, particularly since MVNOs with SMP are likely to have symmetric MTRs with the other operators, as has been the case for TMI and Lycamobile since 2013.

2.2 Changes in spectrum assignments

ComReg held a major auction in late 2012 for spectrum in the 800MHz, 900MHz and 1800MHz bands, and the outcome changed the distribution of spectrum assignments between the four MNOs. There are certain short-term conditions attached to the holdings in the 900MHz and 1800MHz bands, with some interim assignments until 2015. The subsequent merger of O₂'s business with that of H3GI has further changed this distribution.

Figure 2.1 and Figure 2.2 below show low-frequency and high-frequency spectrum holdings (a) prior to the 2012 auction, (b) after the 2012 auction is completed and after the interim assignments have expired by 2015, and (c) as for (b) but after the merger of H3GI and O₂.

Figure 2.1: Low-frequency (800/900MHz) spectrum holdings by the MNOs [Source: ComReg, 2012]

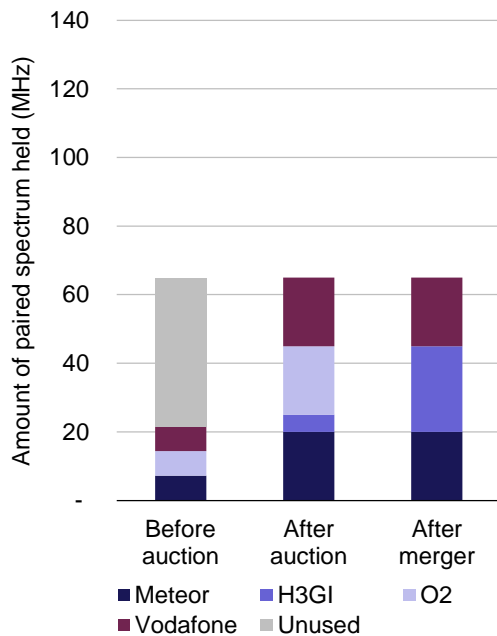
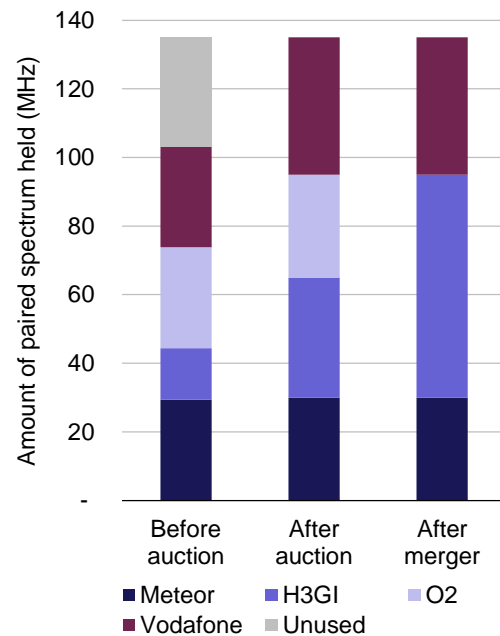


Figure 2.2: High-frequency (1800/2100MHz) spectrum holdings by the MNOs [Source: ComReg, 2012]



As can be seen, prior to the 2012 auction there was unused spectrum, but it has since been fully assigned (though due to the interim assignments – which all expire by 2015 – some 1800MHz spectrum will remain unassigned until then).

Prior to the 2012 auction, the assigned low-frequency spectrum was evenly distributed between Vodafone, O₂ and Meteor. Following the auction, H3GI acquired a small amount of this spectrum, leading to a 20:20:20:5 split (with a standard deviation of 6.5). As a result of the merger, the low-

frequency spectrum will now be split 20:25:20 amongst the remaining three MNOs (with a standard deviation of 2.89).

Prior to the auction, the high-frequency spectrum was assigned evenly between Vodafone, O₂, Meteor and H3GI (except that H3GI had no 1800MHz spectrum before the auction). Following the auction, all four MNOs had almost the same holdings of high-frequency spectrum. The merger, however, has led to some asymmetry, since the post-merger company will now have around twice as much high-frequency spectrum as Vodafone and Meteor individually. All three MNOs in Ireland will now have more spectrum than they did prior to the 2012 auction: at least 2×50MHz each from 2015 onwards, with all four spectrum bands fully assigned from that point, and with at least 2×10MHz in each of these four bands.

One of H3GI's hosted MVNOs will have the option of purchasing some of H3GI's spectrum assignments from 2016 onwards.

There is a shift in spectrum assignments in the market following the merger, but all three MNOs certainly have sufficient spectrum to provide voice coverage using all three mobile technologies (employing, for example 2×5MHz of 900MHz, 2100MHz and 800MHz spectrum each respectively). Moreover, they should still all have sufficient spectrum to provide the necessary 2G/3G voice capacity, since they were able to do this with their holdings *prior* to the merger.

Ensuring continued, adequate competition with regard to the Irish mobile market was a focus for ComReg during its analyses of both the 2012 auction and the merger. The EC's final decision also concludes that the merger would have no significant impact on effective competition in the market for mobile voice termination³³.

2.3 Changes in network deployments

The network technologies used by the main operators at the time of the 2012 report are shown below; this highlights the fact that H3GI was the sole 3G-only operator (the rest using 2G+3G).

³³ See EC document C(2014) 3561 final, paragraph 890

Figure 2.3: Technologies used by the MNOs at the time of the 2012 report [Source: TeleGeography, PolicyTracker Global Spectrum Database, 2011]

Operator	2G	2.5G	3G	3.5G	4G
Vodafone	GSM	GPRS	UMTS	HSDPA/HSUPA/HSPA+	–
O ₂	GSM	GPRS/EDGE	UMTS	HSDPA/HSUPA	–
Meteor	GSM	GPRS/EDGE	UMTS	HSDPA/HSUPA/HSPA+	–
H3GI	-	–	UMTS	HSDPA/HSUPA	–

Following the 2012 auction, all four MNOs won spectrum in all four bands (as described above), and therefore all the main mobile spectrum bands in use today (800, 900, 1800 and 2100MHz) have now been assigned. As a result, all four MNOs have developed and launched 4G (LTE) networks and services of some kind. All MNOs have also upgraded their 3G network to higher data speeds using HSPA+ and, in the case of Vodafone, dual carrier (DC) HSPA+. This situation is summarised in Figure 2.4 below.

Figure 2.4: Technologies currently used by the MNOs [Source: TeleGeography, 2014]

Operator	2G	2.5G	3G	3.5G	4G
Vodafone	GSM	GPRS	UMTS	HSDPA/HSUPA/DC-HSPA+	LTE
O ₂	GSM	GPRS/EDGE	UMTS	HSDPA/HSUPA/HSPA+	LTE
Meteor	GSM	GPRS/EDGE	UMTS	HSDPA/HSUPA/HSPA+	LTE
H3GI	–	–	UMTS	HSDPA/HSUPA/HSPA+	LTE

Network sharing has also become increasingly common between the MNOs, in terms of both passive and active network sharing. eircom and O₂ announced a network-sharing agreement in 2011³⁴ which covered site consolidation, sharing of ancillary site equipment, power supply, technology and transmission sharing. In mid-2012, H3GI entered into a passive network-sharing agreement with Vodafone, which was restricted to site sharing and site consolidation only.³⁵ In order to gain approval for the merger, H3GI had to guarantee that eircom could continue to benefit from the network-sharing agreement that it had with O₂ (an agreement whose new terms were finalised in late August 2014).³⁶ The MNOs are therefore continuing to seek efficiency gains in operating their infrastructure but are continuing to invest in improving their 2G/3G networks in addition to investing in 4G technologies. For example, H3GI announced plans for a significant upgrade of its 2G/3G network following the merger with O₂.³⁷ Furthermore, no operators have yet announced any intention to shut down their 2G networks, meaning that for the time being at least, all three generations of mobile technology will continue to operate in parallel.

³⁴ http://pressroom.eircom.net/press_releases/article/eircom_and_O2_Announce_Strategic_Network_Partnership/.

³⁵ <http://www.vodafone.ie/aboutus/media/press/show/BAU017497.shtml>.

³⁶ http://pressroom.eircom.net/press_releases/article/Three_and_eircom_reach_network_sharing_agreement/

³⁷ http://press.three.ie/press_releases/three-confirms-partnership-with-nokia-networks-as-part-of-overall-e300m-network-investment-plan/

2.4 Investments in deployment of 4G and voice-over-LTE

Since the 2012 auction, all MNOs have announced significant investment plans for the deployment of 4G data networks, as summarised in Figure 2.5 below.

Figure 2.5: Summary of 4G investments by MNOs [Source: Analysys Mason, 2014]

Operator	Date 4G launched	Planned investment (EUR million)	Period of investment (years)
Vodafone ³⁸	October 2013	500 (as of 2014)	3–5
Meteor ³⁹	September 2013	330 (as of 2013)	5
O ₂ ⁴⁰	Not launched due to merger	200 (as of 2012)	3
H3G ⁴¹	January 2014	300 (as of 2014)	3

In particular, all the MNOs committed to extensive investment in 4G infrastructure, and all three of the remaining MNOs have deployed coverage and launched 4G services. Although MVNOs are not investing in 4G infrastructure, they should nonetheless be able to buy 4G wholesale services from MNOs and retail them to their subscribers. For example, eMobile⁴² has announced plans to provide 4G services on this basis.

However, 4G investments are not particularly relevant to voice termination. As described in our previous report, this will not be the case until such time as voice-over-LTE (VoLTE) is a commonly used and efficient technology for 4G voice services. Any voice traffic carried in the 4G data layer as over-the-top (OTT) voice is not relevant to the voice termination as it is interconnected as data megabytes rather than as switched voice minutes.

We have not found evidence that VoLTE is definitely being deployed by any operator in Ireland, though there are some indications that Vodafone may be planning to use VoLTE. These plans are only implicit: the Vodafone Group has indicated that it will activate VoLTE in its networks “in Europe” by March 2015, although there was no specific reference to Ireland in the announcement.⁴³ At the current time, VoLTE is not an active service in Europe, though it is available in the USA and developed Asia-Pacific (Japan, South Korea, Singapore and Hong Kong).

³⁸ <http://www.vodafone.ie/network/>, August 2014;
<http://www.vodafone.ie/aboutus/media/press/show/BAU021319.shtml>.

³⁹ http://www.eircom.net/assets/static/pdf/IR/eircom_launches_irelands_first_4g_service.pdf.

⁴⁰ <http://www.o2online.ie/o2/uploads/pdfs/press/Telefonica-Ireland-to-commence-rollout-of-4G-network-in-first-half-of-2013.pdf>.

⁴¹ http://press.three.ie/press_releases/three-ireland-to-launch-comprehensive-4g-offers/, <http://www.hutchison-whampoa.com/en/media/topic/2687/3Ireland-O2-May/>.

⁴² <http://www.emobile.ie/4G-info/>

⁴³ <http://www.vodafone.com/content/dam/group/investors/downloads/presentations/vodafone-4g-webinar-presentation.pdf>, slide 8.

3 Changes in the market

This section describes how the Irish mobile market has evolved in more general terms. In particular:

- Section 3.1 outlines how the voice subscriber market has evolved
- Section 3.2 illustrates the flows of voice traffic and termination charges between operators
- Section 3.3 sets out the mobile voice-related packages that are available to Irish consumers today, including SIM-only packages
- Section 3.4 contains our analysis of the postpaid subscriptions of the Irish players
- Section 3.5 revisits our consideration in the 2012 report of the average revenue per subscriber across each operator's entire subscriber base.

3.1 Number of voice subscribers

3.1.1 Overall penetration

Mobile penetration appears to have saturated in Ireland since 2011, and has shown an increase of only 1–2% when excluding mobile broadband-only SIMs (which are less relevant to the voice termination market). This situation is shown below in Figure 3.1.

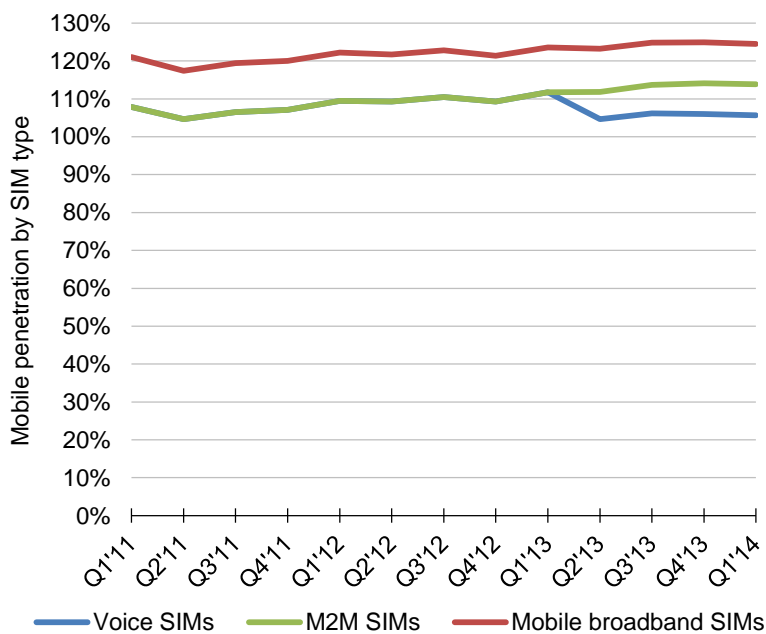


Figure 3.1: Evolution in mobile-only penetration in Ireland [Source: ComReg quarterly data⁴⁴, 2014]

⁴⁴ This data is taken from ComReg's Quarterly Key Data Report for Q3 2014, so that any corrections to market information have been captured. See http://www.comreg.ie/_fileupload/publications/ComReg14134.pdf.

ComReg has separated out machine-to-machine (M2M) SIMs in its reporting since Q2 2013. M2M SIMs are also less relevant to the voice termination market, but with the data available it is not possible to extrapolate M2M SIMs prior to Q2 2013. However, according to ComReg data, M2M SIMs have been broadly flat over the period of reporting. If we assume this is the case from 2011, then this would imply that voice SIM penetration has only increased by 1–2% in three years. The Irish market therefore appears saturated from the perspective of voice subscriptions.

3.1.2 Proportion of fixed-only and mobile-only households

Research undertaken by the EC (Eurobarometer) indicates that the proportion of Irish households that are becoming dependent solely on mobile phones for voice communication has continued to increase, from 35% in 2011 to 41% by early 2014, as illustrated in Figure 3.2⁴⁵. This trend is also supported to a limited extent by the slight drop in homes that rely solely on fixed phones over the same period.

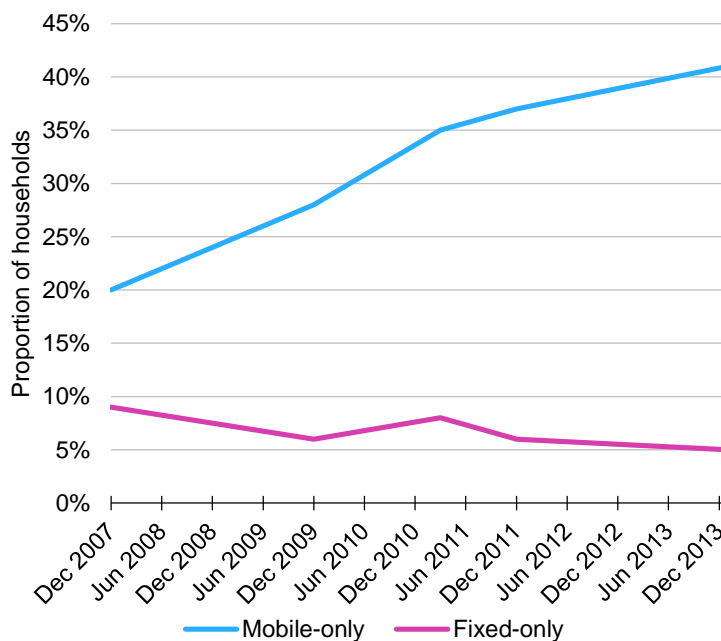


Figure 3.2: Evolution in Irish fixed-only and mobile-only households [Source: Eurobarometer surveys, 2006–14]

According to ComReg’s quarterly reports, mobile-originated voice per subscriber has increased by 6.4% between Q1 2011 and Q1 2014, whilst fixed-originated voice per subscriber has decreased by more than 33% over the same period.

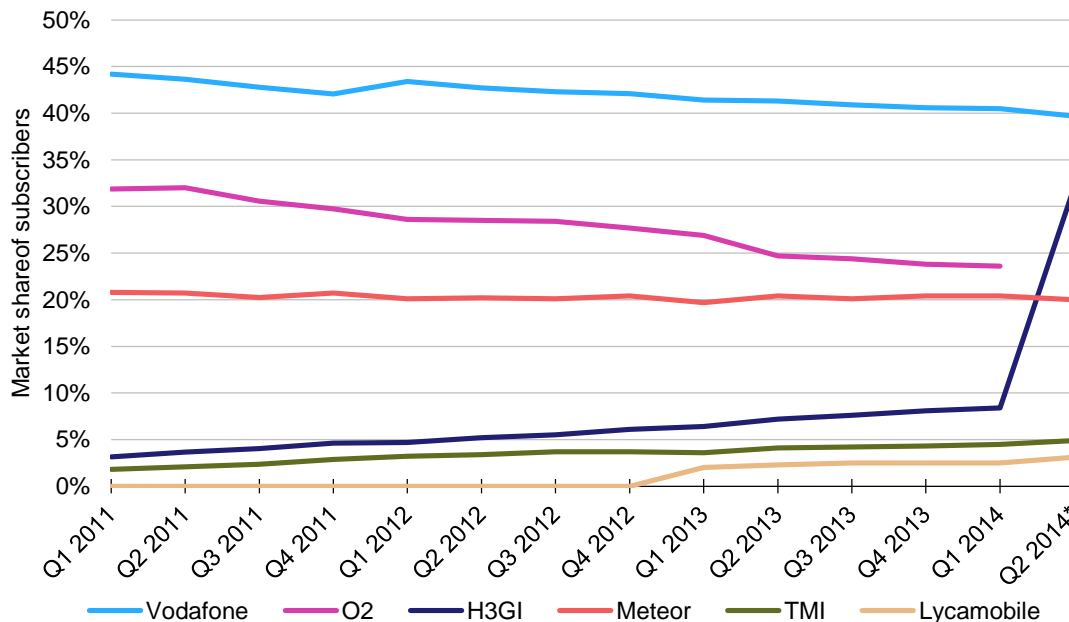
3.1.3 Market share

As can be seen below in Figure 3.3, from the start of 2011 the market shares of the largest three MNOs (Vodafone, O₂ and Meteor) have continued to be static or in decline, whilst H3GI and the MVNOs have been increasing their market shares. Therefore, the voice subscriber market, although relatively stable in total size, is continuing to exhibit evidence of competition, with

⁴⁵ This compares with 17% of households in the UK.

subscribers moving from the larger operators to the smaller operators and MVNOs. In particular, the two main MVNOs have gained almost 10% of the market between them, compared with only 2–3% at the time of the 2012 report.

Figure 3.3: Market shares of SIMs in Ireland (excluding mobile broadband, and M2M from Q2 2013 onwards)
[Source: ComReg quarterly data, 2014]



* The final data points for Q2 2014 are indicative and illustrate the impact of the merger of H3GI and O₂.

The market has changed again during 2014 with the purchase of O₂'s mobile business by H3GI. Prior to the merger, Vodafone was the leading MNO in subscriber terms, followed by O₂ and Meteor and then H3GI. But following the merger, the combined subscriber base of the new entity is on a par with that of Vodafone, whilst Meteor remains the third MNO in the market.

3.2 Flows of mobile voice traffic and termination payments

In this section we consider the flows of both voice traffic and termination charges in the Irish mobile market. We consider this at the level of the overall market in Section 3.2.1, between individual operators in Section 3.2.2 and in the context of their entire revenues in Section 3.2.3.

3.2.1 Flows in the overall market

We have analysed the traffic and flows of revenues/outpayments between mobile and fixed operators in 2H 2013 and compared the values to those in 1H 2011 (with values broadly rounded). The results of this comparison are illustrated in Figure 3.4 below. Off-net outgoing mobile voice traffic has increased from 1.7 billion to 2.2 billion minutes. Incoming off-net mobile voice traffic has also increased slightly (from 2.1 billion to 2.25 billion minutes), since the growth in off-net mobile-to-mobile minutes has offset the decline in fixed-to-mobile minutes. Mobile-to-fixed traffic has also increased, from 550 million to 650 million minutes.

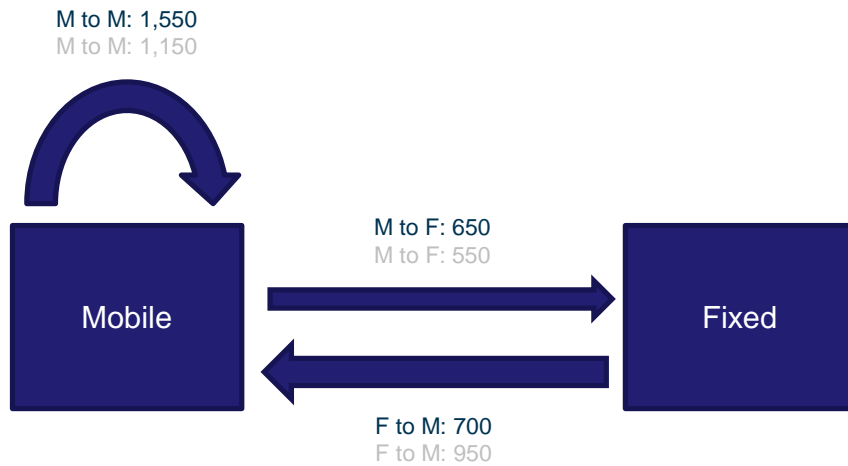


Figure 3.4: Flows of traffic among operators in H2 2013 (H1 2011 in grey), millions of minutes [Source: ComReg quarterly data, 2014]

In 2H 2013, mobile-to-fixed and fixed-to-mobile traffic became almost equal, but there is a significant difference between the FTR and MTR (EUR0.098 cents per minute and EUR2.6 cents per minute respectively). As a result, there is still a significant net flow of revenues from the fixed operators to the mobile operators, as can be seen in Figure 3.5 below – the revenues to fixed operators from mobile-to-fixed traffic (EUR0.5 million) is far outstripped by the revenues to mobile operators from fixed-to-mobile traffic (EUR18 million).

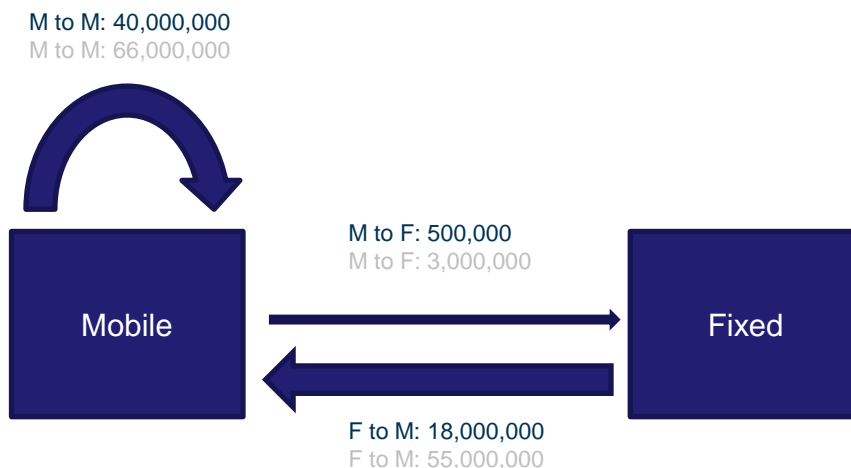


Figure 3.5: Flows of termination revenues between operators in H2 2013 (H1 2011 in grey), EUR [Source: ComReg quarterly data, 2014]

Whilst mobile-to-mobile minutes have increased by 35% and mobile-to-fixed by 18%, the associated payments have decreased by 39% and 83% respectively as a result of the reduced FTRs and MTRs. Fixed operators have benefited the most from the reduced MTR: although fixed-to-mobile traffic fell by 26%, the associated outpayments fell even more significantly (by 67%). If the MTR level had remained at the average level of EUR5.85 cents used in the 2012 report for the first half of 2011, but symmetrically across all operators, then the MTR outpayments would have decreased by only 27%. This means that 27% of the overall decrease is due to the imposition of symmetry, and the remainder is due to the imposition of reduced MTR levels.

3.2.2 Flows between the mobile operators

We have analysed the flow of voice traffic among the four MNOs and TMI in 2012 and 2013. Figure 3.6 shows the flow of voice minutes amongst the operators for each half year in 2012 and 2013. The percentages represent the proportion of all (off-net) originating and terminating minutes for the operators.

Figure 3.6: Flow of voice minutes⁴⁶ in 1H 2012, 2H 2012, 1H 2013 and 2H 2013 for each mobile operator
[Source: ComReg quarterly data, 2014]



The traffic flows of the four MNOs appear quite stable over time, but TMI's terminating traffic flows from fixed subscribers and from mobile subscriber in 2H 2012 and 2H 2013 have experienced a marked change.

Figure 3.7 below shows the total flow of termination-related revenues and outpayments among the operators in 1H 2011 and 2H 2013. The percentages represent the proportion of all total incoming terminating revenues and total outgoing termination payments for each mobile operator. Outflows to other mobile operators and to fixed operators (the light pink and dark pink bars on the figure) represent the termination payments the operators make, while inflows from other mobile operators and from fixed operators (the light purple and dark purple bars) show the termination revenues that operators receive.

Figure 3.7: Split of revenues and outpayments among mobile operators in 1H 2012, 2H 2012, 1H 2013 and 2H 2013 [Source: ComReg quarterly data, 2014]



The trends in these flows are similar to the flows of voice minutes, although MSP payments to fixed operators for mobile-to-fixed traffic are effectively negligible now that FTRs are priced at pure LRIC levels. The changes are more extreme for TMI, due to the reduction in its MTR between 2012 and 2013. H3GI also experienced a large shift in the balance of outpayments and revenues. The effect in absolute terms is more significant with $\text{€}10$: each lost approximately $\text{€}10$ million in net termination revenues between 2012 and 2013 (corresponding to approximately 1% of their respective total mobile service revenues).

We note that TMI (which had by far the highest MTR when the 2012 report was written) reported an 11% decrease in revenue in 2013 compared to the previous year,⁴⁷ and an overall operating loss. As can be seen above, TMI's termination revenue has fallen in comparison to its outpayments

⁴⁶ Meteor (1 quarter) and TMI (4 quarters) have not provided some information for terminated minutes. In those cases we have applied linear extrapolation based on the data points available.

⁴⁷ As set out in TMI's financial statements submitted to Companies Registration Office Ireland

between 1H 2012 and 2H 2013: it experienced a 38% drop in termination revenue in absolute terms between the two periods.

The charts above appear to indicate that the flows of minutes versus those of outpayments/revenues are stable for the larger MNOs in relative terms, even following a large change in FTRs and MTRs. This is reasonable to expect given the larger scale of these operators. However, there appear to be more extreme effects for MSPs with smaller subscriber bases (particularly MVNOs).

We would observe that the reduction in MTRs (and FTRs) has not significantly changed the relative balance between termination outpayments and revenues for the larger MNOs: all the MNOs are net receivers of termination revenue. The effects in relative terms are most pronounced for H3GI (the MNO with the smallest scale and the highest MTR) and the MVNO TMI (which has the smallest scale of all, and has been subject to a significant fall in MTR).

MNOs remain net receivers of termination revenue because their mobile-to-fixed and fixed-to-mobile traffic remain approximately equal, but there is a significant difference between FTR (set at pure LRIC) and MTR (set above pure LRIC). However, the absolute level of payments from fixed operators to mobile operators has decreased. The impact of reducing MTRs would be more extensive and would be increasingly so if MTRs are set at a pure LRIC level in the future.

3.2.3 Termination revenue compared to total revenue

In the 2012 report, we compared the revenues and outpayments from termination for the mobile operators, calculated as a proportion of their retail revenues. This 2012 calculation was undertaken using Q3 and Q4 2011 data from three MNOs and one large MVNO (no data was provided by 3).

In this study we have repeated this calculation using new data for Q2 2013 and Q2 2014 provided by all four MNOs and both main MVNOs. The results across all operators⁴⁸ are shown in Figure 3.8. The last data point on this chart shows the split assuming the Q2 2014 information but assuming an MTR of EUR0.71 cents (as described in Section 1.2).

⁴⁸ The chart using only the four operators who provided data in all three periods is almost identical.

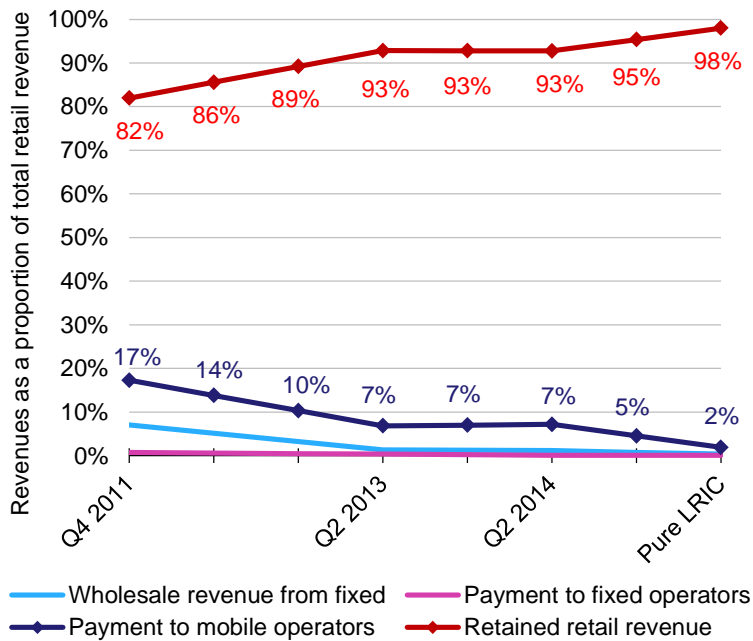


Figure 3.8: Split of termination revenues and outpayments for mobile operators as a % of retail revenues, Q4 2011 to Q3 2014
[Source: Operator data, 2012 and 2014]

As can be seen, between Q4 2011 and Q2 2014 the operators' wholesale revenues from fixed operators have fallen from 7% of their own retail revenue to just 0.1%. Nevertheless, they have retained an additional 11% of their own retail revenue internally by reducing the termination charges they pay to one another and to fixed operators. The fact that the mobile providers now retain (and thus control) a greater proportion of their retail revenues is due at least partly to the fall in the MTR to EUR2.6 cents, compared to the average level of EUR4.0 cents at the time of the 2012 report. Assuming an MTR of EUR0.71 cents (as described in Section 1.2) would increase the proportion of retail revenue that is retained by a further 5% compared Q2 2014, to reach 98%.

The calculated proportions of retained revenue are almost the same when comparing Q2 2013 and Q2 2014. It is important to note that the MTR was the same in both quarters, but had been established for one quarter in Q2 2013 and five quarters by Q2 2014. This indicates that the impact of the MTR reduction (EUR1.4 cents in total) occurred within one quarter and then has stabilised. This is true not only across all six operators as a whole, but also individually: most operators show a change in the proportion of retained retail revenue of less than 1% between these two quarters, with the exception of \times .

3.3 Packages available to consumers

In this section, we focus on offers for residential customers, though we recognise that the mobile operators often provide separate packages for small-medium enterprises (SMEs) and large corporates. The section is set out as follows:

- Section 3.3.1 describes available on-net/off-net discounts
- Section 3.3.2 compares bundle sizes and prices
- Section 3.3.3 summarises converged fixed–mobile offers
- Section 3.3.4 presents available SIM-only packages.

3.3.1 On-net/off-net discounts

At the time of the 2012 report, the mobile operators provided various discounts on traffic usage within their bundles. These included bundled minutes (both on-net and off-net), bundled SMS (both on-net and off-net) and data megabytes. However, these discounts were not specific to any specific phone numbers, but were applicable to all subscribers. As of 2014, there still appears to be no evidence of “friends and family” or “business” discounts for numbers selected specifically by the subscriber.

Operators offer a large variety of prepaid or postpaid (“bill pay”) plans. These plans differ in the number of minutes, SMS, data megabytes included in the bundle as well as varying levels of discounts. Examples of discounts available today include:

- Vodafone and Lycamobile both offer free international minutes
- TMI allows unlimited calls on-net and SMS after a prepay top-up of at least EUR5
- H3GI includes free on-net calls and SMS.
- The MVNO 48 Months offers free land-line minutes.

Figure 3.9 illustrates the various unlimited-usage discounts offered by operators for prepaid offers.

Figure 3.9: Prepaid offers currently available in Ireland [Source: Operator websites, 2014]

Operator	Offers	Price per month, EUR
Vodafone ⁴⁹	Unlimited on-net minutes and SMS	10
	Unlimited on-net minutes and SMS, 500MB of data	15
O ₂ ⁵⁰	Unlimited SMS to any network for free	20 top-up required
	Unlimited on-net calls and SMS for free	20 top-up required
H3GI ⁵¹	All you can eat data, unlimited any network SMS and unlimited any network weekend calls	20
eMobile ⁵²	250 any network calls, 250 any network SMS, 250MB of data and unlimited landline calls	20
TMI ⁵³	Unlimited on-net minutes and SMS	5
	Unlimited on-net minutes and SMS, 250 webtexts ⁵⁴	10
	Unlimited calls to all mobiles and landlines, free on-net SMS, 250 webtexts	15

Most of the operators offer free on-net calls and SMS for a certain monetary commitment, which can be relatively low: for example, TMI offers free on-net calls and SMS for a top-up fee of EUR5

⁴⁹ <http://shop.vodafone.ie/shop/phonesAndPlans/phonesAndPlansHome.jsp?reset=true&subPage=plans&planType=paysim>.

⁵⁰ <http://www.o2online.ie/o2/shop/plans/prepay.php>.

⁵¹ <http://www.three.ie/shop/sim-only-plans/prepay-sim-only/>.

⁵² <http://www.emobile.ie/phonesplansmore/phones/details/?id=63>.

⁵³ <http://www.tescomobile.ie/priceplans/pay-as-you-go-plans.aspx>.

⁵⁴ A customer can send 200 national and 50 international SMS per month through online account.

per month. There is evidence of unlimited off-net bundling, but only from players with a smaller market share (H3GI, TMI and eMobile). However, these bundles do carry a higher top-up requirement of at least EUR15 per month.

Since the 2012 report, operators have revised their packages significantly. For example, Vodafone fully revamped its postpaid packages in April 2013, launching “Vodafone Red”.⁵⁵ Several of these packages included any-network minutes as part of the bundle.

3.3.2 Bundle sizes and prices

All operators (including MVNOs) now offer packages with unlimited, any-network voice and any-network SMS (both on-net and off-net), plus significant bundles of data. Figure 3.10 summarises the offers currently available.

Figure 3.10: Available unlimited voice/SMS and large or unlimited data offers [Source: Operator websites, 2014]

Operator	Data offer	Postpaid?	Contract length (months)	Price (EUR/month)
Unlimited or large data bundles				
H3GI	Unlimited	✓	1	40
Meteor	Unlimited	✓	12	35
Meteor	Unlimited		1	30
TMI	Unlimited	✓	1	25
Lycamobile	Unlimited	✓	1	29
eMobile	15GB	✓	1	35
eMobile	5GB		1 ⁵⁶	24
48 Months	5GB		1	20
Smaller data bundles				
Vodafone	2GB	✓	12	35
O ₂	2GB	✓	1	35
Meteor	1GB	✓	1	30
Vodafone	1GB	✓	1	30
O ₂	1GB	✓	1	30
PermaNET	1GB	✓	12	29

As can be seen, in the top block of offers (unlimited or large data bundles), the MVNOs are offering the lowest prices; TMI and Lycamobile are particularly competitive. For the second block of offers (smaller data bundles) the spread in pricing is much smaller.

⁵⁵ <http://www.telecompaper.com/news/vodafone-ireland-refreshes-red-mobile-price-plans--935564>;
<http://www.vodafone.ie/red/>.

⁵⁶ eircom customers only.

We have compared how prices have changed for Meteor’s bundles since 2012. This has been possible using the data Meteor submitted in 2012 and the comparable bundles that are currently available to consumers.⁵⁷ As can be seen below in Figure 3.11, the prices for approximately comparable bundles have fallen considerably in just two years.

Figure 3.11: Prices of Meteor’s bundles in 2012 and 2014 [Source: Meteor submission and website, 2012/2014]

Bundle	Price in 2012 (EUR)	Price in 2014 (EUR)	Reduction
200 minutes, unlimited SMS, 1GB of data (SIM-only)	∞	20	∞
Unlimited voice/SMS to any network, 5–6GB of data	∞	59	∞
300 voice+300 SMS to any network, 2GB of data ⁵⁸	∞	29	∞

The price benchmarks in ComReg’s quarterly reports also show a declining trend in prices. When comparing the four baskets listed in the Q1 reports for 2012, 2013 and 2014 (namely prepaid, low-usage postpaid, medium-usage postpaid and high-usage postpaid), the prices shown for all the baskets except for low-usage postpaid have decreased. In particular, the price for the high-usage postpaid basket has decreased by more than 50% in the two-year period.

3.3.3 Converged fixed–mobile offers

In Section 5.3.2 of the 2012 report, we argued that a reduction and symmetrisation of both MTRs and FTRs should allow operators to develop new retail packages, and that this could lead to converged fixed–mobile offers. And indeed, such offers have started to appear since the 2012 report was written. For example, in September 2013, eircom launched a new bundle including fixed line, broadband and a 4G mobile subscription.⁵⁹ Another example is the new MVNO PermaNET, which offers a wide variety of different packages with fixed line, mobile and broadband services in different combinations.⁶⁰

According to ComReg’s 2013 ICT survey, as of February 2013 less than 2% of consumers subscribed to a bundle of telecoms services that included both fixed and mobile services.⁶¹ But later in 2013, Vodafone launched a fibre broadband offering which had some packages that included bundled minutes to Irish mobiles, landline and even international numbers.⁶² And eircom has now started including calls to any mobiles within its fixed-line bundles, e.g. bundling 30 mobile minutes per month in its main Home Phone plans, with larger add-ons available.⁶³

⁵⁷ <http://www.meteor.ie/pay-as-you-go/simply-unlimited/> and <https://store.meteor.ie/sim-only-plans>.

⁵⁸ In 2014, the bundle only includes 0.5GB of data.

⁵⁹ <https://www.eircom.net/mobilebundles/>.

⁶⁰ http://www.permanet.ie/New/products_home.html.

⁶¹ http://www.comreg.ie/_fileupload/publications/ComReg1346.pdf, page 59 of 63.

⁶² <http://www.vodafone.ie/aboutus/media/press/show/BAU020223.shtml>.

⁶³ <https://secure.eircom.net/talktime/talktime-evolution-flow;jsessionid=1D667B7B5741F414D7F2B13F94FE0C6E?execution=e1s1>.

3.3.4 SIM-only packages

We have analysed SIM-only packages across operators, which are a widely used type of package in Ireland. Figure 3.12 and Figure 3.13 below show the distribution of prices per package for short-term and long-term contracts respectively (both prepaid and postpaid packages are included).

Figure 3.12: Price per SIM-only bundle with a 30-day contract across operators [Source: Analysys Mason, 2014]

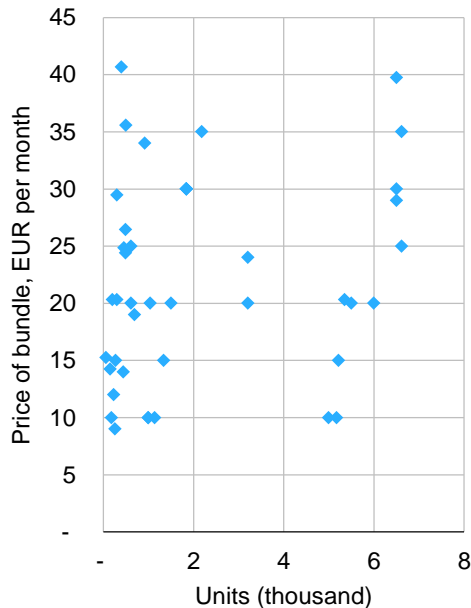
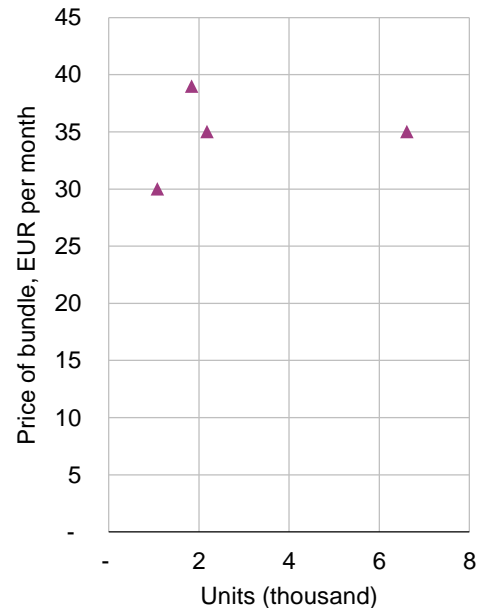


Figure 3.13: Price per SIM-only bundle with a long-term contract across operators [Source: Analysys Mason, 2014]



For the purposes of the charts above, we have converted the minutes, SMS and data within bundles into a single total number of “units” (some operators use the principle of “flexi-units” that can be converted into a certain number of minutes/SMS/megabytes within the bundle). We assume one unit is equal to one voice minute, two SMSs or three megabytes of data. *Unlimited* minutes/SMS are expressed as 1000 units, whilst unlimited data is treated as 15 000 megabytes (the maximum specified allowance in Irish packages today).

The points on the right-hand side of both charts above show the distribution of unlimited (or nearly unlimited) data bundles, whilst the points on the left-hand side represent more limited bundles. The two data points in-between the two clusters in Figure 3.12 are bundles with unlimited calls and SMS, with a significant but not unlimited amount of data (5000 megabytes).

Short-term SIM-only plans will be used by users who either only want a short-term subscription, or do not wish to be tied to a long-term contract and prefer the freedom to move between plans. The long-term SIM-only plans we have identified are all in the range of EUR30–40 per month, whilst the short-term plans indicate a much wider range of monthly prices.

New data received from the operators has indicated that since 2H 2012 sales of SIM-only packages have remained steady at around 30 units in each half-year period. Almost half of these packages were

sold by the two main MVNOs, but the proportion of total sales that are postpaid has increased from around 5% to 10% (i.e. these sales are not merely prepaid, short-term SIM-only packages). Thus, it appears that SIM-only packages are persisting on the market, to meet the needs of consumers already owning a working (un-locked) mobile handset. However, long-term low-price SIM-only plans are not available, meaning that options for low-end users may be limited to short-term plans.

Finally, the data indicates that operators still offer substantial subsidies on mobile handsets. Even if handset revenues are assumed to only recover equipment costs (i.e. ignoring other handset-related costs such as commission payments), then the average difference between revenue and equipment cost per device, across all operators, is EUR \times .⁶⁴ In reality, since these other costs are also relevant, then the difference is even higher.

3.4 Postpaid inclusive minutes

All of the major operators except \times have provided us with a quarterly breakdown of their postpaid subscribers by package, and the number of minutes bundled per month for each of those packages. Across the operators for which we have data, we first calculated the proportion of these subscribers that have on-net and/or off-net voice minutes included within their bundle. As can be seen below in Figure 3.14, the proportion of subscribers that do not have such discounts in their bundle has fallen from almost 50% to 40% in the past eight quarters.

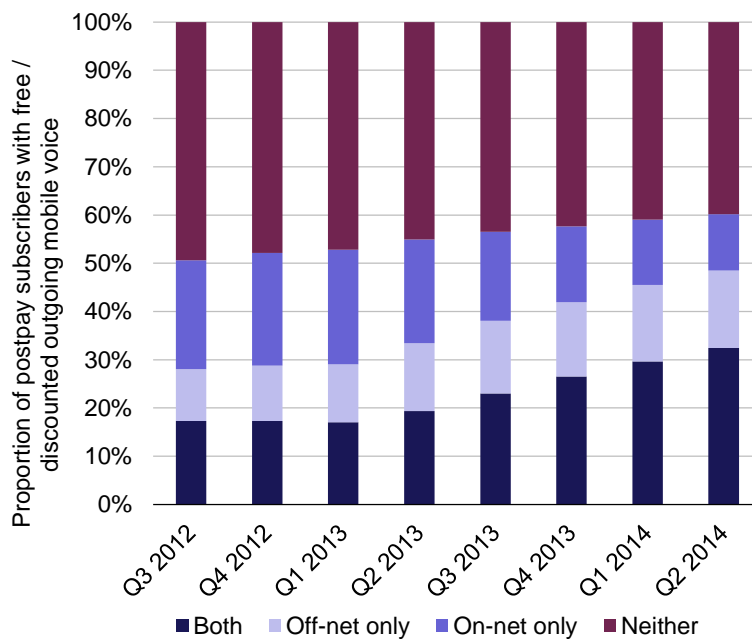


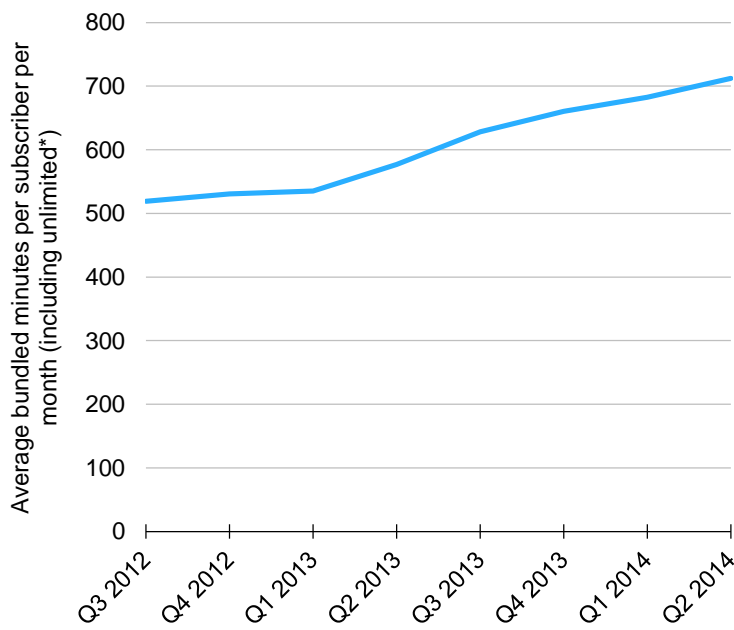
Figure 3.14: Postpaid subscribers with free/discounted outgoing mobile voice in their bundle, Q3 2012 to Q2 2014 [Source: Operator data, 2014]

Furthermore, the proportion of postpaid subscribers with bundled voice has increased from almost 30% to almost 50% in the same period. Therefore, postpaid subscribers are increasingly able to

⁶⁴ Although this calculation includes packages that do include voice (i.e. mobile broadband) handsets; however, these comprise less than 10% of both devices and handset revenues and will not therefore not affect this finding.

experience the benefit of having voice included within their bundle. Off-net voice is also becoming increasingly prevalent within postpaid plans.

For the same operators for which we have data, we have also calculated the average number of bundled minutes per month for those subscribers receiving some bundled minutes. We assume that unlimited packages equate to 1000 bundled minutes per month. On this basis, as shown below, the average number of bundled minutes has increased by 40% over the past eight quarters.



*Figure 3.15: Average bundled minutes per postpaid subscriber per month, Q3 2012 to Q2 2014 (unlimited is counted as 1000 minutes per month)
[Source: Operator data, 2014]*

3.5 Average revenue per user

Figure 3.16 shows the evolution of average revenue per user (ARPU) in the Irish mobile market since 2010. As can be seen, the ARPU for both prepaid and postpaid customers has been declining since 2010. This is partly due to MNOs reducing their prices, and also due to MVNOs such as TMI, Postfone and eMobile providing low-cost alternatives to the MNOs, often with a focus on prepaid subscriptions.

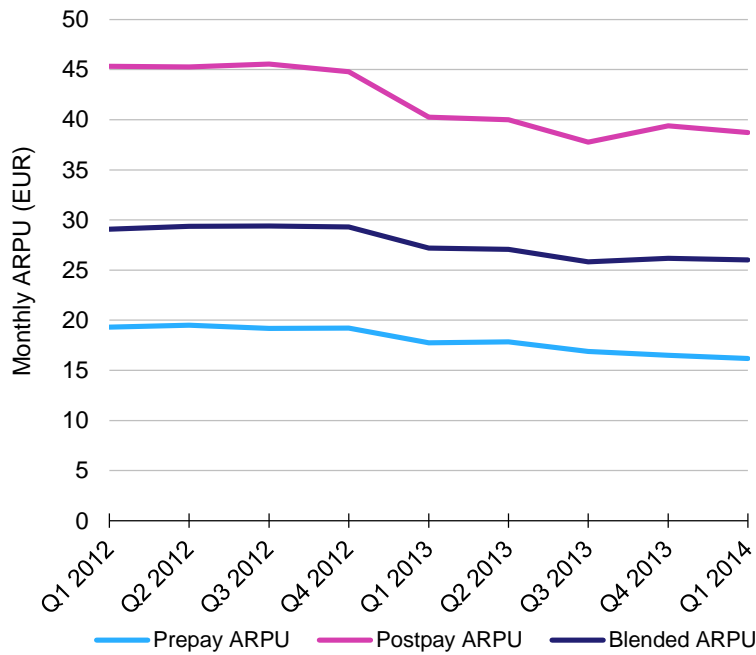


Figure 3.16: ARPU evolution in Ireland [Source: ComReg quarterly data, 2014]

In the 2012 report, it was observed that on a customer-segment basis (according to the data provided by the operators) customers in the lowest-usage groups paid the highest approximate price per minute (APPM⁶⁵), and the APPM was lower for very-high-usage customers (500 minutes per month or more). A set of bounds were defined for this behaviour in Figure 5.10 of that report. These bounds, as well as the associated data points received from operators (customer segments and their associated APPM) are shown below in Figure 3.17.

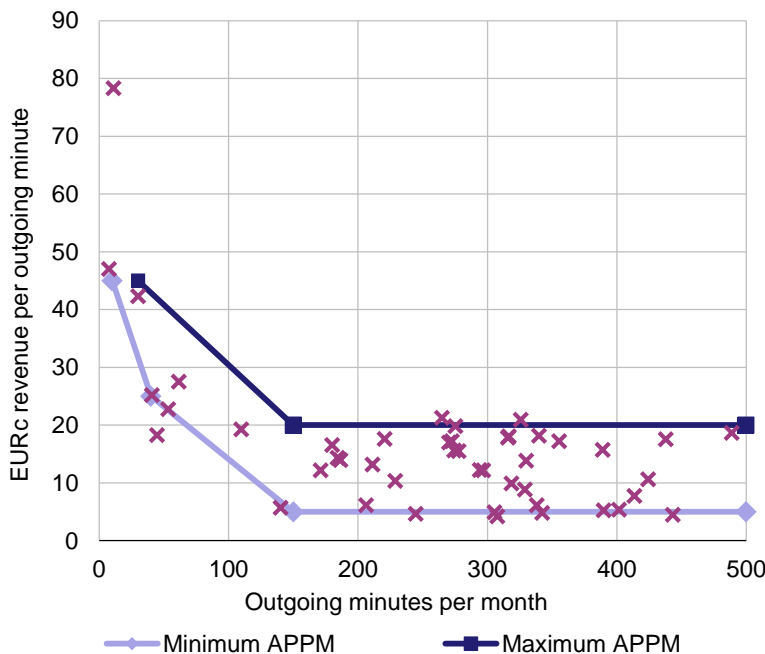
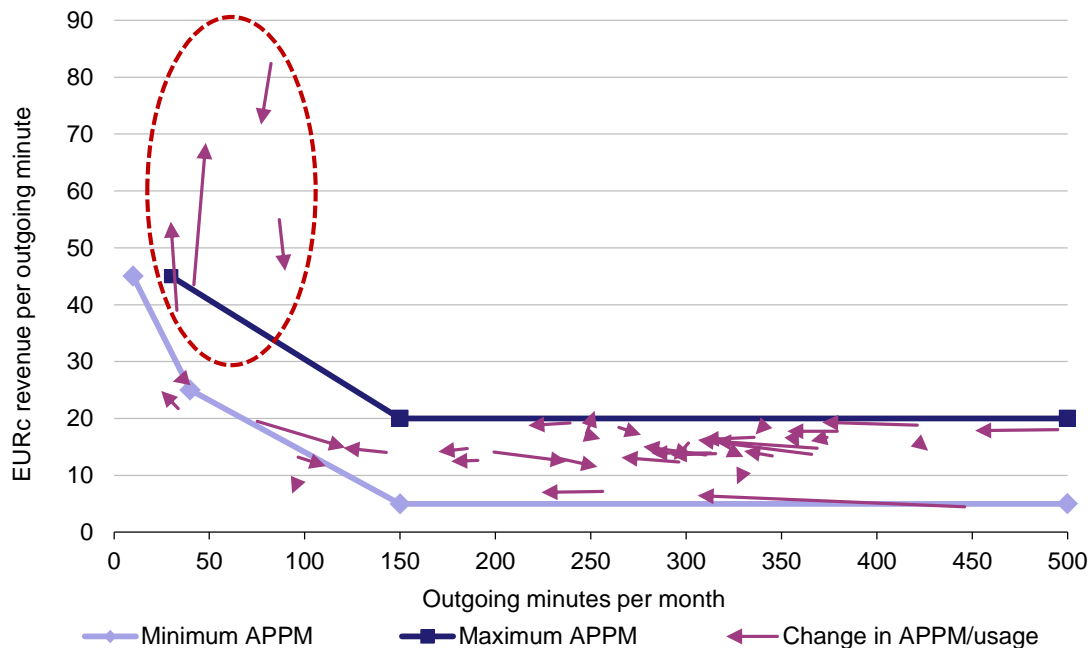


Figure 3.17: APPM (including on-net minutes) for a range of customer segments [Source: Operator data, Q4 2011]

⁶⁵ Approximate price per minute = retail ARPU / originated minutes (off-net to fixed, off-net to mobile and on-net)

For the present study, the four MNOs and two main MVNOs have provided data on ARPU and subscribers for Q2 2013 and Q2 2014. However, not all operators have provided information on segmentation: \times only provided total values, and \times provided segmentation that was consistent with that used in the 2012 report. We have calculated the same measures as used in the 2012 report for Q2 2013 and Q2 2014, and in Figure 3.18 below have plotted them as arrows to illustrate how the APPM has moved for each segment. The bounds from the 2012 report are also shown.

Figure 3.18: APPM (including on-net minutes) for a range of segments [Source: Operator data, 2013/14]



Between the two quarters, there appears to have been some movement of customer segment usage towards the central “bulge” – i.e. the average usage of many of the segments is becoming similar, but with little change in APPM (this can be seen from the fact that most of the arrows are horizontal, which indicates changes in voice usage per month but little change in APPM).

Overall, APPM across different segments is exhibiting broadly the same behaviour as in 2012: in particular, most clusters still lie within the bounds identified in the 2012 report. The main outliers are circled above \times . In these cases, there is little change in usage per month but significant changes in APPM (two increasing and two decreasing).

Low-usage groups are therefore still charged a (much) higher price per minute for outgoing traffic than other usage groups. Therefore, low-usage groups in particular are not heavily reliant on the termination revenue they accrue to their operator in order to be profitable to serve, and so these groups are not at risk of being forced to cancel their subscription following a reduction in MTRs.

4 Conclusions

In this section we present our findings from our analysis of the developments in the market since 2012, and assess whether or not each development still supports⁶⁶ the application of pure LRIC based MTRs, as we originally concluded in our 2012 report. We have used the following classification:

- **Neutral** – the change neither supports nor undermines the case for pure LRIC based MTRs
- **Positive** – the change is consistent with, and supportive of, the application of such MTRs
- **Negative** – the change indicates a degree of retreat, caution, risk or restraint regarding the application of such MTRs.

Our assessment has been made from the perspective of three criteria – efficiency, competition and equity – and the table below considers each of these criteria in turn.

As can be seen below, we have identified mainly positive and neutral implications for our conclusion of applying pure LRIC based MTRs. There are a small number of negative indicators where market changes mean that a degree of retreat, caution, risk or restraint could be applicable in the adoption of pure LRIC based MTRs.

However, it is our opinion that these negative indicators are significantly outweighed by the positive and neutral factors in our analysis, supporting our original conclusion in 2012 to recommend pure LRIC based MTRs to ComReg. Therefore, we conclude there have been no significant market changes since the writing of our 2012 report that would materially change our recommendation to ComReg in that report; namely to apply a pure LRIC cost standard for the assessment of regulated MTRs in Ireland.

⁶⁶ Our conclusions were formed in November 2014 on the basis of public information and ComReg market data to Q3 2014, as well as Section 13D responses to Q2 2014.

Figure 4.1: Assessment of market developments since 2012 and whether or not they support the application of pure LRIC based MTRs [Source: Analysys Mason, 2014]

Aspect considered	Section in report	Description of market development	Still supports application of pure LRIC?
Assessment from perspective of efficiency			
Reduction in the number of MNOs	2.1	A smaller number of network players should lead to improved productive efficiency in serving the market demand. The shareholders of H3GI and O ₂ decided that a merger of the two MNOs would be favourable to productive efficiency and profitability	<p>Neutral: A smaller number of network players should lead to lower LRAIC+ levels, but no change regarding the <i>choice</i> of pure LRIC</p> <p>Positive: Prior to the merger there would have been a material flow of traffic and revenues between H3GI and O₂. Each implicitly supported the common costs of the other in the '+' paid in MTRs (and similarly supported the common cost of other operators). However, after the merger, their inter-subscriber traffic becomes on-net traffic and the associated common costs must be recovered from non-interconnected services. This means that the proportion of the common cost recovery of the merged entity that relies on the '+' in LRIC+ MTRs has declined by a material amount, meaning that it is less reliant on LRIC+-based MTRs to recover its costs</p>
Network deployments	2.3 and 2.4	All MNOs have announced plans to invest significant sums in 4G networks in Ireland (though these will not support voice termination in the short term). However, the dynamic efficiency of these investments is focused on data services not legacy 2G/3G voice	Neutral: Network-related investment decisions are not strongly related to the MTR situation
Termination revenues compared to total revenues	3.2.3	With recent reductions in both MTRs and FTRs, a larger proportion of operators' revenues now comes from their own customers	Positive: Operators now control a greater proportion of their own revenue
Pricing of on-net and off-net call in postpaid packages	3.4	Tariff-mediated network externalities (TMNEs) are strong due to increasingly available "unlimited on-net minutes". Chargeable traffic persists for off-net calling for these tariff plans, but the proportion of plans with	<p>The implications of this development are different for large and small operators:</p> <p>Negative (in the context of large operators): The merger means ~75% of subscribers are served by the two</p>

Aspect considered	Section in report	Description of market development	Still supports application of pure LRIC?
		off-net call charges has reduced	largest MNOs, which will give rise to some TMNE benefit for the customers of the merging operators. H3GI (respectively O ₂) will no longer need to overcome the drawbacks of the TMNEs of O ₂ (respectively H3GI) (by using pure LRIC MTRs for calls between their customers) because they are now all one network Positive (in the context of smaller operators): The drawbacks of TMNEs generated by the large players could be more acute for emerging MVNOs with <10% market share – this could be somewhat mitigated by lower MTRs
Assessment from perspective of competition			
Spectrum assignments	2.2	The holdings of the four MNOs are more symmetrical after the auction, though the merger of H3GI and O ₂ has introduced some asymmetry in the high-frequency bands	Neutral: All MNOs continue to have more than enough spectrum for 2G/3G voice
Market share	3.1.3	The H3GI/O ₂ merger has reduced the number of MNOs to three, but the number of MVNOs has increased and will increase further with the future entry of potentially strong MVNOs such as UPC	Neutral: The market HHI is higher after the merger, which has removed the smallest player. However, the undertakings agreed by H3GI with the EC are intended to encourage the entry and growth of MVNOs, and are required by the EC (DG Competition) to permit the acquisition, as set out in the merger procedure decision document of the EC.
Traffic and revenue flows	3.2.1 and 3.2.2	Voice traffic flows are almost symmetrical. There is still a net flow of revenue to from fixed operators to mobile operators, but this is significantly reduced in absolute size	Positive: Lower MTRs would reduce the net flow of revenues to mobile operators (from fixed operators) still further
Any-network voice discounts and bundle sizes	3.3.1 and 3.3.2	On-net and off-net calls to both fixed and mobile networks are increasingly featuring in bundles. As described in Section 3.4, for postpaid subscribers the	Positive: Lower MTRs would reduce the risk for operators of offering off-net calls in bundles

Aspect considered	Section in report	Description of market development	Still supports application of pure LRIC?
		actual volumes of such minutes in bundles is also increasing	
Converged fixed–mobile offers	3.3.3	A limited number of converged fixed–mobile offers are now appearing	Positive: Lower MTRs would reduce the risk for both fixed and mobile operators of offering off-net calls and calls to mobiles in bundles
Assessment from perspective of equity			
Mobile termination rates	1.2	The largest impact has been on H3GI and TMI due to the removal of MTR asymmetry, although H3GI is merging with O ₂ . The impact of the MTR reductions on Vodafone and O ₂ is a small percentage of their total revenues	Neutral: Overall, MTRs are at a lower level than in 2012, but still some way above pure LRIC levels However, there are different specific implications for fixed and mobile operators: Positive for fixed operators due to reduced MTR outpayments Negative for mobile operators due to reduced MTR revenues for fixed–mobile voice
Number of fixed-only and mobile-only households	3.1.2	A growing proportion of households (now > 40%) are mobile-only, and there is increasing fixed–mobile substitution	Neutral: Consumers' preference is increasingly for from making calls on a mobile basis, independently of MTR pricing
SIM-only packages	3.3.4	These are now widely available. Operators are offering few (or no) long-term, low-end SIM-only packages	Neutral: Continuing presence of SIM-only offers in the market means that there is no significant change in the existence of sufficient working handsets (i.e. there has been no surge in the need to subsidise handsets for voice calling, therefore no need to have higher MTRs as a result).
Average revenue per user	3.5	Consumer segments appear to be changing their usage, but ARPUs appear stable	Neutral: Low-usage groups still generate the highest ARPU, so their profitability is not heavily reliant on the MTR level

