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Non-Geographic Numbering

Report from DotEcon on non-geographic numbers in Ireland.

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Strategic Review of Non Geographic Numbers in Ireland

A DotEcon report for ComReg

[NON-CONFIDENTIAL VERSION]

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Content

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Executive Summary

What are Non-Geographic Numbers?

Non-Geographic Numbers (NGNs) are telephone number prefixes that are not linked with any particular geographic location. This contrasts with geographic numbers, where the prefix indicates the location of the recipient (e.g. 01 for Dublin or 021 for Cork).

NGNs include number prefixes such as[1]:

- 1800 - Freephone;
- 1850 - Shared cost (per call charge);
- 1890 – Shared cost (per minute charge);
- 0818 – Universal access; and
- 076 – Nomadic / VoIP.

NGNs are used by private companies, public sector bodies and charities to deliver a variety of different services. These include help lines, customer support numbers, response numbers for marketing campaigns, product helplines, teleconferencing, information services and international calling services (to name but a few).

Problems with NGNs

Harm to callers

There are a number of problems with NGNs that are currently harming consumers:

- retail tariffs for calls to NGNs are not transparent to customers, who are often unable to forecast the likely cost of a call;
- consumers often do not understand the different designations for each of the five types of NGN; and
- retail prices for calls to NGNs can be high, especially from mobile phones where NGNs are frequently not included within call bundles.

[1] This review excludes premium rate and directory enquiries and considers only these five prefixes.

Few consumers give NGN calls much priority when choosing a telecoms provider, so competition between originating operators (OOs) does not protect consumers.

Harm to service providers

There is evidence that consumers may be avoiding making calls to NGNs as a result of these problems. In turn, this make NGNs less useful for providers of services, who use NGNs as a means to make themselves accessible to callers and may cover part of the overall cost of the call for this reason.

Service providers may face high charges for receiving NGN calls, as a consequence of wholesale origination charges set by the originating operator.

This problem is essentially structural. NGNs are used as a way for service providers to offer their services to all callers irrespective of which originating network the caller subscribes to. Each originating operator has bottleneck control over access to its customers; if it raises wholesale origination charges, there is little that service providers (or terminating operators receiving calls for services providers) can do in response.

Recommended response

These problems are sufficient to warrant action to correct these market failures to improve outcomes for consumers and service providers. We recommend:

- two types of call pricing: Freephone and calls priced the same as if a geographical call had been made (bringing these 'geo-linked' NGN calls within call bundles widely offered to customers);
- elimination of some of the number prefixes over time, ideally to just two prefixes to match these two types of call pricing;
- rationalisation of number prefixes over an appropriate transitional period to ensure that adjustment costs to service providers are not excessive (likely 2-3 years); and
- setting a cap on wholesale origination charges for NGNs.

Lack of understanding of NGN pricing structures

There is some awareness that NGNs exist…

Most consumers are aware of the existence of NGNs in the 1800, 1850 and 1890 range, but the 0818 and 076 ranges are less well known. Service providers demonstrate a similar pattern of higher awareness of the existence of 18xx numbers, with somewhat less awareness of 0818 and 076.

...but little awareness of their prices

Whilst consumers know that NGNs exist, few know about their retail pricing. Just 14% of surveyed consumers were confident in being able to report the costs of calls to at least some of these NGN classes.[2]

Many also incorrectly believed that the organisations use these numbers to make money, confusing them with premium rate numbers. For the 1850 and 1890 classes, 41% of respondents stated that they believed that organisations can make money from customers dialling those numbers.[3]

Excessive retail pricing

Very few calls to NGNs are included in calling bundles

Very few operators or packages include calls to NGNs within the call bundles. Calls to 1850 and 1890 are not offered "in-bundle" by any operators, but rather charged on a per-call or per-minute basis. Whilst some operators offer a small volume of calls to the 0818 and/or 076 class in-bundle, this is not universal.

This contrasts with pricing for geographical calls and calls to mobiles, where the prevalence of phone packages with inclusive bundled minutes means that the price at the margin for an additional call is zero in many cases.

There are particular problems with retail mobile pricing

For calls to NGNs falling out of bundle, operators specify per call or per minute charges. Prices charged by the mobile operators tend to be much higher than those of fixed operators. For example, a call to 1850 is typically €0.06-0.07 per call from a landline and around €0.30 per call from a mobile. Similarly, calls to 1890, 0818 and 076 are typically €0.04-0.06 per minute from landline (in addition to a 'set-up' charge of around €0.06 - 0.09), but calls from mobile cost as much as €0.35 per minute.[4]

[2] Question: Do you know how much it costs you per minute/per call when making calls to NGNs (in the case that they are not included in your call package, or calls are made out of bundle)?
Base: All adults aged 18+ (1,023)

[3] Question: Which NGN or NGNs, if any, do you associate with each of the following statements: organisations can offer a lower call rate to customers using this NGN; this/these number(s) is/are free for people to call; organisations can make money from customers dialling these NGNs?
Base: All aware of NGNs (919)

[4] Although ComReg has effectively imposed a price ceiling on calls to these numbers, it is increasingly unclear what the relevant geographic call price is and the calculation of a "standard rate call" may be somewhat opaque as currently defined and there is not currently any obligation to include calls to NGNs within bundles.

We estimate that for the 18XX ranges, the margins earned by mobile operators are close to 90%. For 0818 for mobile operators' margins are about half that amount (as mobile operators do not set their own origination charges for 0818 but rather adopt the same settlement charges and payment regime as the fixed operators). By comparison, fixed operators make far lower margins – roughly 10%-20%. The cost of call origination on mobile networks would have to be 7-8 times that of the regulated mobile termination rate (2.6cpm as of July 2016) in order for mobile margins to be in line with fixed margins. Therefore, retail prices for NGNs on mobile networks are far above incremental cost.

Competition for customers is not sufficient to constrain retail prices

For most customers, NGN calls too small a share of total spending to allow competition between originators to constrain retail prices for NGN calls significantly. Consumers are much more likely to choose providers based on monthly access charges, the prices of geographical and mobile calls and the volume of minutes and data in bundles. Bundling with other services (e.g. mobile broadband and media content) is prevalent further reducing the importance of NGN pricing in consumers' choice of providers. Just 5% of customers considered the inclusion of NGN minutes in different call packages when choosing provider/package for their fixed line and 6% for mobile, suggesting that the price of NGN calls or their inclusion in bundles is not a competitive differentiator between operators.[5]

However, just because NGNs might make up a small share of total calls, this does not mean that harm does not occur if retail prices are excessive or unclear. If, at the point of making a call, customers experience (or perceive) any unnecessary barriers to calling these numbers, there may be a reduction in the number of customers calling NGNs. In turn, the value of NGNs to the service providers is reduced.

[5] Question 12 and Question 15: Did you consider the inclusion of NGN minutes in different call packages when choosing your provider/package?
Base: All aware whether or not NGN calls included in their call package (311 for fixed & 642 for mobile)

Suppression of calls to NGNs

Lack of understanding and high costs can impact on usage of NGNs

Surveys show that consumers are actively avoiding calling NGNs due to bad experiences arising from high costs of calling or bill shock, or a perception that they are expensive to ring.[6]

Call traffic to NGNs has fallen over the past five years. Between 2011 and 2015, the volume of calls to these numbers has fallen by 15%; over the same period, the total of all other voice calls has fallen by only 3.3%.[7] A survey of organisations shows that the price of calling NGNs is also a barrier to SPs providing services over these numbers.

Service providers' perspectives and wholesale costs

SPs are aware of NGNs, but can face high costs to use them

Only around 10% of businesses in Ireland are providing services over NGNs. There is a general perception amongst businesses that the costs of using NGNs are high, both for the business and for its callers.

At the same time, those SPs using NGNs say they are unlikely to use alternative methods of contact to replace NGNs, with surveys demonstrating that the phone remains the most important form of contact for most SPs. Even those that offer other contact methods (e.g. web-based) still provide a phone service and some businesses place a value on using a NGN rather than a simple landline or mobile number. Few other options are considered viable substitutes. Even geographic numbers are not a viable substitute for those SPs that want an NGN for flexibility or for marketing purposes.

Evidence from our SP interviews and business survey shows that SPs are unhappy with the cost to them of providing services over NGNs, but often have no choice but to continue. This is particularly the case for the 1800 Freephone range, where the called party pays the entire cost of the call; SPs are facing charges as high as 34 cents per minute for these calls.

SPs typically need to ensure coverage of all callers regardless of the originating network that a caller may subscribe to. For most

[6] Independent websites such as http://www.saynoto1890.com/ have been set up to help consumers find alternatives to avoid calling NGNs and mainstream media have picked up on the high cost of calls to some of these numbers. For example, The Irish Daily Mail, 'Exposed: The great lo-call phone rip-off', Saturday 1 October 2016.

[7] Based on figures from ComReg quarterly reporting and the percentage change between total 2011 and 2015 figures. This includes total minutes for: fixed to fixed; fixed to mobile; fixed to international; mobile to mobile; mobile to fixed; and mobile to international/roaming, and excludes fixed and mobile calls to "advanced minutes" which include calls to NGNs.

applications of NGNs (e.g. a helpline or a marketing response number) it would be highly unattractive for an SP if it were not able to receive calls from all originating networks.

Terminating Operators (TOs) compete with other TOs to provide services to SPs (directly or indirectly through other parties that may be involved in procuring termination and supporting the SP's services). Therefore, there are incentives for TOs to take into account SPs' interests. However, unlike some other countries where TOs influence the prices charged (with TOs typically setting wholesale charges, though subject to the risk of dispute by originators), in Ireland, wholesale NGN rates are set by the originating operator.

Originating operators could be seen as having bottleneck control over NGN origination

It is typically not possible for TOs to exert a significant degree of countervailing power against specific originating operators due to the requirement to maintain end-to-end connectivity and the desire of SPs to be reachable by callers on every network. This provides originators with the potential to raise wholesale prices with little loss of volume.

Wholesale rates set by mobile operators are an order of magnitude higher than that charged by fixed operators, for example up to 34 cents per minute compared with 0.8 cents per minute for Eir for 1800 calls, and around 16 cents per call compared with around 3 cents per call for 1850 calls.

High prices faced by SPs for receiving calls may further reduce their incentives to use NGNs on top of the effects of reduced call volumes (due to high retail prices and lack of retail price transparency for callers). This leads to adverse feedbacks: if few services are provided over these numbers then consumers are less likely to engage with the platform in terms of understanding what the various number classes mean and may call NGNs less often.

Retail remedies

Simplification to two classes of NGN

The requirements of service providers could be well met by having just two categories of NGN – Freephone and a 'geo-linked' category where prices are linked to those of a call to a geographic number. There is little need for additional classes that would set retail price intermediate between these two cases. Moreover, the lower level of per minute charges would largely eliminate the need for a NGN class where there is a fixed call price regardless of call length.

We recommend that Freephone remains free to callers from fixed and mobile, and that all other NGNs move to geo-linked pricing, where the price is linked ***dynamically*** to the price of a national geographic call ***at the point of use***. Therefore, calls to NGNs would become in-bundle for those callers with a bundle call plan that included geographical calls.

Multiple classes with the same purpose

At minimum, we recommend that ComReg takes the initiative of introducing common branding for NGNs such that if there are multiple number prefixes all linked to geographical call prices then these are easily identifiable by consumers as equivalent.

Nevertheless, there is merit in simplification by reducing the number of NGNs that fulfil similar functions through a phased transition. In particular, ComReg should consider moving to a single Freephone number and a single geo-linked number prefix The geo-linked number should ideally one that it is internationally accessible, implying that either 0818 or 076 should remain. On balance, we consider that 0818 has the relative advantage.

Our retail market recommendations are summarised in the diagram below:

Differentiation:	Freephone	"Geo-linked"
Pricing:	Free to call from landline and mobile	Price linked 'dynamically' to the cost of a national geographic call at the <u>point of use</u> Calls included 'in bundle' Calls outside of bundle will benefit from competition on price of geo calls.
Numbering:	Sort the existing pre-fixes into these two categories. Apply common branding (such as colour coding or naming) Supported by a ComReg campaign as a transition measure during consolidation.	
	1800	1890 / 1850 / 0818 / 076
		Phase out some prefixes (1890 first) until there is just one "geo-linked" category that is internationally accessible. 0818 is the preferred candidate to remain.

Speed of transition

In rationalising number prefixes, ComReg will need to strike a balance between the relative merits of a fast versus a slow transition. There will be a cost for SPs associated with any transition and the removal of a number range, and a gradual withdrawal may help to reduce adjustment costs for SPs. However, if the change is overly prolonged then the benefits of simplification for callers will be deferred. We consider that the exact timescale for transition should be subject to consultation, but that it would be reasonable for a full transition to occur over a 2-3 year period.

Waterbed effects on other services

This proposal would eliminate the identified sources of harm to consumers. However, a reduction in retail margins earned from NGNs for originators might lead operators to increase prices for other services (by a very small amount). Nevertheless, even taking this possibility into account, there is a strong argument for retail intervention.

First, as a matter of principle, even if other services might be inefficiently cross-subsidised by excess revenues earned from NGNs, this is not in itself an argument for the *status quo*.

Second, it is not necessarily the case that any excess margins earned from NGNs result in lower prices for other services to the benefit of consumers; such margins may be dissipated through costs of competition, such as expenditure on marketing, advertising or other activities aimed at winning or retaining customers that do not directly benefit customers.

Third, the impact on pricing of other service is tiny. Revenues for fixed and mobile operators generated from customers calling NGNs amounted to around €30 million in 2015. In contrast, total retail revenues in the telephony market were around €2.9 billion in the 12 months to December 2015 (and around €2.9 billion in 12 months to December 2016).[8] Given how small a proportion of total revenues NGN revenues account for, the price increase across all other services would have to be very small for it to be revenue neutral (c. 1%).

Wholesale remedies

Wholesale charges of mobile operators are high both in absolute terms and relative to those charged by fixed operators. Mobile operators make more than half their total NGN revenue[9] from interconnection fees. In comparison, fixed operators make less than a quarter of their total NGN revenues from interconnection fees and instead earn the majority of their revenue from customers.

Retail remedies alone may not be sufficient

Whilst the recommended retail remedies are necessary to address the problems identified in the NGN market, they may not be sufficient without accompanying wholesale remedies.

If SP costs of using NGNs are excessive (and stopping many businesses using these numbers, as the evidence suggests), then intervention may be needed to address the underlying cause of high

[8] Based on fixed line retail revenue plus mobile retail revenues as displayed in Fig 1.1.1 of ComReg document 17/15(R), 'Irish Communications Market – Quarterly Key Data Report. Data as of Q4 2016', 16 March 2017. Available at: https://www.comreg.ie/publication/irish-communications-market-quarterly-key-data-report-data-q4-2016/

[9] Total NGN revenue includes all revenues obtained for originating and terminating NGN calls.

charges faced by SPs for receiving NGN calls. It is also possible that retail remedies without corresponding wholesale remedies could even worsen the situation for SPs if originators seek to recover lost retail margins through higher wholesale charges.

Wholesale price cap

We recommend that ComReg consider possible means by which a price cap could be set on wholesale origination charges for NGNs, either by reference to modelled costs or a proxy measure of cost. This is justified given that each originating operator in effect has market power, given that it is not avoidable by a service provider who needs to be accessible to all callers regardless of which network they might subscribe to.

ComReg intends to carry out a separate project to consider wholesale charges for non-geographic numbers and to assess whether regulatory intervention using its formal powers is appropriate.[10] Nevertheless, we note that ComReg could potentially intervene and set a price cap for wholesale origination charges for NGNs by a number of different routes: ex-ante regulation in a susceptible market; the application of competition law to an abuse of dominance and an own-initiative investigation under the Access Regulations and/or Universal Service Regulations. It is also open to ComReg to issue (ex-ante) guidance about how ComReg would resolve a dispute to provide better incentives for originators' pricing.

[10] ComReg document 17/53, 'Information Notice – Wholesale Charges for Non Geographic Numbers', 14 June 2017. Available at: https://www.comreg.ie/publication/information-notice-wholesale-charges-non-geographic-numbers/

1 Background and scope of project

1.1 What are Non-Geographic Numbers?

Non-Geographic Numbers (NGNs) are a class of telephone number within the national numbering resource for which the geographic termination point is not identifiable from the number. By contrast, a geographic number is linked to a location that can be identified from the area code (e.g. 01 for Dublin).

NGNs provide an important platform for the delivery of a wide variety of services. Private companies, public sector bodies and charities use these numbers to deliver teleconference services, help lines, customer support numbers, response numbers to support marketing campaigns, product help desks, information services and international calling services (to name but a few services). NGNs include Freephone numbers, numbers where the calling party pays for the call and other numbers where the called party (referred to here as the 'service provider' or 'SP') contributes towards the costs of the call, reducing the price charged to the caller.

There is a wide range of NGNs available in Ireland. Some of these NGNs are so-called 'number translation codes'. For example, 1800, 1850, 1890, 0818 and premium rate services have no inherent termination point of their own. Instead an intelligent network 'translates' the number into a number that is assigned to a termination point such as a fixed-line geographic number, mobile number or other number.

Premium rate and directory enquiry services (for which the SP receives revenues from the caller, who is charged a higher rate than the costs of connecting the call) are a special case of NGNs and are not considered in this study. We focus on calls where the caller and/or SP contribute towards some or all of the cost of the call or in some split, rather than premium rate and directory enquiry services where the SP receives funding for its service from the excess of the retail charge paid by the caller over the costs of originating and conveying the call.

This study will consider the following five NGN classes in Ireland:

- '1800', Freephone – the total charge for these calls is borne by the called party;
- '1850', Shared Cost (per call charge) – the caller is charged a fixed rate for only part of the cost of the call, with the called party being charged for the remainder.

- '1890', Shared Cost (per minute charge) – the caller is charged a per minute rate for only part of the cost of the call, with the called party being charged for the remainder.
- '0818', Universal Access – originally introduced to allow a called party to receive calls at a single or several different locations depending on the time the call is made and the location of the caller. The caller pays for the call and there should be no contribution from the called party.
- '076', Nomadic – originally intended to provide VoIP operators a greater choice of types of numbers as well as much more freedom in respect of rights of use than other types of number. It has recently been adopted for other uses including corporate numbers. The caller pays for the call and there should be no contribution from the called party.

Despite the growth of the Internet, smartphones and apps as alternative means of delivering some of the traditional services provided over NGNs, there is and will remain an important role for voice-based services. A voice-based service is easily available to anyone with a phone (fixed or mobile, smart or dumb) and so provides largely universal accessibility to service providers in a way that other platforms cannot. Therefore, NGNs remain important; even though some service providers may have alternatives to using NGNs, others do not (as we document in this report).

1.2 Potential concerns

There is significant benefit to both callers and service providers from the NGN market functioning well, with a rich variety of services being provided over the platform. However, even prior to a detailed assessment, it is clear that the NGN market has not been working well for callers and SPs.

Some originating operators (OOs) have set high retail and/or wholesale prices for calls to NGNs, in effect grabbing margin at the expense of other parties further down the value chain. This could lead to a variety of adverse impacts on both consumers and other parties within the NGN value chain. In addition, retail tariffs for NGN calls may not be sufficiently clear and that this may discourage consumers from calling these numbers. In turn, this may undermine the utility of the platform to SPs of providing a universally accessible shop-front for their services for callers from all OOs. This could create a vicious circle, as fewer or lower quality services over the platform may decrease calling volumes.

ComReg has already carried out some work on NGNs following developments in the wholesale market. For example, BT Ireland indicated in early 2014 that it would move away from the longstanding "deemed-to-be" regime: a voluntary agreement that ensured fixed operators levied a symmetric charge for origination on one another based on Eir's regulated wholesale interconnect rates.[11] BT claimed that this system is no longer sustainable, as mobile operators do not partake in the regime and levy asymmetric origination charges that are significantly higher than those levied by fixed operators. Several other market players also highlighted similar issues in their responses to ComReg's Call for Input (ComReg 14/23) on BT's proposed solutions[12] to the ill-functioning deemed-to-be regime.

Following the move by BT (followed by a number of other fixed operators) to break away from the deemed-to-be regime, ComReg was alerted to the fact that higher fixed origination charges (together with higher charges from mobile operators) could have an adverse impact on the welfare of both callers and SPs.[13] ComReg also considered that breaking away from the deemed-to-be regime created a risk that billing reconciliation between fixed operators would become more complex, increasing the cost of using NGNs overall. In this regard, ComReg has been conducting various work related to NGNs, including an investigation into the costs of mobile operators compared to fixed operators and following a Call for Input in May 2015.[14] [15]

Following from its work to date (focussed mainly on the wholesale side of the market) ComReg now seeks to consider the NGN system as a whole, in particular the retail market, and assess the extent to which the current NGN system is causing harm to both called and calling parties. Where it is deemed that intervention is required to correct market failures, we understand that ComReg expects to issue a consultation document and seek further views from stakeholders.

[11] The Interconnect settlement regime and the 'deemed-to-be' regime are discussed in more detail in Section 4.5.2 of this report.

[12] A "deemed to be" regime that included the mobile operators or a new "0800" Freephone number range.

[13] ComReg Document 15/40, 'Wholesale charges for non-geographic numbers – Call for Input', 8 May 2015

[14] ComReg Document 15/40, 'Wholesale charges for non-geographic numbers – Call for Input', 8 May 2015

[15] In June 2017, ComReg also published an Information Notice regarding its work on wholesale changes for NGNs. See ComReg document 17/53, 'Information Notice – Wholesale Charges for Non Geographic Number', 14 June 2017.

1.3 The scope of this project

In light of the requirement on ComReg to ensure that these classes of numbers are used in a manner that promotes competition, protects consumers and encourages the efficient use of numbering resources, ComReg commissioned DotEcon to assist it with a strategic review of NGNs, collecting evidence and information about the use of NGNs and sources of potential harm. The primary focus was intended to be on the retail market in response to ComReg's emerging concerns regarding:

- Transparency – ComReg is concerned that operators may not be communicating the retail tariffs for calls to Non-Geographic Numbers in a sufficiently clear manner to allow consumers to calculate the charge for a call upfront;
- User understanding – ComReg is concerned that consumers may not understand how calls to Non-Geographic Numbers are charged in relation to their subscription package, and they may also not understand the different designations for each of the five types of Non-Geographic Numbers;
- Usage – ComReg is concerned that if consumers do not understand either the retail tariffs or the specific designations for Non-Geographic Numbers, then consumers may be harmed when they use these types of numbers.

Specifically, we were asked to:

- review regulatory management and use of NGNs in a selection of comparable jurisdictions;
- provide an overview of NGNs in Ireland including the types of services typically provided, the level of demand and trends over the past 5 years, retail tariffs for calls to these numbers and the extent to which they are included in bundles;
- provide a description of the wholesale supply chain for each class and interaction between each participant in the chain including flows of revenue for each class of NGNs between the originating operator, the terminating operator and the service provider as well as any intermediaries involved in carrying a call;
- identify any consumer harm and recommend remedies.

Whilst transparency and consumer understanding of the retail prices for calls to these numbers is a key focus, we cannot assume that improving transparency alone would be sufficient to correct consumer harm. As we discuss in this report, some of the underlying problems result of from structural issues in the NGN value chain that can create market power, externalities and market failure. Therefore, we also consider whether intervention may be necessary on the wholesale side of the market.

1.4 Evidence collected during this investigation

For this project we undertook a substantial evidence gathering exercise. ComReg commissioned market research in the form of surveys of household customers (consumers) and organisations and issued a comprehensive information request to 38 fixed and mobile telephony operators in Ireland. We also conducted extensive interviews with service providers.

Market research directed at consumers

Behaviours & Attitudes together with The Research Perspective (B&A) carried out a survey of a fully representative sample of adults in Ireland. The consumer survey, designed in conjunction with ComReg and DotEcon, sought to gather information of consumer awareness of NGNs, their experiences of accessing services via the NGN platform, and their attitudes towards these numbers, including understanding of the costs of calls to these numbers.[16]

Market research directed at organisations

B&A also carried out a survey of a representative sample of Irish organisations to determine the extent to which they were using NGNs to deliver services of various types and the reasons for doing so (or for not doing so). The organisation survey, again designed in conjunction with DotEcon and ComReg, sought to capture information on general awareness of NGNs, understanding of charging structures, including the costs faced by the called and the calling party, and general attitudes to these numbers from the perspective of service providers.[17]

Fuller free-form interviews with a small number of organisations using NGNs to provide services

DotEcon and ComReg conducted in-depth interviews with private companies as well as with public sector bodies using NGNs (especially those providing services of social or public interest). These interviews gathered more information on specific experiences of organisations providing services over NGNs, including the costs and benefits of doing so. Where concerns were raised, we requested further information and evidence from the service providers, for example in relation to the charges levied on them for receiving calls to their NGNs.

[16] Full details of the research themes, the survey and the sample can be found in Annex C of this report and Document 17/70b.

[17] Full details of the research themes, the survey and the sample can be found in Annex C of this report and Document 17/70c.

Information requests to communications providers involved at all levels of the NGN value chain

An information request was issued to 38 telecommunications operators in Ireland providing fixed and/or mobile telephony services. DotEcon and ComReg held a workshop to present the information request and explain its purpose. Subsequent conference calls were set up on a bilateral basis with operators having any queries on the details of the information request. Initially, ComReg issued this as a voluntary information request. However, a large number of operators were not responsive to this request, leading to ComReg issuing formal 13D notifications requiring operators to provide this data.[18]

We sought data on the demand for each of these NGN types, and the revenues received (and fees paid) by each of the different parties in the value chain. Specifically, the information collected included:

- volumes of calls and minutes terminated and originated;
- rates and revenues associated with termination and origination of calls to each of these numbers;
- revenues and rates associated with transit and hosting (where applicable); and
- some qualitative questions on tariffs and costs associated with NGNs.

The data was used together with market research and other information, to:

- assess the extent to which customers call each NGN type;
- provide an assessment of market structure and the wholesale supply chain; and
- construct a revenue allocation model (i.e. follow revenue flows in outline through the value chain).

The data covered up to 3 years (and in some cases up to 5 years). Where possible we use this data to assess changes over time (for example, in relation to the amount of active numbers in each class, changes in the level of demand for each class and possible migration of services to and from each class).

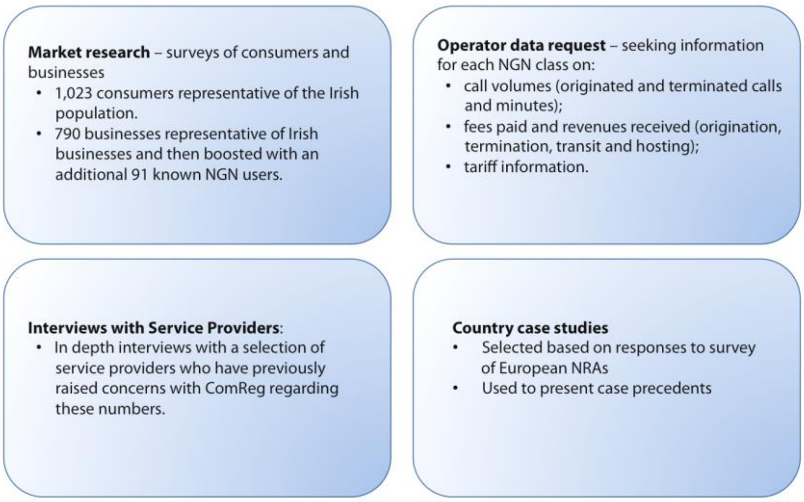
[18] A full overview of the process and the results of the information request are discussed in more detail in Annex D of this report. Under Section 13D(1) of the Communications Regulation Acts 2002 to 2011, ComReg may require an undertaking to provide ComReg with such written information as ComReg considers necessary to enable ComReg to carry out its functions.

Enquiries to other EU NRAs about their experiences with regard to NGNs

ComReg also issued a short questionnaire to all National Regulatory Authorities (NRAs) throughout Europe in the form of a BEREC questionnaire. This asked about:

- the type and number of NGNs available in each country;
- whether there had been any complaints regarding the NGN system;
- whether (and what) research on consumer and/or business use of NGNs had been conducted;
- whether they had identified any evidence of consumer harm or any competition concerns;
- whether there were any plans to investigate such concerns (if not already done so);
- whether any remedies had been imposed in the market, the impact of those remedies; and
- whether there had been any legal challenges against the remedies.

There was a good response from NRAs and we reviewed the replies to select a shortlist of countries for which more detailed case studies were prepared. These case studies are provided in Annex E and are referenced at relevant points throughout the report, including in our assessment of potential issues and options for remedies.[19]



The evidence collected provides a consistent story

The findings of this report are supported by a large body of evidence that has been collected over the course of this project. As such we are not reliant on any specific piece of evidence in isolation when drawing our conclusions and recommendations. Overall, we

[19] Case studies are included in Annex E of this report.

consider that the evidence paints a consistent picture of various market failures arising out of the structural features of the NGN value chain, with the scope for significant harm to consumers and service providers.

1.5 The structure of this report

The remainder of this report is structured as follows:

- In section 2 we set out the economics of NGN markets and discuss the potential for market failure and consumer harm. This section sets the context of the review and provides some hypotheses to be tested using evidence specific to the Irish market;
- In section 3 we provide an overview on NGNs in Ireland including a discussion of the specific characteristics and retail charging structure for each class; the prices faced by consumers making calls to these numbers including the extent to which they are included in bundles; and the level of demand for NGNs from a caller perspective in terms of volume of calls and minutes to each NGN class including any noticeable changes or trends in recent years;
- In section 4 we discuss the types of businesses and organisations in Ireland that provide services over NGNs, the reasons for doing so and the types of services typically provided. We then provide an overview of the market dynamics explaining the various parties involved in connecting the calling and the called party. We consider how this differs across the different NGN classes, the payment flows involved between the parties, the different business models of operators and outline the revenue allocation across different parties in the supply chain;
- In section 5, we summarise our findings and identify key issues with NGNs in Ireland and identify whether there has been, or is scope for, harm to either the calling party, the called party or any other player within the supply chain; and
- In section 6 we discuss the range of remedies that ComReg could impose to address any issues identified in this report and provide our recommendations.

2 Economic Framework

2.1 The economics of NGN markets

NGNs as a two-sided market

NGNs are an example of a two-sided market where the size of the user base on one side of the market impacts the usefulness of NGNs to the other side.

NGNs connect callers to service providers though an originating operator (which provides the caller with a telecoms service) and a terminating operator. Callers benefit from the services that SPs offer through the platform. However, by using NGNs, SPs typically cover some (or all in the case of Freephone numbers) of the cost of being called. Therefore, we may think about SPs using NGNs as a means to make themselves contactable by callers, at terms chosen by the SP. Helplines, product support lines, marketing response numbers and so on are good examples of organisations using NGNs to reach out to callers and make themselves accessible.

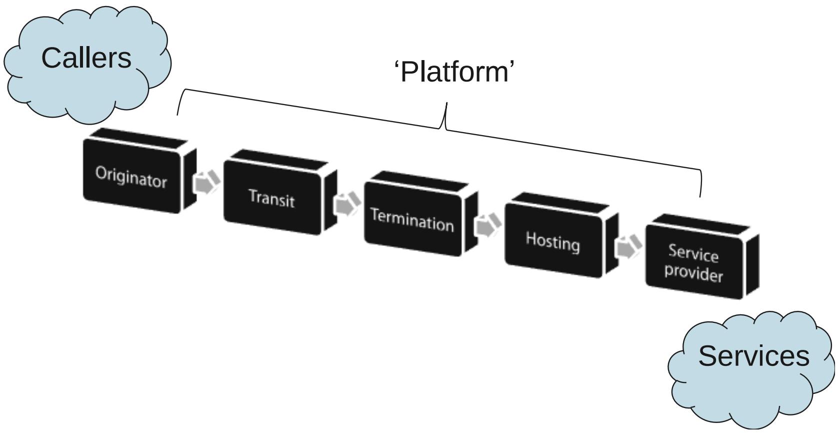
NGNs have some aspects of a two-sided market. By this, we mean that NGNs can be thought of as a 'platform' linking callers and SPs, where the size of the user base on one side of the platform affects the usefulness of the platform to the other side. Callers derive value from enjoying the services provided on a NGN 'platform'. On the other hand, SPs derive value from being contactable by callers. Therefore, there is an externality from one side of the market to the other – if there are more SPs or better services, the number of callers using NGN services are likely to rise and vice versa. In particular, if calling is inhibited (for whatever reason), this reduces the value of the platform to service providers. If few services are provided over these numbers, then consumers are less likely to engage with the platform in terms of understanding what the various number classes mean and may call less.

Therefore, we need to understand the notion of a NGN 'platform' quite broadly (certainly more broadly than just the physical networks involved). The platform is the whole ecosystem of number classes and services, including consumer perceptions of how the different types work and their expectations about the usefulness of the services provided over these numbers. Hence, adverse actions by one originating operator can ripple through and affect all parties involved by shifting consumer perceptions. Equally, problems with one number class may 'infect' other classes.

NGNs may have a complex value chain

The value chain for NGN calls may be quite complex. In the simplest case, the main parties between the caller (individual or business caller) and the service provider include the originating operator (OO) and the terminating operator (TO). In some cases, the originating operator and terminating operator may be the same operator, for example Eir, where the call originates from and terminates on the same network. However, in other cases there may be more than two networks providing the connection, for example due to transit networks between the OO and the TO. Furthermore, there may be resellers or hosting providers within the supply chain that serve as an intermediary for a SP in assigning number ranges, negotiating contracts with terminating network providers (see Figure 1) and providing infrastructure to deliver the service (call centre capacity, automated menu selection, voice recognition etc.).

Figure 1: The basic value chain



Service providers need to be universally accessible

SPs using NGNs typically need to ensure coverage of all callers regardless of the OO. Therefore, different originators are complements rather than substitutes for a SP. An SP who needs to be universally accessible to *all* customers at a reasonable price (or for free) may have little option but to accede if an originator seeks to take advantage of its position, for example through raising retail and/or wholesale prices. Therefore, from the perspective of SPs, originating networks have bottleneck control over their customers.

Competitive origination bottlenecks

If the OO increases retail charges (which can suppress calling and hurt the SP) or tries to grab more revenue available within the value chain (which may, in some cases, increase costs for the SP), SPs may struggle to find an alternative because:

- disconnection from that originator may be infeasible because of end-to-end connectivity obligations on Communication Providers (CPs);
- switching to a geographic number or a mobile number may be unattractive either because callers are lost (for example due to prior investment in branding a NGN) or because the SP does not want to be associated with a particular location (for example where services are national in nature), or wants to maintain a brand image of good size and reputation (for which a mobile number may not be suitable);
- switching to a different type of NGN may not resolve the problem (in that the originator may set high retail prices for

that class too) and/or that class may not accord with the SP's objectives;

- switching to an alternative non-voice based services means of delivering the service (e.g. through a website or smartphone app) may risk losing certain callers and not have the same universality as a NGN-based service.

Therefore, it is reasonable to expect that originators may be able to raise either retail[20] or wholesale prices with SPs having limited ability to respond.

In some cases, margins earned from raising retail or wholesale charges may be competed away by originators in competing for customers, rather than taken as excess profit. Indeed, it is well understood that competition between originators may lead them to seek 'soft' sources of profit (e.g. call termination or roaming) that then subsidise customer acquisition and retention. Therefore, to the extent that originators have a bottleneck for NGN origination, this is a 'competitive bottleneck', in that any excess margins associated with calls to NGNs may be used to help compete in other areas where the relationship between caller and originator is one that is competed for.

Consumers may lack the ability or willingness to respond to retail price differences

Even if excess margins earned on NGN origination are competed away through competition for subscribers and lower charges for other services, this does not mean that consumer harm is eliminated:

- We have strong evidence that subscribers typically do not give much weight to what they might need to pay to make an NGN call when they chose a network provider; charges are typically not transparent in any case. Therefore, competition cannot be expected to constrain NGN prices to any great extent and, if anything, is likely to incentivise operators to raise these as a soft revenue source.
- The extent of pass-through of any margins earned by the originator on NGN calls depends on the intensity of competition for customers. However, even if competition is effective, we cannot assume that this is entirely passed back to customers through lower prices for other aspects of their service bundle (e.g. lower call charges for geographical calls or lower subscription charges). Rather, excess margins from NGN calls might be dissipated through greater customer

[20] Note that there is a retail price ceiling in place for NGNs (although not sufficiently well defined, as we discuss in this report), which means that raising the price for NGNs would mean a raising the price of geographical calls. However, the fact that geographical calls are often included in-bundle whereas NGN calls are not. The incentive for raising the price of NGN calls remains, as increases in the per-minute charge will have a greater impact on the marginal price of an NGN call.

acquisition and retention expenditures[21] by originators, which may not directly benefit customers.

- Even under the most optimistic assumptions that callers anticipated NGN call prices when choosing a network and that any excess margin on NGN calls were passed back as lower prices for other services, high call prices reduce the usefulness of the platform to SPs. This disincentivises SPs from offering services over the NGN platform and ultimately leads to reduced and/or lower quality service for callers to access.

Particular problems with mobile

In many countries, there have been particular problems with excessive retail prices for mobile-originated calls. This may be due to intense competition leading to the cross-subsidy situation outlined above. It is also conceivable that mobile operators might be able to extract an 'immediacy premium' associated with some services provided over NGNs that callers cannot delay calling (e.g. helplines, conference service access numbers, fraud reporting etc).

High mobile origination rates may have a knock-on effect on fixed origination rates. In some countries such as Ireland where fixed origination rates are significantly lower than mobile origination rates, increasing call volumes from mobile results in an asymmetry of revenues earned from NGN origination by fixed and mobile operators, risking fixed operators raising fixed origination rates in response.

Overall, in evaluating economic issues with the use of NGNs, it is important to take into account:

- the two-sided nature of the market, in particular the influence of consumers' and SPs' preferences over NGNs on each other;
- the complex value chain in the provision of NGN services and the competitive bottlenecks that arise;
- whether the market power afforded by such competitive bottlenecks is exploited to the overall detriment of consumers; and
- whether other operators might effectively exert a countervailing effect on the party with market power.

[21] The excess margin appropriated by operators will result in a net loss to consumers. Firstly, a portion of the excess margin is likely to be retained as excess profits. Secondly, while consumers may benefit from certain expenditures such as price promotions and upgrades, retention and acquisitions expenditures also include additional marketing and advertising expenditures, which do not provide a direct gain to consumers.

Potential for market failure and harm

Given the market structure of NGNs explained above, there may be a number of externalities that can lead to market failures:

- OOs' incentives may not be aligned with the SPs' and they may be able to increase prices to such an extent that consumers reduce calling certain classes of NGNs (*vertical externalities*);
- individual originating operators may not have an incentive to take into account impacts on other originators and are unlikely to consider the impact of their retail tariffs on the reputation and consumer perception of a particular NGN class or the NGN market as a whole (*horizontal externalities*, in essence free-riding amongst originators[22]); and
- where there are reputational impacts across the number classes (resulting from horizontal externalities) the reduction in demand may be wider reaching than a single class of NGNs.

If such externalities arise and are not internalised across the various parties involved, then there may be suppressed demand and loss of consumer surplus not just for a single NGN class, but also the entire NGN platform. For example, there could be a situation in which high pricing by one originating operator in one number range might destroy the reputation of that number range, affecting other originators using that range and potentially even other number ranges. The whole NGN ecosystem depends on callers having a reasonable notion of what they might reasonably expect to pay when ringing a particular number class.

In addition to the direct loss of consumer surplus through supressed demand there may be further impacts on the service provider side. Where the incentives of individual network providers or intermediaries do not align with the interests of all parties in the supply chain there are vertical externalities that could ultimately lead to consumer harm. For example, where originating network providers, such as mobile operators, have an incentive to charge a high retail price[23] for NGN calls, they do not consider the impact of

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[22] BEREC also note that, as a consequence of the above, the prices set by originators may turn out to be unprofitable for themselves. For example where the increased prices lead to lower usage of NGNs, this is "not an outcome that seems to be profitable for all OOs as a collective set" See paragraph 43 of BoR (12) 55.

[23] For example, by excluding NGN calls from bundles or setting the price with reference to a more expensive geographic equivalent tariff such that the marginal price is higher than a 'standard' geographic call for most customers.

the retail tariff on the called party i.e. the organisation offering services using the NGN.

Higher prices to the called party (possibly in addition to reduced demand from callers) will also have a knock-on effect by way of consequent reduced incentives to offer services or improve quality of services offered over NGN platform (though these could move to other platforms, such as web, smartphone apps etc.). There may be a further feedback loop where there is then a greater loss of consumer surplus for those still demanding the services, due to worse/fewer services offered over NGNs.

Overall, in assessing consumer harm (to both callers and service providers, for example through some combination of higher prices, reduced quality and/or reduced choice), there are a number of distinct issues to consider:

- consumers facing *known* high retail prices will reduce calling, entailing a loss of consumer surplus;
- to the extent that retail prices are *unknown*, consumers may also reduce calling to avoid subsequent bill shock or a *perception* that calls to these numbers are expensive. There is a loss for consumers who think prices are higher than they really are (as they do not call when they should) and also for consumers who think that prices are lower than they really are (as they call too much and may experience bill shock). Notice that one possibility is that consumers are fearful about high prices, never call as a result and so never find out what prices really are (so incorrect beliefs are never confounded);
- uncertainty about retail prices may infect consumers' beliefs across different originators and number classes (what we might call 'contagion'). For example, one bad experience on one number with one originator may lead to an expectation of high prices from other originators and/or for other number ranges;
- to the extent that such problems reduce the services available over NGN classes, this further harms customers (potentially significantly) due to services ceasing to be available, potential new services never starting and services being of lower quality than would otherwise have been the case;
- there may be additional issues of equity for some services used by vulnerable groups (for example the elderly); and
- given the two-sided nature of the NGN market, a reduction in the use of NGN services by consumers will eventually reduce the incentives to service providers to continue to provide services over NGNs.

The regulatory challenge

It is clear from the above, that decisions in the NGN market may have significant effects outside traditional telecoms markets, in that many different services across different sectors of the economy may be provided over NGNs, including some of social importance. This must be accounted for in any assessment of the costs and benefits of interventions.

2.2 Key issues

We have identified several potential issues above, including:

- excessive retail pricing;
- lack of consumer understanding of the categories of NGN and their associated characteristics;
- lack of consumer awareness of the cost of calling these numbers and their attitudes to making calls to NGNs;
- bottleneck control by originators, which may have an impact on service provider incentives to use these services;
- scope for excessive pricing and lack of understanding leading to reductions in use of these numbers.

These are issues of principle, but equally there are good reasons why these problems are likely, given the structure of the NGN value chain. In the course of this project, we have gathered evidence that supports the view that such problems are indeed prevalent in the Irish NGN market and that intervention is required. In the remainder of the report we outline the details of the Irish NGN market and refer to the evidence collected during the investigation, the issues identified and recommendations for imposing remedies.

3 Overview of NGNs in Ireland

This section is intended to provide a factual overview and focuses mainly on those calling NGNs. We begin with an overview of the regulatory and legislative background before discussing the specific 'characteristics' of each of the NGN types in this report (i.e. how each of these numbers are defined and what the charging structure is). We then look at the actual prices faced by consumers and the volume of calls to each NGN class, including any noticeable changes or trends observed over the past few years.

In addition to presenting information gathered from desk research and the operator information request, we also refer to key findings from the survey data to illustrate the difference between the way these numbers are intended to work and the current understanding of consumers.

3.1 Regulatory and legislative background

Under section 10 of the Communications Regulation Act 2002 ("2002 Act")[24] ComReg has the statutory function to manage the national numbering resource. ComReg must regulate the provision of electronic communications networks and services and ensure the efficient management and use of the national numbering resource in Ireland, in accordance with its relevant functions, objectives, duties and powers which are set out in primary and secondary legislation. This must also be done in accordance with any applicable directions issued by the Minister for Communications, Energy and Natural Resources under Section 13 of the 2002 Act, and subject to ComReg's objectives as mainly set out in Section 12 of the 2002 Act and Regulation 16 of the Framework Regulations.[25]

In order to ensure that the national numbering resource is managed and used efficiently, ComReg lays down conditions attached to the rights of use of numbers and describes its procedures for granting rights of use. The 2015 Numbering Conditions of Use and Application Process (Numbering Conditions) – ComReg 15/136) specify the currently applicable conditions. The Conditions of Use are set out in

[24] Communications Regulation Act, 2002. Available at: http://www.irishstatutebook.ie/2002/en/act/pub/0020/index.html

[25] S.I. No. 333 of 2011 European Communities (Electronic Communications Networks and Services) (Framework) Regulations 2011. Available at: http://www.irishstatutebook.ie/2011/en/si/0333.html

accordance with the Authorisation, Framework, Universal Service and Access Regulations, the 2002 Act[26], and in European Commission decisions, the International Telecommunications Union (ITU) recommendations, European Conference of Postal and Telecommunications (CEPT) decisions and recommendations, and the European Telecommunications Standards Institute (ETSI) standards.

The Numbering Conditions establish who is eligible to apply for NGNs, and designations for each type of number. There are specific requirements relating to each type of number. The requirements include the level and type of charges that the operator may make.

The Numbering Conditions is a single document that merged and replaced the "National Numbering Conventions" and the "Numbering Application Procedures and Application Forms". ComReg explained that: *"In terms of their purpose and effect, the conditions in the draft Numbering Conditions are, for the most part, essentially the same as those in the current National Numbering Conventions. The main difference is that some of the conditions are now presented as being conditions of the General Authorisations, rather than conditions of individual rights of use for numbers."* i.e. numbering conditions which are intended to have general effect - meaning that they are intended to apply to all undertakings or to some category or group of undertakings – now form part of the General Authorisation.[27]

The 2015 Numbering Conditions of Use and Application Process outlines the conditions related to retail tariff principles for NGNs and is a legally binding document.

3.2 History, characteristics and charging structure

Each of the five NGN types included as part of this review (1800, 1850, 1890, 0818 and 076) have particular characteristics in terms of the structure of retail charges for calls to these numbers and the reason for their introduction:

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[26] Communications Regulation (Premium Rate Services and electronic communications infrastructure) Act 2010 includes amendments to the Communications Regulation Act 2002 to deal specifically with Premium Rate services.

[27] See paragraph 5 of ComReg 15/60.

Freephone Numbers (1800)

Freephone services (1800) were introduced by Telecom Eireann prior to market liberalisation. These numbers were introduced to allow businesses and organisations to offer a number that was free to call for its customers.

As currently defined in the 2015 Numbering Conditions of Use and Application Process, calls to 1800 numbers originating in Ireland enable the called party to be reached at no charge to the caller, regardless of which network operators, service providers or Freephone number holders are involved in the call. Therefore, these calls should be free for both mobile and fixed line callers including calls made from payphones. The total cost of the call is borne by the called party. Access to this number is not possible for callers outside of Ireland.

Shared Cost Numbers (1850 and 1890)

We understand that shortly after the introduction of Freephone, there was demand for a "toll-share" service from those businesses that did not want to pay for the entire price of the call. The **1850** number range was introduced by Telecom Eireann to meet this demand. The price that the customer would pay when calling from a fixed line was set equal to a local geographic call. We understand that at that time, the fee for a call to local numbers in Ireland was independent of duration (i.e. calls were untimed), whereas national calls were timed, with a unit fee charged every 20-30 seconds and dependant on distance. Therefore, businesses that operated over an area larger than one local exchange area did not necessarily want to subject their customers to the more expensive (and less attractive) cost of a national call. The introduction of the 1850 number class allowed such businesses to be contacted by a customer paying a rate equivalent to calls to a local number regardless of the physical location of the business. Under this arrangement, the called party would pay the remainder of the cost of the call.

In 1993, Telecom Eireann revised the charging structure for local call prices moving to a recurring charge every three minutes at peak times. Based on the charging structure described above, that would have led to callers to 1850 numbers facing a recurring charge equivalent to a local call, with the called party paying the balance in the case where the call originated outside the local area (and was thus effectively a national call). However, it was decided that calls to 1850 would remain 'untimed'. Thus, in addition to any cost differences between the customer payment and the cost of a national call, the called party was also required to contribute to the 'local call' costs where the duration of the call to 1850 meant there were recurring local call charges.

Call centres/service providers who wanted to control costs did not necessarily want to contribute to recurring local call costs, as this made it difficult to manage costs predictably. The **1890** range was introduced in response. In this case, the caller paid the full local charge (i.e. including any recurring charges) and the called party only paid the difference between the local and national rate for calls outside the local area.

Given that these numbers allow the caller to be charged for only part of the cost of the call, with the called party being charged for the remainder, the **1850 and 1890** NGNs are both classed as "shared cost" numbers. Of course, the intention of sharing the cost is that together, the contributions from the calling and the called party should be sufficient to cover costs (i.e. origination charges cover costs net of retail revenue) and no more. In principle, the service provider will only be paying to cover the costs of the call that are not covered by the retail price charged to the caller and should be content to do so where the NGN meets its other requirements.

As currently defined in the 2015 Numbering Conditions of Use and Application Process, for the **1850** shared cost number range the caller is charged a fixed fee that is independent of the duration of the call. ComReg has specified that the cost of this call to the caller **shall not exceed the retail charge for a 5-minute call at the originator's standard rate for calling geographic numbers.**

For the **1890** shared cost number range the caller is charged a fixed rate throughout the duration of the call. This rate shall **not exceed the retail charge for a call of the same duration to an Irish geographic number at the originator's standard rate.**

What is a "standard rate" call?

According to the 2015 Numbering Conditions of Use and Application Process, the "standard rate" is defined as:

"…*the rate charged to the customer during regular working hours (e.g. Mon-Friday; 8am to 6pm).*"

However, ComReg also specifies that:

"If individual package effects or other factors cause the calculation of standard rate to be unduly complex or impractical, the undertaking may estimate its value by reference to its average charges for calling geographic numbers. Such variations must however be notified to ComReg."

Note that the standard rate for calling local geographic numbers can vary across originating operators.

Note that where the rate for calling Irish geographic numbers is distance dependent, the standard rate referred to for 1850 and 1890 calls shall not exceed the standard rate applicable for **local** geographic calls (i.e. calls within the Minimum Numbering Area ("MNA")).

Access to 1850 and 1890 numbers is not possible for callers outside of Ireland.

Universal Access Numbers (0818)

The Office of the Director of Telecommunications Regulation (ODTR) introduced **0818** in 1998. It was introduced in response to demand from large organisations in Ireland for universal access numbers. Their purpose was to allow callers to dial a single number from anywhere in the world and be routed to the organisation at a network termination point convenient to that organisation.

0818 numbers are sometimes referred to as Universal Access numbers, as the range allows calls to be made to a central number for re-routing to a particular response point. These are typically corporate numbers with the destination number of the call decided by the called party and in some cases will depend on parameters such as: "*the time the call is made, the location of the caller, locations of local corporate offices etc.*"[28]

As currently defined in the 2015 Numbering Conditions of Use and Application Process, the retail charge to the calling party for calls to 0818 shall **not exceed the retail charge for a call of the same duration to an Irish geographic number at the originator's standard rate**. 0818 is not designated as a shared cost number.[29]

Note that where the rate for calling Irish geographic numbers is distance dependent, the standard rate referred to for 0818 calls shall not exceed the originating undertaking's standard rate applicable for **national** calling. This may vary across operators.

Callers can access 0818 numbers from outside Ireland.

IP-Based Numbers (076)

The **076** number range was introduced by ComReg in 2004 to provide a greater choice of classes of numbers to VOIP users, as well as more freedom in respect of rights of use than with other classes

[28] See Convention 10.7.6 of ComReg, March 2011, 'National Numbering Conventions v7.0', Document No: 11/17

[29] However, as discussed in Section 4 below, we do observe that there are some cases of operators generating revenues from service providers in relation to 0818 calls, though the amount is small relative to revenues earned from callers.

on number. The 076 range is unique, in that it is not a Number Translation Code. 076 numbers were initially intended for VoIP providers to provide services to individual end-users, however, recently they are now being used by SPs as an alternative to 18xx numbers; interviews with SPs suggest this was because of perceived difficulties with the pricing of 18xx. ComReg have also noted increased use of 076 numbers for intra-organisational communication, with organisations finding benefits in having internal numbers that are not geographically linked. These benefits include ease of network management and maintenance, and cost reduction.

As currently defined in the 2015 Numbering Conditions of Use and Application Process, calls to 076 have the same charging structure as for calls to 0818 numbers. That is, they shall **in no case exceed the retail charge for a call of the same duration calculated at the originating undertaking's standard rate for calling Irish geographic numbers** (the originating undertaking's standard rate applicable for **national** calling). 076 is not designated as a shared cost number. [30]

As with 0818, callers can access 076 numbers from outside Ireland.

3.3 Customer awareness

In the consumer survey conducted by B&A, a representative sample of consumers (i.e. the calling party) were asked about their awareness of the existence of NGNs and the charging structure defined above.[31] We found that the majority of consumers are aware of the existence of NGNs in the 1800, 1850 and 1890 range; however, the 0818 and 076 ranges are less well known, with only 40% and 16% of respondents respectively claiming to be aware of these NGNs. A small number of respondents (11%) were not aware of any of these classes.

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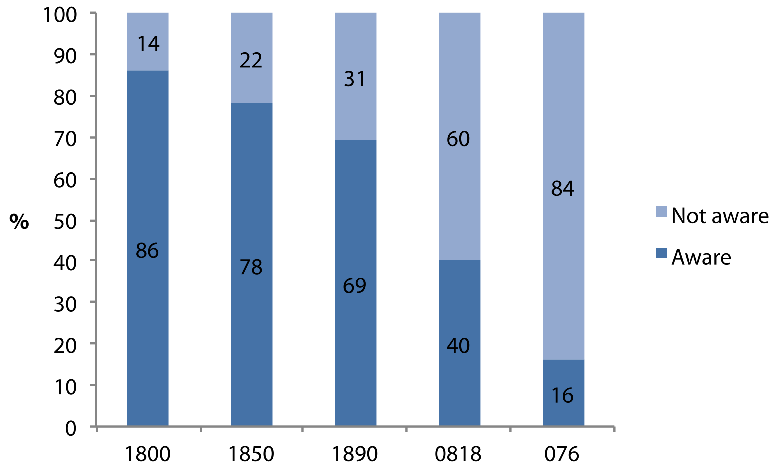
[30] However, as discussed in Section 4 below, we do observe that there are some cases of operators generating revenues from service providers in relation to 076 calls, though the amount is small relative to revenues earned from callers.

[31] For an overview of the market research process, see Annex C of this report and the report from Behaviours & Attitudes who conducted the research. Available at Document 17/70b.

Figure 2: Awareness of NGNs



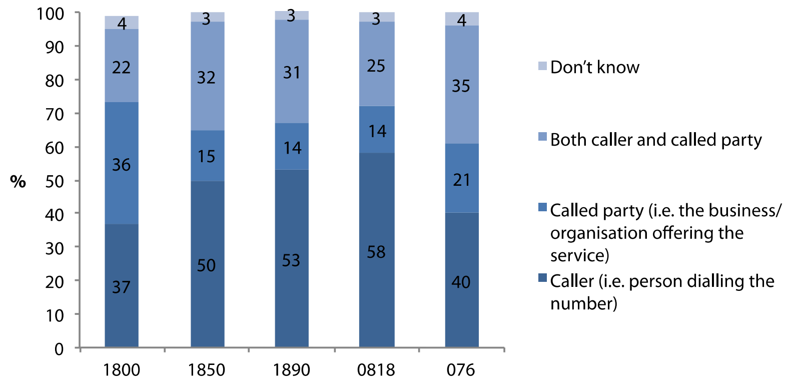
Question: Are you area of these Non-Geographic Number (NGN) prefixes?
Base: All adults aged 18+ (1,023)

Despite consumer awareness of the existence of these numbers, in particular the 18XX numbers, it is clear that this awareness is largely limited to the existence of the number, and does not extend to its features or pricing. When consumers were asked to match the different NGN classes to statements about the charging structure of calls, very few customers were able to answer correctly. For example, even for 1800, many thought that the caller paid for such calls with only 33% stating correctly that 1800 was free to call from mobile and 40% saying that 1800 was free to call from a landline. 57% and 46% of respondents said that none of these NGNs was free to call from mobile or landline respectively. Only 32% of respondents correctly identified 1850 calls as being charged on a per call basis, and a small number of respondents just did not know how the statements presented mapped to the five classes on NGN.[32]

There was also confusion about who actually pays for the cost of the call. For example, with only around a third answering correctly for the 18xx NGNs (1800 = 36% said called party, 1850 = 32% said both caller and called party, 1890 = 31% said both caller and called party.)

[32] Question: For each statement I show you, please tell me which NGN or NGNs you think is/are associated with it.
Base: All aware of NGNs (919)

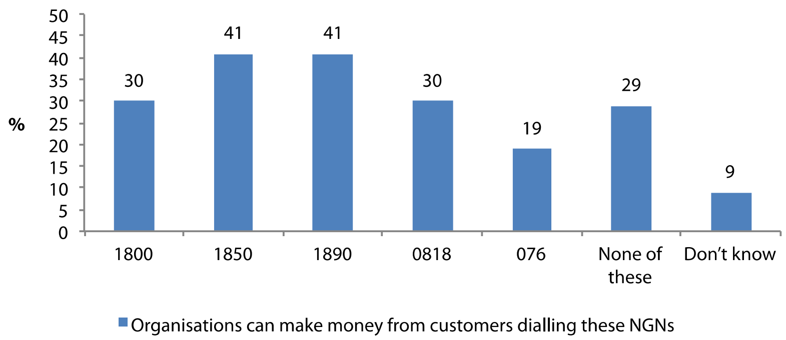
Figure 3: Consumers' perception of who pays for calls to NGNs



Question: In your view, when businesses/organisations provide a service with an NGN, who pays for the cost of providing services over this type of NGN?
Base: All aware of relevant NGN (1800=881; 1850=808; 1890=710; 0818=413; 076=168)

Many also believed that the organisations use these numbers to make money (confusing with premium rate numbers), in particular for the 1850 and 1890 classes, with 41% of respondents stating that they believed organisations can make money from customers dialling those numbers. Only 29% of respondents correctly stated that none of the NGN classes listed could be used by organisations to make money from customers dialling these numbers.

Figure 4: Consumers think organisations make money from calls to these numbers



Question: Which NGN or NGNs, if any, do you associate with each of the following statements: organisations can offer a lower call rate to customers using this NGN; this/these number(s) is/are free for people to call; organisations can make money from customers dialling these NGNs?
Base: All aware of NGNs (919)

3.4 Retail prices observed in the market

As per the Tariff Conditions specified in the Numbering Conditions of Use, the charges applied to NGNs can differ between operators to the extent that the "standard rate" for geographic calls may vary. Of course, many calls to geographic numbers may be included in bundles, particularly for mobile bill-pay tariff packages. Therefore, we begin our assessment of retail prices by considering the extent to which calls to these numbers are included 'in-bundle'.

Bundled tariffs

Bundling

We adopt the following definitions of 'in-bundle' and 'out of bundle' NGN calls. We consider there to be three broad categories of tariff type that consumers will use to call an NGN and we asked operators to provide data consistent with the following definitions:

- Calls 'in-bundle' – this is where calls to NGNs are included in the primary bundle to which a consumer is subscribed, that includes a set number of calls and possibly SMS/data for a headline fee. This is more likely to be (although not exclusively) the case for post-pay packages;
- Calls 'out of bundle' – this is where subscribers are charged an explicit fee for calls to NGNs and may be listed as a specific line and charge on the subscriber's bill. This is the case for subscribers who may or may not be subscribed to a bundle;
- Calls from an 'opt-in' package – this is where a subscriber has chosen a particular (optional) package that provides free or discounted calls to NGNs by actively 'opting-in'. This may be in the form of a 'bolt-on' or additional fee over and above the subscriber's base tariff/package. Such an 'opt-in' package may include additional calls, SMS or data over and above discounted or free NGN calls.

In ComReg's 2015 Numbering Conditions of Use, it did not impose a requirement on operators to include NGNs in-bundle, but it has strongly encouraged them to do so in the past.[33]

However, we have found that no operator includes all NGNs within the bundles offered to consumers in call packages. Nine operators include calls to certain NGNs (mainly 076) within the bundles offered to consumers in call packages. Even where calls to NGNs are advertised as being the same price as calls to geographic numbers, in some cases, where geographic calls are included within the caller's bundle, some operators explicitly state that the calls to NGNs do not

[33] ComReg accepted in document 10/60 that the issue of bundling must remain at the discretion of the undertaking and in document 11/16 it "*strongly encourage[d] all who can do so to include calls to most NGNs in-bundles. This will provide a competitive advantage, whilst also serving to pre-empt customer complaints*".

benefit from the inclusive minutes.[34] In this case NGNs are charged at the out of bundle geographic rate while geographic calls remain in-bundle. Therefore, geographic and non-geographic calls are treated differently, with calls to NGNs typically having a higher marginal price.

From our own desk research and from responses to the information request to operators we have found that:

- Calls to 1850 and 1890 are not offered "in-bundle" by any operators, but rather are charged on a per-call or per-minute basis.
- Sky notes in its response to the information request that calls to 1800 are included in-bundle in their call packages, though given this range is free to call anyway, this seems to be a moot point.
- Only Sky and Vodafone included (some) calls to 0818 numbers in-bundle: Sky offers calls to its 0818 customer care number in-bundle[35]; we understand that calls to 0818 numbers made by Vodafone's mobile bill pay customers are first deducted from their inclusive minutes, however if the caller exceeds his/her inclusive minutes then calls to 0818 numbers are charged at the mobile to landline rates as per the caller's price plan.[36]

According to operator information request responses there are, however, a number of operators who offer calls to the 076 class in-bundle. This includes:

- Eir;
- Lycamobile;
- Meteor;
- Pure Telecom;
- Ripplecom;
- Tesco Mobile.

Therefore, it seems that 076 numbers are the most common NGN class to be included in-bundles. We understand that this may be related to the provision of fixed voice and Voice over IP (VoIP) services, including the opening up of the 076 1000000 – 1199999 number range, for Government Networks. Following an interview

[34] See Annex E for details.

[35] However, Sky does not attribute any retail revenues earned from these in-bundle 0818 calls.

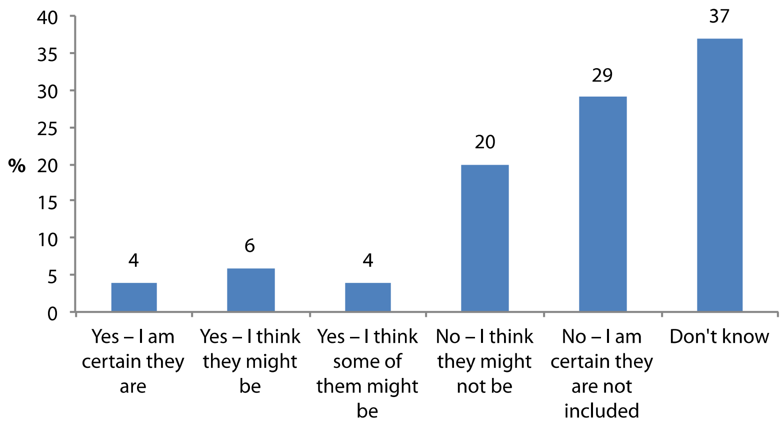
[36] See Annex E for details.

with 'Government Networks'[37], **[CONFIDENTIAL:** ✂[38]]. Further, we note that for a number of these operators, 076 is not differentiated from geographic numbers at all (at the retail level) and is offered in-bundle by default as a result of some calls to geographic numbers being offered in-bundle, rather than 076 being offered in bundles as a deliberate marketing decision.

However, the fact that calls to any 076 number may be included in-bundle is not always clear to consumers - for example, whilst the response to the operator information request shows Meteor as including calls to 076 in-bundle, its website implies that only calls to 0761 numbers on bill-pay tariffs are included.[39]

This lack of clarity was also apparent from the findings of the consumer survey. Whilst the majority of respondents were generally correct in believing that calls to NGNs were not included in their bundles, a large proportion of consumers stated that they did not know whether calls to NGNs were included in their bundle. As demonstrated by the figures below, respondents were less certain about what was included in their fixed line package.

Figure 5: Awareness of calls to NGNs being including in fixed line bundles



Question: Are calls to NGNs included in your fixed line call package of free telephone

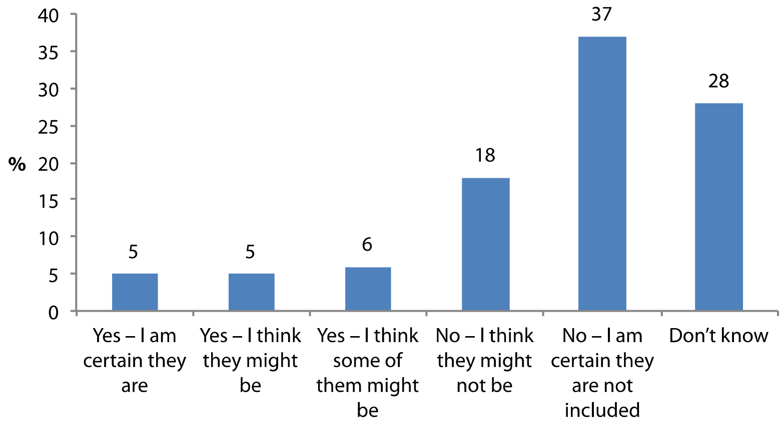
[37] "Government Networks (GN) is a private, managed, wide area network (WAN) connecting public service agencies on a data, voice and video capable network. GN is designed primarily to facilitate secure and reliable communication between Government agencies and to support existing and future Government applications. A mechanism for providing agencies with a secure access to the Internet is included as well as a means for agencies to securely host Internet services." See: http://ictprocurement.gov.ie/government-networks/

[38] **[CONFIDENTIAL:** ✂]

[39] For 0760, 0762-0769 numbers Meteor's website states that calls to these numbers do not "avail of inclusive minutes" whereas for the 0761 number range this statement is not included for bill pay customers only.

minutes/calls?
Base: All have landline and aware of NGNs (487)

Figure 6: Awareness of calls to NGNs being included in mobile bundles



Questions: Are calls to NGNs included in you call package of free mobile minutes/calls?
Base: All with mobile and aware of NGNs (899)

We found that the inclusion of calls to NGNs within bundles is not an influencing factor for consumers when choosing telecoms provider or a specific package. Just 5% of customers considered the inclusion of NGN minutes in different call packages when choosing provider/package for their fixed line and 6% for mobile, suggesting that the price of NGN calls or their inclusion in bundles is not a competitive differentiator between operators.[40]

Our findings from desk research and the operator information request also suggest that no 'opt-in' packages for NGNs exist in Ireland. No operators are offering any other packages or tariff types that subscribers may subscribe to that will alter the price paid for calls to these NGN classes.

Per-call and per-minute charging

For those charges provided out of bundle, operators charge specific per call or per minute charges. We conducted desk research to gather details of the prices charged for calls to each NGN range for the main fixed and mobile operators by accessing operator websites

[40] Question 12 and Question 15: Did you consider the inclusion of NGN minutes in different call packages when choosing your provider/package?
Base: All aware whether or not NGN calls included in their call package (311 for fixed & 642 for mobile)

and promotional materials. Full details of our research are provided in Annex E with the retail prices of these main operators summarised in the table below:[41]

[41] Given the lack of transparency on some operator websites, it was not always possible to find the exact price charged for calls to all number ranges, therefore where an N/A is included in the table, this indicates that we were unable to find a cost for calls to these numbers in the operator's price list.

Operator	Fixed (F) Mobile bill-pay (MBP) Mobile pre-pay (MPP)	1850 (per call)	1890 (set-up / connection fee) € cents	1890 (per minute) € cents	0818 (set-up / connection fee) € cents	0818 (per minute) € cents	076 (set-up / connection fee) € cents	076 (per minute) € cents
eir	F	6.7661	9.66	5.25	9.66	5.25	29	9
Vodafone Home	F	0.0	N/A	N/A	N/A	N/A	9.8	4.5
Sky Talk	F	6.8	9.7	6.9	9.7	6.9	9.7	6.9
Virgin Media Ireland	F	14 (7c call plus 7c set-up fee)	6.6	4	20	4	20	4
Digiweb	F	15.65 (6.7 call plus 8.95 set-up fee)	8.95	4.29	8.95	12.5	8.95	8.95
Meteor	MPP	30	-	15	-	15	-	As per national geo - 35c
Meteor	MBP	30	-	15	-	15	-	As per national geo – 30c
Three	MPP	30.49	-	29.48	-	29.48	-	N/A
Three	MBP	30.49	-	30.49	-	30.49	-	N/A
Vodafone	MPP	31	Up to 9	Up to 45	Up to 9	Up to 45	Up to 9	Up to 45
Vodafone	MBP	30	-	(as per geo)	-	(as per geo)	-	(as per geo)
Tesco	MPP	35	-	15	-	20	-	As per geo – 32
Tesco	MBP	35	-	15	-	20	-	As per geo -32

Source: See pricing annex based on desk research (Annex E . Where the per-minute rates differ according to time of the call, we have included the 'daytime' or 'peak' rate so as to provide a figure comparable to ComReg's definition of a 'standard rate'. Note that in some cases, evening and weekend calls to these numbers can be cheaper than stated. Where rates differ across plans we refer to the highest rate found and display as "up to". In some cases we were unable to find the information for existing tariffs through desk research and display N/A.

***eir**: https://www.eir.ie/opencms/export/sites/default/.content/pdf/pricing/Part2.1.pdf **Vodafone:** https://www.vodafone.ie/home/broadband/charges* and *https://n.vodafone.ie/shop/pay-as-you-go-plans/Charges.html,, https://www.vodafone.ie/bill-pay-plans/out-of-plan-charges/. Vodafone pre-pay calling costs are dependant on the type of pay-as-you-go plan the customer is subscribed to ('Top up offer' vs. 'Lifestyle' rate). **Sky Talk**: http://www.sky.com/ireland/__PDF/ROI_SkyTalkTariffGuide_May_2016.pdf **Virgin Media Ireland:** https://www.virginmedia.ie/pdf/standard_call_rates_may_2016.pdf **Digiweb:** http://www.digiweb.ie/price-plan-rules/#call_charges_terms_conditions **Meteor**: https://www.meteor.ie/pay-as-you-go/other-charges/ , https://www.meteor.ie/bill-pay/other-charges/, https://store.meteor.ie/bill-pay-mobile-phone-plans, https://www.meteor.ie/pay-as-you-go/simplicity/ **Three**: www.three.ie/pdf/current-priceguide.pdf **Tesco:** http://www.tescomobile.ie/help-centre/Your-Plan#Other-Call-Charges*

Fixed line operators charge a 'set-up' or 'connection' fee in addition to the per-minute charge for calls to 1890, 0818 and 076 numbers, but the mobile operators do not follow this charging structure. However, even with the set-up fee included, we see the per-call or per-minute charges faced by consumers calling these numbers from a mobile are typically much higher than those made from a fixed line.

Comparing against the typical costs of a geographic call (akin to a "standard rate" call as defined in the 2015 Numbering Conditions) it appears that the rates for calls to NGNs are higher. However, there may be some ambiguity as to exactly when these "standard rates" would actually apply to geographic calls given the increased prevalence of bundles and discounted packages for such calls.

Customers do not know the cost of calls to these numbers

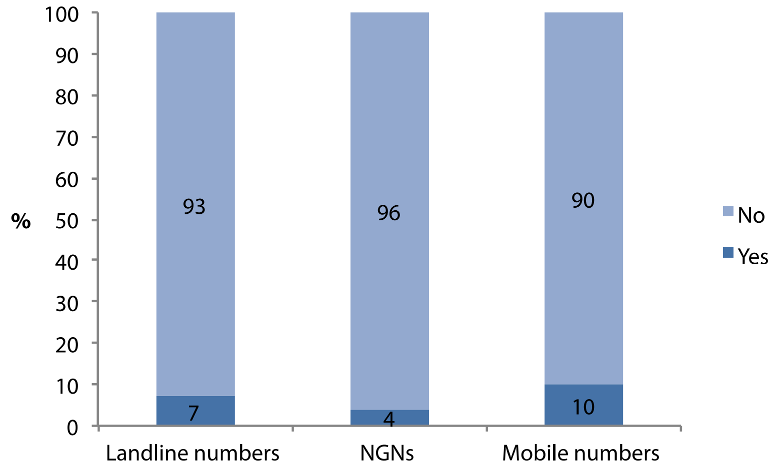
In terms of consumer awareness, the large majority of customers do not know the cost of calls to these numbers, with just 14% of all customers stating that they were confident in being able to report the costs of calls to at least some of these NGN classes.[42]

This limited awareness may in part be due to only a small number of callers having looked up the cost of calls within the last three months (see Figure 7 below). From the consumer survey we found that as many as 37% of consumers indicated that they do not pay attention to the cost of NGN calls on their bill.[43]

[42] Question: Do you know how much it costs you per minute/per call when making calls to NGNs (in the case that they are not included in your call package, or calls are made out of bundle)?
Base: All adults aged 18+ (1,023)

[43] Question: Which of the following most accurately reflects how you've felt after receiving a bill or on reviewing call costs which included an additional cost related to calls to NGNs?
Base: All ever dialed NGNs (722)
For those typically calling NGNs from landline only 14% claimed awareness of cost, for billpay mobile 17% claimed to be aware and 20% of prepay mobile customers claimed awareness of costs.

Figure 7: Incidence of looking up the cost of calls in past 3 months



Question: Have you looked up the cost of calling any of the following numbers in the past 3 months?
Base: All adults aged 18+ (1,023)

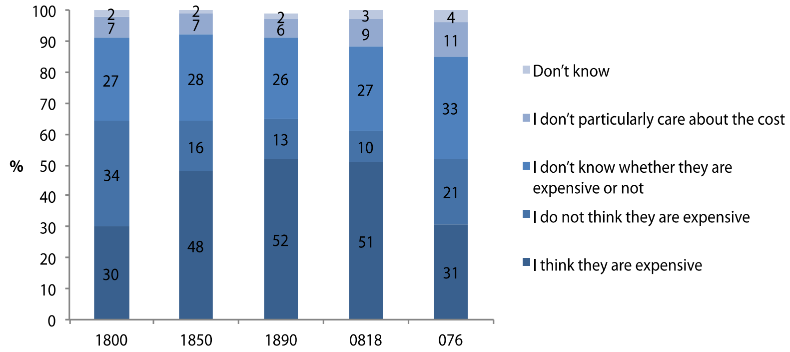
Of those that did look up the cost, most of them checked their bill or referred to the provider's website. 12% of those who looked up costs for calls to mobile numbers reported this as being very difficult or fairly difficult; this rose to 15% for landline numbers, whilst 34% of those looking up cost of calls to NGNs reported this as difficult.[44] This matches findings from our own desk research. Finding the exact cost of calls to NGNs is often quite difficult. For example, when trying to find such information from the operator's website in some cases this required delving into detailed terms and conditions, rather than an easy to find tariff page.

Despite the fact that the majority of consumers were neither confident in knowing the cost of calls nor have looked up the cost of calls, it is clear that consumers still have a perception that making calls to these numbers is costly. 49% of customers *thought* that calls to NGNs are expensive relative to calls to landlines.[45] When asked to consider the specific NGN types, the 1890 range in particular is perceived to be the most expensive, with 52% reporting that they *think* calls to these numbers are expensive.

[44] Question: How easy of difficult is it to find out the price of a call to the following numbers?
Base: All looked up costs.

[45] Question: For each statement please indicate whether you associate this more with calls to landlines, calls to NGNs or whether there is no difference?
Base: All aware of NGNs (919)

Figure 8: NGN cost perceptions



Question: Thinking about [insert specific NGN] please indicate which statement you associate most with this number.
Base: All aware of specific NGN (1800=881; 1850=808; 1890=710; 0818=413; 076=168)

More people found these calls to be surprisingly expensive (upon receiving a bill) than those finding them inexpensive (25% versus 7% respectively), with the majority of those consumers changing their calling behaviour as a result. Over half of callers who were surprised at the cost of calls from landline to NGNs now only call when absolutely necessary, and 22% stopped calling NGNs altogether. For mobile, over half of callers who were surprised at the cost of calls from mobiles to NGNs now only call when absolutely necessary, and 25% stopped calling NGNs.[46]

Even amongst the small number of callers claiming to be aware of the exact price of calls to these numbers, the prices they believed would apply significantly exceeded actual rates, with some customers even giving non-zero calling costs for the 1800 range. The average perceived price of calling 1800 numbers from a landline during business hours was €0.42 per minute.[47] 0818 was perceived to be the most expensive to call from a landline at €1.20 per minute, followed by 1890 at €1.18 per minute. 076 and 1850 NGN prefixes score similarly at €0.92 per minute and €0.91 per call respectively.

The perceived average price of calling 1800 numbers from a mobile (billpay) during business hours is €0.60 per minute. Calls to the 0818 and 1850 NGN prefixes are perceived to be the most expensive to call from a billpay mobile at €1.58 per minute and €1.57 per call,

[46] Question: You mentioned you were surprised at how expensive the calls to non-geographic numbers (NGNs) were, did this affect your mobile phone / landline call behavior to these numbers in any way?
Base: All surprised at expense of calls to NGNs and have a landline (101)
All surprised at expense of calls to NGNs and have mobile (182)

[47] Question: How much do you think it costs ...per minute to call a number starting with 1800, from a landline during business hours?
Base: Aware of NGN + Have Landline + Know some or all costs (76)

followed by calls to the 1890 prefix at €1.37 per minute. Calls to the 076 prefix was estimated at €1.14 per minute.

Aside from 1800, the average estimated prices from a prepay mobile are lower when compared with estimated costs from a billpay mobile. The perceived average price of calling 1800 numbers from a mobile (prepay) during business hours is €0.86 per minute. Calls to the 1890 NGN prefix are considered the most expensive to call from a prepay mobile at €1.33 per minute followed by 1850 at €1.29 per call. Calls to the 0818 NGN prefix are estimated at €1.14 per minute and the least expensive estimate were calls to the 076 prefix at €1.06 per minute.

The high (actual) prices for calls to these numbers, coupled with the lack of awareness, and over-estimation of the cost of calls to these numbers demonstrates clear potential for harm, resulting in either suppression of calls if anticipated prices are higher than actual or bill-shock if anticipated prices are lower than actual.

Of those customers choosing to avoid calling NGNs many did so not necessarily because they did not know how much it costs per call/minute, but because they *thought* it was expensive:

Figure 9: Reasons for why customers avoid calling NGNs

Question: You said you would not dial [XXXX] numbers, why would you not dial these numbers?
Base: Avoid NGNs (1800=189, 1850 = 287, 1890 = 322, 0818 = 332, 076 = 274)

However, it is also the case that 20% of callers still make calls to these numbers 'without further consideration'.[48] Nevertheless, the fact that some consumers do not appear to 'care' about the costs and that we have evidence to suggest that consumers do not typically consider the treatment of NGNs when choosing package/provider are reasons to be concerned about the cost of calls

[48] Q.32: Thinking about accessing services using NGNs, which of the following do you typically do?
Base: All ever dialled NGN (722)

to NGNs being an insignificant factor in competition between operators for customers. To the extent that callers are being charged high prices to call these numbers, there is lost consumer surplus. If volumes of calls to these numbers are depressed because of high (actual or perceived) prices, then service providers may not have the incentive to continue to provide, or innovate, the services over such numbers. This may mean that customers, even those that do not appear to care about the costs, cannot access potentially valuable voiced based services. We do have specific evidence to suggest that calling volumes may have been suppressed and discuss volume trends below.

3.5 NGN Traffic in Ireland

Active numbers

ComReg keeps a record of the quantity of numbers it has assigned in each number range. Table 1 below shows an overview of the quantity of assigned numbers in each NGN class.

Table 1: Quantity of numbers assigned by ComReg as of January 2016

1800	1850	1890	0818	076
811,200	788,800	800,800	212,950	1,010,000

Source: ComReg internal numbering database

However, given that numbers are typically assigned in blocks of 100 – 1000, this does not reflect the quantity of numbers that are actually in use, the actual quantity in use is far less. This is partly due to service providers' preference for using 'golden numbers' for their services as they perceive them to be more memorable than other types of numbers. In order to provide an estimate for the number of 'active' numbers in each NGN class, we refer to data collected from operators via the Information Request, in which we asked terminating operators to indicate the number of unique numbers in each class that they terminated calls to in each quarter. While the figures in Table 2 below are likely to understate the actual active number of NGNs in use, we note that from the differences in figures in each of these tables, it appears that active numbers in use are likely to form only a small proportion of the numbers assigned by ComReg.

Table 2: Quantity of active numbers (2015)

1800	1850	1890	0818	076
18,300	6,711	18,216	11,217	23,823

Source: The total number of "unique numbers terminated" across all fixed and mobile operators responding to the information request (2015). We note that the figures included in this table do not include figures from a number of operators including Vodafone (holds sizable share of 076 termination minute volumes), Verizon (holds notable share of 1800 termination minute volumes) and terminating operators who did not respond at all to the information request. Therefore, these figures are likely to only represent a subset of the total number of these NGNs in active use.

Volume of calls

Below, we analyse the volume of calls and minutes to numbers in each NGN class to help inform the overall picture of the most used and least used classes of NGN. We present two measurements: the total number of calls to numbers in each NGN class and the total number of minutes of calls to numbers in each NGN class. This allows us to infer the average call duration of calls to these numbers and may indicate particular number ranges where calls are kept short and those where calls are typically longer in duration. Here we present annual average origination volumes to each NGN class between 2011 to 2015 and average call duration[49]:

[49] Whilst the figures in this table show the average duration across the period, we note that for all NGN classes, the average duration of a call was shorter in 2011 compared with 2015.

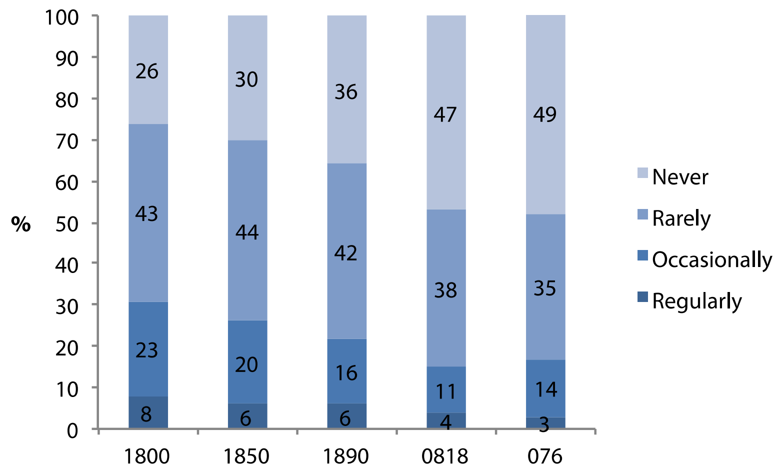
Table 3: Total number of originated calls/minutes to each NGN (annual average across 2011-2015)

	1800	1850	1890	0818	076
Total number of originated minutes	244m	74m	180m	75.5m	27m
Total number originated calls	174.5m	36m	39.5m	22.5m	7.5m
Average duration (minutes per call)	1.39	2.05	4.55	3.34	3.69

Source: Operator information request, volume figures rounded to the nearest half million.

From these tables, we see that the 1800 range receives the most calls (by some distance), followed by 1890 then 1850. The minute volumes of calls to the 1800 and 1890 ranges are significantly higher than the other NGNs. This is generally in line with the findings from the consumer survey, where callers of NGNs were less likely to call 0818 and 076 numbers than 1800, 1850 and 1890 numbers. However, few callers are using any of these numbers on a regular basis (see Figure 10).

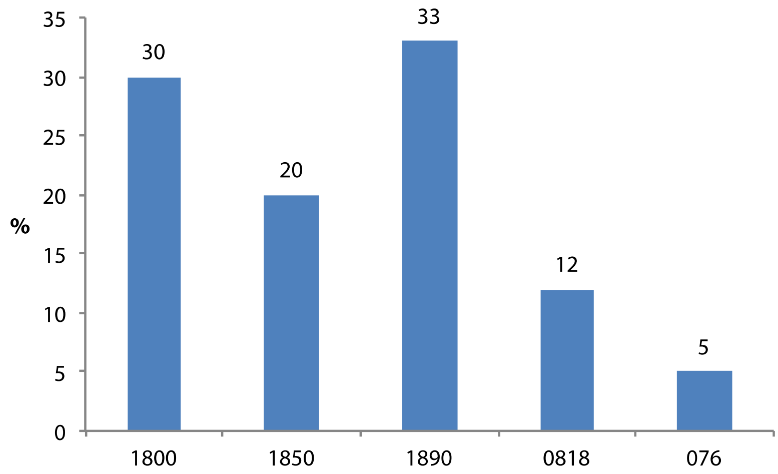
Figure 10: Frequency of dialling NGNs



Question: How often do you dial any of the following NGNs? For each number type please state: regularly (10+ times per year); occasionally (3-10 times per year); rarely (1-3 times a year) or never.
Base: All aware of specific NGN (1800=881; 1850=808; 1890=710; 0818=413; 076=168)

Similarly, more organisations providing services over NGNs considered 1800 or 1890 to be their 'main NGN' than the other ranges:

Table 4: Main NGN as reported by organisations currently using NGNs



Question: Which type of NGN would you consider to be your main NGN?
Base: Currently use NGNs (218)

Callers spend more time on the phone on calls to the NGN ranges that are charged per minute – that is the 1890, 0818 and 076 ranges rather than the free or fixed price NGN ranges – 1800 and 1850 respectively. The Freephone range sees the shortest call duration while the call duration of calls to 1850 is also significantly shorter than that of 1890, 0818 and 076.

Fixed and mobile share of call volumes

The majority of calls to NGNs are made by fixed subscribers as shown in Figure 11 below. In particular, fixed subscribers account for roughly three-quarters of calls and two-thirds of minute volumes to the 18XX ranges.[50] This bucks the general trend for overall total voice minutes for which fixed subscribers only account for a third of total voice volumes, with mobile gradually taking over as the main medium through which subscribers make voice calls in Ireland.[51] However, this is consistent with call volumes for fixed and mobile

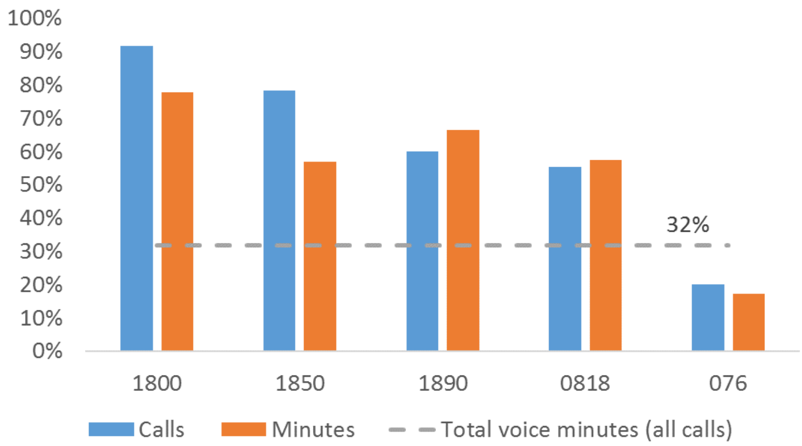
[50] The relative share of voice minutes from fixed subs is pretty constant for 1800 (~78%),1850 (~59%) and 0818 (~56%) over the past three years (and even over the past 5 years). 1890 saw the greatest movement of the 18xx numbers; a difference of 9 percentage points between 2013 (68%) and 2015 (59%). The relative proportion of fixed minutes for 076 decreased from 27% in 2013 to 13% in 2015.

[51] Using data on mobile/fixed voice minutes as a share of total voice minutes from the ComReg Quarterly Key Data reports (available at: https://www.comreg.ie/industry/electronic-communications/market-information/quarterly-key-data-report/) we have calculated the average across the years 2011-2015.

'advanced minutes' (which included calls to NGNs) with the majority of advanced minute calls originating from fixed lines.[52]

In the case of calls to the 076 range, a far lower proportion of calls come from fixed subscribers with mobile subscribers accounting for the majority of volumes to this range; in particular, a significant portion of calls are made by pre-paid subscribers.

Figure 11: Average fixed share of volumes originated



Source: DotEcon from information request responses
Figures provided represent an average over 5 years of data from 2011-2015

Volume trends and changes over time

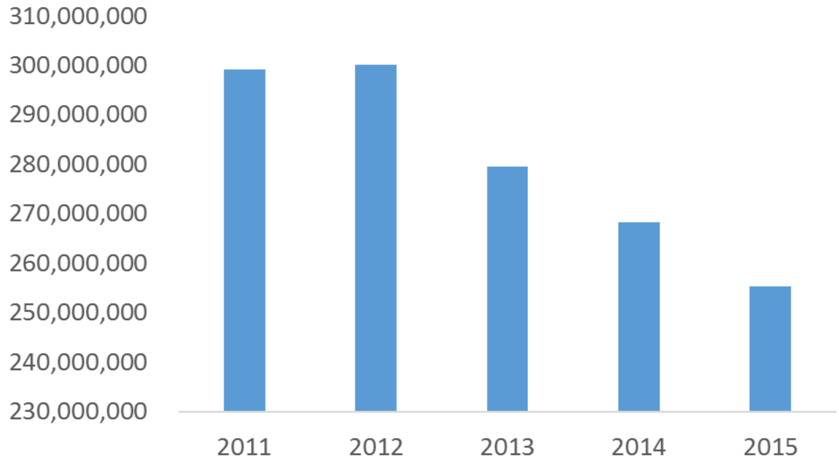
Looking at volume trends over the last five years, there has been a general trend of decline of volume of calls to NGNs. For example, as shown in Figure 12, between 2011 and 2015 calls originated to these numbers have fallen from around 300 million calls per annum to around 255 million calls per annum, a reduction of 15%. However, over the same period, the total of all other voice calls[53] has fallen

[52] Fixed advanced minutes include premium rate services minutes, freephone minutes, payphone minutes, operator services minutes, national and international virtual private network minutes. Also includes 1850, 1890 and 0818. Mobile advanced minutes include premium rate services minutes and other mobile minutes such as voicemail, DQ, call completion minutes etc. Also includes 1850, 1890 and 0818. See ComReg Quarterly Key Data reports (available at: https://www.comreg.ie/industry/electronic-communications/market-information/quarterly-key-data-report/)

[53] This includes total minutes for: fixed to fixed; fixed to mobile; fixed to international; mobile to mobile; mobile to fixed; and mobile to international/roaming, and excludes fixed and mobile calls to "advanced minutes" which include calls to NGNs.

from 16.2 billion minutes in 2011 to 15.7 billion minutes in 2015, a fall of only 3.3%.[54]

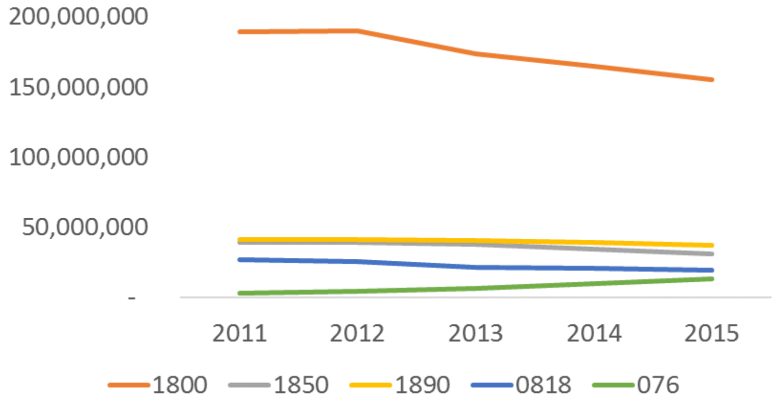
Figure 12: Origination call volumes of all NGNs



Source: DotEcon from information request responses

Figure 13 shows that calls to the 1800 range have seen the steepest decline. In contrast, there has been an increase in volume of calls to 076 range over the same period. While fewer calls to NGN are now being made in total, minute volumes (Figure 14) have not seen similar rates of decline. Rather, there has been a slight increase in 1800 minute volumes while minute volumes of calls to 076 is registering significant growth. This suggests that callers are spending longer on the phone when they do call these NGNs.

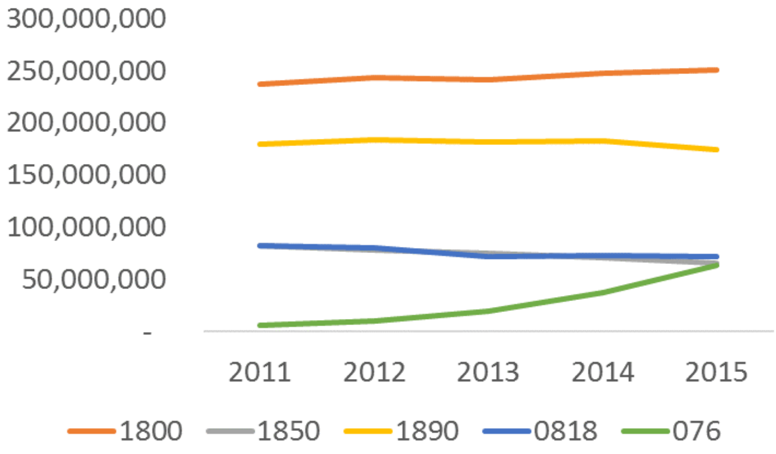
Figure 13: Origination call volumes by NGN



[54] Based on figures from ComReg Quarterly Key Data Reports and the percentage change between total 2011 (16,224,218,000 minutes) and 2015 (15,694,103,000 minutes) figures. See ComReg documents 11/44, 11/66, 11/98, 12/20, 16/48r; and 17/15r..

Source: DotEcon from information request responses

Figure 14: Origination minute volumes by NGN



Source: DotEcon from information request responses

The decline in volumes of calls to the 18XX and 0818 ranges and the increase in volume of calls to the 076 range suggests some switching amongst NGNs, in particular, towards the 076 range. Interviews with SPs indicate a trend of some operators shifting away from Freephone (1800) numbers to other NGN classes.[55] For some SPs this trend is driven by the cost of calls to Freephone numbers[56], for others cost savings are one element of a decision move to IP-based systems for voice calls that can be more easily and efficiently managed.[57] Similarly, some SPs said that they were planning to move away from shared cost numbers (1890) to IP-based numbers (076) for structural and rationalisation reasons rather than simply saving on call costs.[58]

On the other hand, one SP told us that it moved from 1850 to Freephone 1800 despite the high costs of receiving calls to Freephone numbers and the fact that the costs incurred in Ireland are significantly higher than the cost incurred by the SP for Freephone calls in other European countries.[59] This SP moved to Freephone to be competitive as a result of similar services offered by

[55] [**CONFIDENTIAL**: ✂]

[56] [**CONFIDENTIAL**: ✂]

[57] [**CONFIDENTIAL**: ✂]

[58] [**CONFIDENTIAL**: ✂]

[59] For example, Irish rates are close to six times UK charges for one SP [**CONFIDENTIAL**: ✂]

competitors being offered over 1800; it considered that it is difficult now to move back to an NGN that requires customers to pay for their calls.

Overall, given that there has been a decline in the total volume of calls to the NGNs concerned, it is possible that there has also been some switching from the use of these NGNs to geographical numbers or other platforms. Many SPs we interviewed said that they were looking at different contact channels (e.g. online chat services), but they also noted that a significant proportion of customers still preferred to phone.[60] The consumer survey also reveals that 67% prefer to contact organisations by telephone[61] suggesting that alternative (non-voice) forms of contact are not considered a suitable substitute.

[60] For example, [**CONFIDENTIAL**: ✂] said that it was looking at different contact channels e.g. supporting online chat, but it noted that 40% of its customers prefer to phone.

[61] 43% of the adult population indicating they use their mobile phone to call while 24% use their home landline telephone

4 Supply chain and revenue allocation

In this section we describe the various types of organisations providing services over NGNs and the main players involved in connecting the call between the calling and called party.

We begin by outlining which businesses are providing services over these numbers and the key characteristics of those businesses. We consider their reasons for using NGNs (and why other businesses choose not to use NGNs) as well as the types of services provided over these numbers.

We describe the other parties involved in connecting the calling and the called party by explaining the supply chain step by step. We then consider the revenue flows between these parties.

As in section 3, in addition to information gathered from desk research and the operator information request, we also include findings from the survey data and other evidence where appropriate.

4.1 Businesses and organisations using NGNs

NGNs are typically used by businesses and organisations (including charities) to provide consumers with access to certain voice based services they offer. Whilst telephone remains the preferred form of contact for businesses in Ireland,[62] a survey of a sample of representative businesses in Ireland suggests that the number of businesses actually providing an NGN is quite small, with only 10% of businesses using any NGN. However, this is likely to be influenced by the general make-up of business in Ireland where there are many more small businesses than large ones; according to the Central Statistical Office Ireland (CSO), 92% of businesses have fewer than 10 employees and only 0.2% have more than 250.[63] The survey showed that larger businesses were much more likely to be providing

[62] The consumer survey revealed that 67% of consumers still consider calling via telephone as the preferred method for contacting businesses or organisations – 43% said the preferred contact method was calling via a mobile phone, whilst 24% said they preferred to contact organisations via home landline telephone.

[63] CSO statistical release, 'Business Demography 2014', 06 July 2016. Available at: http://www.cso.ie/en/releasesandpublications/er/bd/businessdemography2014/

services over NGNs than smaller businesses, with 58% of businesses with at least 100 employees using NGNs.[64]

Using NGNs to provide services was also more common for Dublin-based organisations. NGNs were mainly used in industries such as 'human health and social work activity' (14%); 'financial and insurance' (14%), 'manufacturing and construction' (8%) and 'wholesale and retail trade' (7%).[65] Of those organisations providing services over NGNs, 1800 and 1890 are the most popular in terms of numbers organisations considering them their 'main' NGN (30% and 33% respectively).[66]

According to the organisation survey and information provided by operators in the information request, the types of services typically provided over these number ranges are shown in the table below:

Table 5: Types of services provided over NGNs

1800	1850	1890	0818	076
Helplines Conferencing services Social service	Customer service / queries Sales	General contact number Customer support Sales Social service	Customer service / queries	General contact number Customer service / queries

Source: Organisation survey - Question: Thinking of the Non-Geographic-Number(s) currently provided by your organisation, please list the services that you provide over each NGN used (e.g. helplines, sales lines etc.)
Operator information request - Question: If known, please identify what type of services each of these service providers provide e.g. customer support lines, social services etc.

There is considerable diversity in the types of services being provided over specific types of NGN. Nevertheless, we can make some

[64] Question: Does your organisation currently use any of the following numbers to provide services such as helplines, sales lines, enquiry and complaint lines or other such services?
Base: All organisations (881)

[65] Question: Does your organisation currently use any of the following numbers to provide services such as helplines, sales lines, enquiry and complaint lines or other such services?
Base: All organisations (881)

[66] Question: Which type of NGN would you consider to be your main NGN? Your man NGN means the Non-Geographic Number that is called the most
Base: Currently using NGNs (218)

distinctions between the reasons why organisations choose to use 1800 versus the other NGNs.

The main reason for providing an 1800 number for certain services instead of other NGNs was to allow customers to contact the organisation for free (perhaps unsurprisingly). 61% of organisations using 1800 gave this as the main reason, with a further 10% stating that it was to provide customers with more memorable contact numbers.[67,68]

There were many reasons given for organisations providing an NGN (other than 1800 numbers) including:[69]

- to reduce the cost of calls to customers (62%);
- to offer single contact numbers to customers (59%);
- to provide memorable contact numbers (59%)[70];
- using this NGN best suits our brand or image (47%)[71]
- to reduce the cost of calls to the organisation (46%);
- so that the organisation can change address without changing number (41%); and
- to avoid showing where your organisation is based (11%).

Some respondents also suggested that this was a legacy decision, with 53% of businesses providing services over an NGN stating that 'the organisation has always used this number'. This is also supported with findings from our interviews with service providers. For example, one SP told us that choice of NGN is typically dictated

[67] Question: What is you main reason for providing a 1800 number for certain services instead of using other NGNs?
Base: Currently use NGNs. Use 1800.

[68] However, the consumer survey revealed that 49% of consumers see no difference in memorability between landlines and NGN.

[69] Question: What are the main reason(s) your organisation uses [main NGN]?
Base: Currently use NGNs. Main NGN is NOT 1800.

[70] Note that only 34% of consumers considered that NGNs were easier to remember than normal geographic (landline) numbers, whilst 49% considered there was no difference.
Question: For each statement please indicate whether you associate this more with calls to landlines, calls to NGNs or whether there is no difference? (I find these numbers are easier to remember).
Base: all aware of NGNs.

[71] Note that 63% of consumers considered that there was no difference between an NGN and a geographic (landline) number when it came to signaling whether the organisation using the number was more reputable/trustworthy.
Question: For each statement please indicate whether you associate this more with calls to landlines, calls to NGNs or whether there is no difference? (I believe that businesses/organisations using these numbers are more reputable/trustworthy).
Base: all aware of NGNs.

by 'historical reasons' and changing can often be time consuming and costly.[72]

4.2 The supply chain

A NGN call begins with a caller and ends with the SP (the called party). One or more telephony providers serve each of these parties, and the provider originating the call may be fixed or mobile.

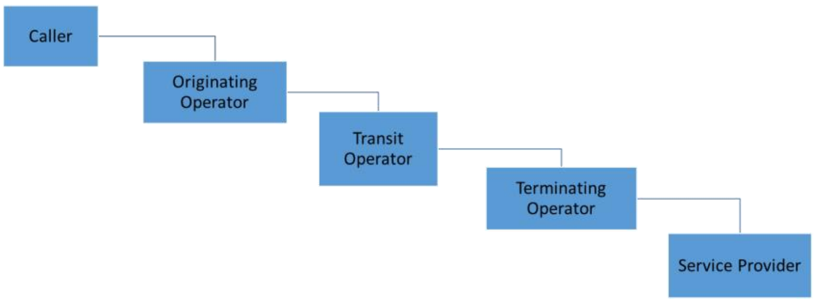
A NGN service provider requires:

- access to a non-geographic number, which requires paying a telephony operator a service charge and in some cases additional charges for service features such as recorded announcements; and
- call termination services, which typically involves a per minute or per call charge paid to the telephony provider. The type of call termination charge depends on the class of NGN.

NGNs typically only terminate on a fixed network, therefore mobile-only providers serving SPs would typically purchase a wholesale service from a fixed operator. A NGN call may originate and terminate on the same network (i.e, the originator and terminator is the same operator) or may originate and terminate on a different network (as shown in the figure below). In some cases, a NGN call may have to be routed via a third network (neither the network of the originating nor terminating operator) and so involve a transit operator. A call may transit more than one network before arriving at the service provider. The originating operator will decide the routing path of an NGN call including the transit path.

Figure 15 shows the link between various parties involved in an NGN call.

Figure 15: NGN call supply chain with callers and service providers served by operators



[72] **[CONFIDENTIAL: ✂]**

In some cases, resellers may purchase wholesale services from an operator in relation to outbound (call origination) and/or inbound (call termination) NGN traffic and compete in the retail market for callers and/or service providers. This may be a white label service or a more basic wholesale service. Resellers may operate in the fixed or mobile market. In most cases, resellers deal only with their wholesale provider and not with other operators that might be involved in handling the call traffic.

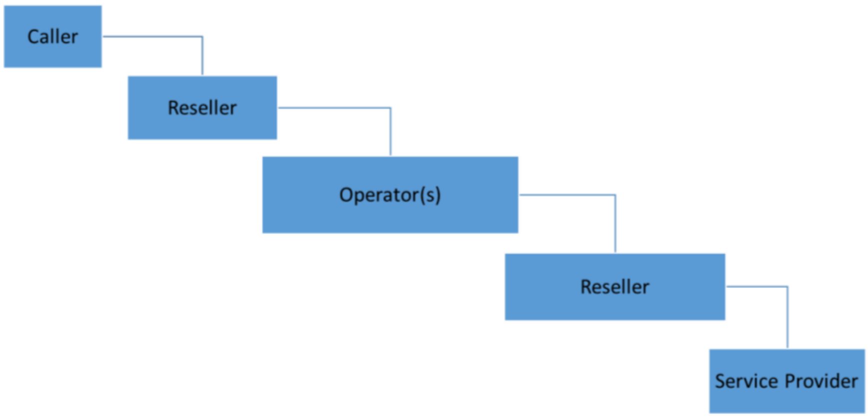
Therefore, the caller may be served by either:

- An operator who owns and operates its own network. This may be a fixed or mobile operator; or
- A reseller who purchases wholesale services from an operator (the wholesale provider) and resells this to the caller. Resellers may also operate in the fixed or mobile market.

Like the caller, the service provider may also source both these services either from a reseller or a network operator, both sometimes referred to as a "hosting operator".

Figure 16 shows the link between the calling and called parties when there is a reseller involved.

Figure 16: NGN supply chain with callers and service providers served by resellers



When discussing the various players in the supply chain, a key requirement of NGNs is that SPs must ensure coverage of all callers regardless of the OO. Therefore, different originators are complements rather than substitutes from the perspective of a SP. A SP must ensure that its contact number is universally accessible to all customers and ideally at a reasonable price from each OO (or for free in the case of 1800 numbers). However, given this requirement for universal accessibility it may have little option but to accede if an originator seeks to take advantage of its position, whether by raising retail or wholesale prices.

4.3 Business models

The market for calls to NGNs is a concentrated market with a small number of operators accounting for the bulk of volumes. A number of terminating operators terminating calls to 1800 and 1850 ranges are making losses, while a significant number of originating operators are making losses on calls to the 076 range,[73] reflecting the currently changing dynamic of use of these NGNs and that the business model for calls to NGNs, particularly for the terminating traffic segment is particularly challenging.

Market focus – traffic and customer type

Fixed and mobile operators operate different network infrastructure while resellers purchase various wholesale services from operators in order to serve their customers. Mobile operators operate mostly on the call origination side, though Vodafone also provide call termination services to service providers.[74] The majority of fixed operators provide both call origination and call termination services with the exception of two operators[75] who only provide call termination services. Table 6 below illustrates whether an operator is active on the origination and/or termination side of the market, as well as whether it has fixed or mobile subscribers.

[73] We observe that some operators price 076 calls in a similar manner to geographical calls, yet the interconnect settlement agreement of 076 calls are different to that of geographical calls (as discussed later in this report), and it seems common that OOs are paying out more in interconnect fees than they receive in call revenues for these calls (note that this assessment is made in the absence of bundled revenue figures from operators, but as we discuss elsewhere, few operators are bundling calls to NGN numbers),

[74] [**CONFIDENTIAL**: ✂]

[75] [**CONFIDENTIAL**: ✂]

Table 6: Operators - origination and/or termination

Operator	Origination		Termination
	Fixed subscribers	Mobile subscribers	
Airspeed	✓	×	✓
Blueface	✓	✓ (MVNO)	✓
BT	✓	×	✓
Colt	✓	×	✓
Eir	✓	×	✓
Equant	✓	×	✓
Imagine	✓	×	✓
In2Tel	✓	×	✓
Intellicom	✓	×	✓
Magnet	✓	×	✓
Magrathea	✓	×	✓
Modeva	×	×	✓
Meteor	×	✓	×
Three Green	×	✓	×
Three Services (Blue)	✓	✓	×
Verizon	✓	×	✓
Viatel	✓	×	✓
Virgin	✓	✓(MVNO)[76]	✓
Vodafone	✓	✓	✓
Voxbone	×	×	✓

Source: DotEcon from information request responses

[76] [**CONFIDENTIAL**: ✂]

Resellers on the other hand are mostly active on the origination side of the market. Table 7 provides an overview of the side of the market served by each of the resellers. Only three of these resellers provide termination services. In particular, AT&T only terminates calls to one 1800 number, which is used to provide a conferencing service to one customer.

Table 7: Resellers - origination and/or termination

Resellers	Origination		Termination
	Fixed	Mobile	
An Post (Postfone)	×	✓	× An Post does manage the termination of calls to its customer care number
AT&T	✓	×	✓
ATS	✓	×	×
Edge/GCI	✓	×	×
Fastcom	✓	×	✓
IFA	✓	×	×
Lycamobile	×	✓	× Lycamobile does manage the termination of calls to its 1890 customer care number
Nova	✓	×	×
PermaNet	✓	×	×
Pure Telecom	✓	×	✓
Rapid BB	✓	×	×
Ripplecom	✓	×	×
Sky	✓	×	×
Tesco Mobile	×	✓	×

Source: DotEcon from information request responses

In terms of customers, both fixed and mobile operators may have wholesale customers (resellers) and/or retail customers (callers or service providers). The majority of operators have both wholesale and retail customers. From the respondents to the information request there was only one "wholesale-only" operator – they sell services only to resellers who in turn serve either callers or service provides. On the other hand, there are a handful of fixed operators who serve only retail customers. Table 8 details whether customer-serving operators have a wholesale only business or is active in the retail market as well.

Table 8: Wholesale and/or retail customers

Wholesale only	Retail only	Wholesale and retail
Magrathea	BT	Airspeed
	Equant	Blueface
	Meteor	Colt
	Modeva	Eir
		Imagine
		In2Tel
		Intellicom
		Three and Three Services
		Verizon
		Viatel
		Virgin
		Vodafone
		Voxbone

Source: DotEcon from information request responses

A good number of fixed operators have business-only subscribers, while a number of resellers serve non-business subscribers only where calls to NGN ranges are part of a wider range of services they offer, for e.g. broadband and quad play packages. Overall, the resellers tend to have more diverse business models serving different market segments.

4.4 Operator volume share

The markets for origination and termination of calls to NGNs are quite concentrated, with a handful of operators typically accounting for the bulk of volumes. As noted in Figure 11 above, the majority of calls to NGNs are made by fixed subscribers.[77] Therefore, on the origination side, four fixed operators and two mobile operators[78] are major players. An additional two mobile operators[79] also account for non-trivial volume shares. On the termination end, four fixed operators and one mobile operators[80] account for the majority of termination volumes, with one operator's[81] share overall gradually increasing between 2011-2015.

For 1800, there are relatively more originating operators with non-trivial (more than 1%) minute volume shares, with relative shares amongst operators being quite even. The termination side of the market looks more concentrated however, with three fixed operators and one mobile operator[82] accounting for the majority of 1800 minutes terminated. In addition one small fixed operator[83] seems to have been quite successful in growing its termination volume share in 2015, whilst another[84] has seen its termination volume share shrink over the years.

Figure 17: 1800 origination minute share

CONFIDENTIAL: ✂

Source: DotEcon from information request responses

[77] Similar behaviour can be seen for call volumes for fixed and mobile advanced minutes, see fig. 1.2.1 of ComReg's QR for Q3 2016. The majority of calls are from fixed. May be a general perception that costs of these calls are more expensive from mobile than from fixed lines and that this perception holds true for all non-geo numbers including PRS. See ComReg Quarterly Key Data reports (available at: https://www.comreg.ie/industry/electronic-communications/market-information/quarterly-key-data-report/)

[78] [**CONFIDENTIAL**: ✂]

[79] [**CONFIDENTIAL**: ✂]

[80] [**CONFIDENTIAL**: ✂]

[81] [**CONFIDENTIAL**: ✂]

[82] [**CONFIDENTIAL**: ✂]

[83] [**CONFIDENTIAL**: ✂]

[84] [**CONFIDENTIAL**: ✂]

Figure 18: 1800 termination minute share

CONFIDENTIAL: ✂

Source: DotEcon from information request responses

For 1850 origination volumes, one fixed operator[85] has roughly half of call volume share with the mobile operators making up the rest of the majority of call volumes. On the termination end, one mobile operator and one fixed operator[86] are fairly evenly matched with another fixed operator's[87] share shrinking since 2011.

Figure 19: 1850 origination call share

CONFIDENTIAL: ✂

Source: DotEcon from information request responses

Figure 20: 1850 termination call share

CONFIDENTIAL: ✂

Source: DotEcon from information request responses

Like calls to the 1800 range, there are a fair number of originating operators with significant minute shares. One fixed and one mobile operator[88] are again the largest players and are as well on the termination side of the market where they are joined by another fixed operator.[89] As with 1850, one fixed operator's[90] share of terminated minutes of calls to 1890 has been declining since 2011.

Figure 21: 1890 origination minute share

CONFIDENTIAL: ✂

Source: DotEcon from information request responses

Figure 22: 1890 termination minute share

CONFIDENTIAL: ✂

Source: DotEcon from information request responses

[85] [**CONFIDENTIAL**: ✂]

[86] [**CONFIDENTIAL**: ✂]

[87] [**CONFIDENTIAL**: ✂]

[88] [**CONFIDENTIAL**: ✂]

[89] [**CONFIDENTIAL**: ✂]

[90] [**CONFIDENTIAL**: ✂]

For 0818, whereas one fixed operator[91] used to originate roughly 40% of minute volumes, its share in 2015 was just under 30%. One mobile operator[92] has a similar share just under 30% though it has maintained its share between 2011 and 2015. Meanwhile, another fixed[93] and mobile operator[94] have increased their origination share between 2011 and 2015. One fixed operator's[95] share of termination minute volumes has also declined over this period, with another[96] experiencing an increase in termination minute share over this period.

Figure 23: 0818 origination minute share

CONFIDENTIAL: ✂

Source: DotEcon from information request responses

Figure 24: 0818 termination minute share

CONFIDENTIAL: ✂

Source: DotEcon from information request responses

As discussed in Section 3.5 above, calls to the 076 ranges have seen the significant growth in the volume of both calls and minutes between 2011 and 2015, reflecting that callers, service providers and operators alike are adjusting their use and management of calls to this range. We note that [**CONFIDENTIAL**: ✂] originates the largest volume of calls to the 076 range, with its minute share growing from 43% in 2011 to roughly 70% in 2015.[97] On the termination side, the distribution of calls received are equally asymmetric with [**CONFIDENTIAL**: ✂] terminating the lion's share of calls to this range, increasing its share from under 50% in 2011 to over 80% in 2015.

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[91] [**CONFIDENTIAL**: ✂]

[92] [**CONFIDENTIAL**: ✂]

[93] [**CONFIDENTIAL**: ✂]

[94] [**CONFIDENTIAL**: ✂]

[95] [**CONFIDENTIAL**: ✂]

[96] [**CONFIDENTIAL**: ✂]

[97] This rapid growth of 076 calls from Tesco mobile does seem unusually high at first. However, aggregate 076 origination volumes do roughly match up to the 076 termination volumes ([**CONFIDENTIAL**: ✂]) over the period. Further we know that Tesco [**CONFIDENTIAL**: ✂] which could have led to some sort or price effect driving volumes up. Furthermore, we double checked and verified these figures with Tesco and together with a degree of internal consistency with termination volumes, we do not have particularly strong grounds to justify that these Tesco's volume figures are incorrect.

We understand from [**CONFIDENTIAL**: ✂] that a significant portion of its volumes to the 076 ranges made by their subscribers should have been charged as "out of bundle" traffic at an ad hoc rate. However, due to a glitch in their billing system, this ad hoc rate was not applied, effectively zero rating the calls to the 076 range for many of its subscribers, the bulk of whom are pre-paid subscribers. It may be that the significant increase in 076 volumes is in no small part due to these calls being effectively free to call for [**CONFIDENTIAL**: ✂] subscribers over the period. We note that [**CONFIDENTIAL**: ✂] increase in origination minute share for calls to 076 roughly matches [**CONFIDENTIAL**: ✂] increase in termination minute share for calls to 076 over period of 2011-2015. This suggests that the increase in minute volumes by [**CONFIDENTIAL**: ✂] subscribers, at least for most part, are going to 076 numbers hosted by [**CONFIDENTIAL**: ✂] service providers.[98]

We note that calls to the 076 range are treated and priced similarly to calls to geographical numbers by some operators. In particular, calls to the 076 range are included in-bundle by a number of operators. While free or lower prices of calls to the 076 range can look like penetration pricing strategies, it is unclear if this is the deliberate intention of operators; specifically, we note from the information request that in some cases, calls to the 076 range are cheaper or zero-rated due to billing errors by operators (discussed further below). Overall, the use of 076 range appears to be still evolving and the volume of growth of calls to this range reflects growing use of a new service. However, the volumes of calls and minutes to the 076 range is still some way from the volume of calls to other NGNs.

Figure 25: 076 origination minute share

CONFIDENTIAL: ✂

Source: DotEcon from information request responses

Figure 26: 076 termination minute share

CONFIDENTIAL: ✂

Source: DotEcon from information request responses

4.5 Payment flows

In this sub-section we describe the payment flows amongst different parties in the supply chain and provide simple illustrations to aid

[98] [**CONFIDENTIAL**: ✂]

understanding. In these figures, the arrows indicate direction of payment flow.

4.5.1 Calling or Receiving Party Pays

Callers and service providers have commercial arrangements with their telephony provider whom they pay to make or receive a NGN call. For the NGN classes concerned, in general terms, the cost of the call is either fully borne by the service provider (Receiving Party Pays (RPP)) or shared between the caller and the service provider in varying degrees (part RPP and part Calling Party Pays (CPP)). As outlined in Section 3:

- 1800 – full RPP where the caller pays nothing for the call and the service provider pays the entire cost of the call.
- 1850 – Part CPP and part RPP. Caller pays fixed cost per call (independent of call duration) capped at what the operator would charge for a five-minute call to a geographical number (or where the rate is distance dependent, then no more than the rate for a local call). The rest of the cost of the call is borne by the service provider.
- 1890 – Part CPP and part RPP. Toll-share between caller and service provider. Caller charged fixed per minute rate throughout duration of call, rate capped at call rates for a geographical number; or where the rate might be distance dependent then, at the rate of a local call. The rest of the cost of the call is borne by the service provider.
- 0818 – should be entirely CPP and rates paid by caller should not exceed national tariff rates.
- 076 – should be entirely CPP with rates paid by caller capped at national tariff rates.

The market for service providers is not regulated and service providers would typically negotiate individual rates and contracts with their telephony provider. SPs would often pay their telephony provider:

- a fixed fee per month to cover the fixed charges such as number rental and charges for any additional services; and
- a per call or per minute charge for inbound NGN traffic received.

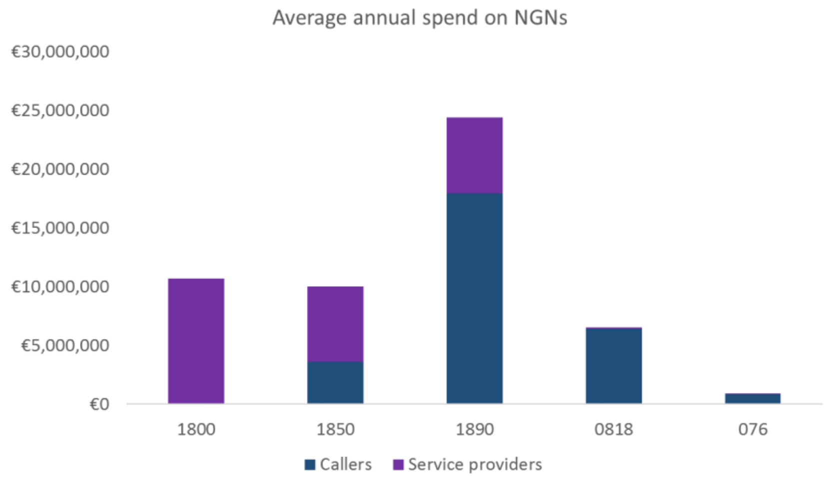
Not all telephony providers would necessarily impose such a charging structure. In addition, while SPs should be expected to pay for the entirety of an 1800 call and share the cost for 1850 and 1890

NGNs, there should be no costs sharing on 0818 and 076 traffic. However, we have observed that some operators are making revenues from SPs on calls to these numbers, suggesting that SPs are having to contribute to the cost of these calls in some cases.[99] However, from the data responses we received, it is more common to earn revenues from SPs for calls to the 18XX ranges.

Overall, if a call originates and terminates on the same network, then the operator would recover its cost either entirely from the SPs (in the case of 1800) or in the case of 1850, 1890, 0818 and 076, partly from the caller and partly from the SP in different proportions based on the number range. However, we note that in a small number of cases terminating operators do not recover all of their costs from SPs and may make losses on some numbers.[100]

Figure 27 below shows the average annual spend on calls to NGNs by callers and service providers over the period of 2011-2015.[101]

Figure 27: Average annual spend on NGNs by callers and service providers



[99] For 0818 numbers six operators [**CONFIDENTIAL**: ✂] make revenues from SPs on traffic that it terminates. For 076 numbers, two operators [**CONFIDENTIAL**: ✂] indicated some revenues from SPs on traffic that it terminates.

[100] However, there are also terminating operators who do not earn any revenues from service providers across all the NGNs concerned, including calls to the 1800 range. [**CONFIDENTIAL**: ✂] and [**CONFIDENTIAL**: ✂] are two such examples. [**CONFIDENTIAL**: ✂], does not have any third party service providers using its NGNs. Rather, [**CONFIDENTIAL**: ✂]. In other words, [**CONFIDENTIAL**: ✂] is vertically integrated in relation to the termination of calls to NGN and the services provided via its NGNs. [**CONFIDENTIAL**: ✂] on the other hand does terminate calls on behalf of third party service providers, but it makes no revenues from hosting or other charges to these service providers.

[101] We note from Annex E that we may not have responses from all major terminating operators – as a result, the quantum of revenues from service providers is likely to be understated.

Source: DotEcon from information request responses

Evidence from the organisation survey states that 48% of NGN users consider NGN costs to the organisation as an important factor in choosing NGN provider.[102] However, as we discuss below, the costs faced by the SP (from the terminating operator) are directly affected by the wholesale rates set for 18XX numbers by the originating operator; terminators will charge service providers an average of the originators' wholesale rates faced by the terminating operator. Wholesale origination charges are, in effect, set by the originating call provider by virtue of the amount they choose to retain to cover their call origination costs. This is described below in relation to the interconnect settlement regime. Therefore, the wholesale rates set by the originators are important insofar as they will have a direct effect on the costs faced by service providers where they have to contribute to the costs of the call.

We have collected evidence of dissatisfaction about the costs faced, particularly for the Freephone number. For example, 73% of current NGN users stated that they would not consider using 1800, as it is "too expensive for my organisation".[103] This was supported by some SPs in the face-to-face interviews with one SP commenting that they had shifted away from the 1800 range to save costs.

Results from the business survey suggest that the high prices faced by businesses can present a barrier to businesses who may otherwise use NGNs. For example, of those businesses who have never used NGNs, 30% stated that this was because NGNs are too expensive for the organisation to use.[104] 47% also reported that it is more cost effective for the organisation to use a landline/mobile number than

[102] Question: To what extent do you agree or disagree with the following statements, on a five point scale where 5 = Strongly Agree with and 1 = Strongly Disagree?
Base: All currently using NGNs (218)
The 48% relates to the proportion stating that they 'Strongly Agree' or 'Agree Slightly' with the statement.

[103] Question: What are you reasons for not wishing to use that/those Non-Geographic Numbers?
Base: Current NGN users who would not consider using specific NGN – 1800 (17*)

[104] Question: Why does your organisation not use any Non-Geographic Numbers to offer services?
Base: All never used NGNs (644)

an NGN.[105] Finally, we have evidence to suggest that up to 44% of businesses who currently think NGNs are too expensive for the organisation would consider using NGNs if the costs to them were to decrease.[106]

Therefore, it is important for us to consider the wholesale market and associated charges in more detail to determine whether the costs can be justified or whether intervention is needed to control the charges and limit the costs faced by SPs, which may be depressing the use of NGNs in Ireland.

4.5.2 Interconnect settlement regime

In the case where a call originates and terminates on a different network, there is an interconnect settlement regime in place in Ireland. In this regime, settlement fees are exchanged between originating and terminating operators to compensate for the cost of connecting the call. The "settlement rate" is the sum per minute or per call that is passed between originating and terminating operator, sometimes via a transit operator. In this sub-section, we describe the payment flow between interconnecting operators in this regime. Note that the structure of the settlement regime can differ depending on the NGN class, and whether the call is originated from a mobile or a fixed line.

In some cases, transit fees are incurred if the call is passed over a transit network. Transit charges are detailed further below.

Fixed and mobile to 1800

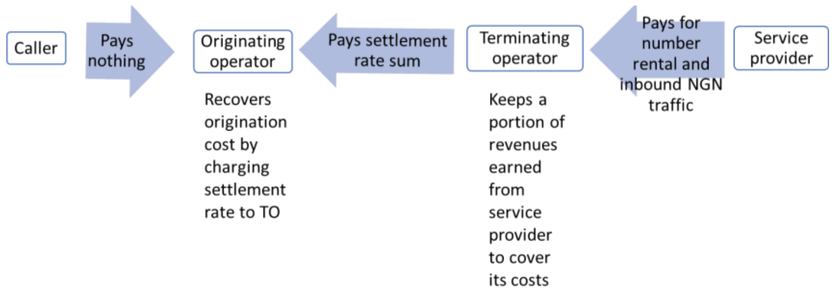
The 1800 range is free to call for both fixed and mobile callers, with the SP paying for the entire cost of the call. Therefore, the OO does not receive any revenues from callers and has to recover their cost

[105] Question: Thinking about your organisation's use of landline or mobile numbers as contact numbers, which of the following statements do you agree or disagree with, on a five point scale where 5 = Strongly Agree with and 1 = Strongly Disagree?
Base: All never used NGNs but use landline or mobile numbers to provide services (605)
the 47% related to the proportion stating that they 'Strongly Agree' or 'Agree Slightly' with the statement.

[106] Question: You said that you do not use Non-Geographic-Numbers because they are too expensive for the organisation to use, would you consider using Non-Geographic-Numbers in the future if the organisation's costs of using these numbers reduced?
Base: All who think NGNs are too expensive for the organisation to use (193).

from the TO. In practice, a "settlement rate" per minute is charged by the OO to the TO in order to recover its origination costs. For 1800 calls originating from a payphone, there are additional Payphone Access Charges (PACs) that are levied by PAC Eligible Payphone Operators on the TO.[107] The TO in turn, in most cases, recovers its cost from the SP. This is illustrated in the figure below (PAC charges not illustrated).

Figure 28: Payment flow for calls to 1800



Eir's Fixed Voice Call Origination (FVCO) charge is capped at cost, calculated using a forward looking, top-down, Long Run Average Incremental Cost Plus (LRAIC+) model. The cap is a remedy imposed on the fixed access and call origination (FACO) markets (for all types of calls, including calls to NGNs), in which Eir has been designated with SMP. For NGN call origination, Eir is additionally allowed to recover its unavoidable retail cost related to billing and bad debt incurred as a result or providing NGN telephony services. The sum of the FVCO charge and the uplift for unavoidable retail charges is together known as the "retention rate". Therefore, Eir's settlement rate that it charges TOs for call origination to 1800 numbers is set at the level of its regulated retention rate.

Other fixed operators are not regulated and are free to set their own origination charges, but nevertheless up until the end of 2014, all fixed operators voluntarily set their origination charges at the same level as Eir's regulated retention rate.[108] This is known as the "deemed to be regime" where origination charges amongst fixed operators are symmetric. All fixed operators in the deemed to be regime therefore use the same settlement rate for 1800 traffic. This

[107] These PACs are published in Table 003 of Eir's Switch Transit Routing Price List (STRPL) document.

[108] We understand that there are a number of reasons as to why operators were willing to adopt this pricing structure on a voluntary basis. For example, this facilitated accounting simplicity, as a cascading accounting system applied for wholesale billing of these calls. Having everyone on the same rate meant that the system need only focus on volumes and greatly simplified the billing system required. Also, it led to pricing simplicity as TOs could charge SPs a single rate for calls originating from different fixed operators.

is in turn beneficial to service providers who incurred the same charge for calls originated from different fixed operators.

In the past decade, this settlement rate has been updated just three times, dropping a little each time. We understand that these updates to retention charges take account of costs changes or due to updates to retail prices. The last time settlement rates were updated was in April 2010, which arose from the implementation of retention changes due to reduced costs reported in Eir's FY0809 accounts. The table below compares the settlement rate in August 2006 and that that applies amongst the deemed to be operators at present. It shows that, OOs now receive less per minute compared with a decade ago.

Table 9: 1800 settlement rate in the deemed to be regime

Euro cents per minute	Peak	Off-Peak	Weekend
August 2006	1.11	0.56	0.71
August 2016	0.80	0.40	0.48

Source: Table 301 in Eir's STRPL Issue 143

With effect from 1st November 2014, BT left the deemed to be regime and set its own origination charges for 1800, 1850 and 1890 NGNs. Its new settlement rates for 1800 (shown below) are significantly higher than that in the deemed to be regime and do not vary between peak, off-peak and weekend periods. Following suit, Smart, Digiweb and Verizon (from 1st June 2015), Airspeed (from 1st August 2014) and most recently Intellicom (from 1st September 2015) also left the deemed to be regime and adopted BT's new settlement rates for 1800.

Table 10: BT 1800 settlement rate after leaving the deemed to be regime

Euro cents per minute	Peak	Off-Peak	Weekend
From 1st Nov 2014 onwards	2.73	2.73	2.73

Source: Table 301A Eir's STRPL Issue 143

Mobile operators have never been part of the deemed to be regime nor are their origination charges regulated by ComReg; therefore, they set their own, individual, origination charges in the form of settlement rates they demand for originating calls to the 1800 range. Mobile settlement rates for 1800 are an order of magnitude higher than that charged by fixed operators for origination (BT or "deemed to be") (see table below).

Table 11: Mobile operators' 1800 settlement rate as of STRPL Issue 143

Euro cents minute	Peak	Off-Peak	Weekend
Vodafone	18.41	12.06	9.52
Telefonica	32.50	18.00	15.00
Hutchison[109]	32.50	18.00	15.00
Meteor	34.28	18.73	15.24
Tesco	34.28	18.72	15.23
Virgin/UPC Mobile	34.28	18.72	15.23
Carphone Mobile	34.28	18.73	15.24

Source: Table 303 in Eir's STRPL Issue 143

Telefonica noted in its response to ComReg's Call for Input on NGN wholesale charges that mobile retail charges were generally higher than fixed retail charges and given retail charges for NGN calls are capped by ComReg or in the case of 1800, free to call, mobile operators had to charge higher origination charges to compensate for the retail revenue forgone.[110] A similar point was made in Vodafone's response who noted that the differentiation in mobile versus fixed origination charges for Freephone mirrors the retail price difference that exist between out of bundle calls from mobile to national and fixed to national numbers.[111]

Like the fixed operators, there have been few changes to the settlement rate charged by the mobile operators over the years. Settlement rates have more or less remained constant from the start except for Telefonica (now Three Services Ireland) who increased its settlement rate by almost 10 Euro cents per minute and Hutchison

[109] We note the Telefonica and Hutchison are now a merged entity.

[110] ComReg, 5th December 2014, Update on Treatment of Non-Geographic Numbers, Reference: ComReg 14/130, page 30.

[111] ComReg, 5th December 2014, Update on Treatment of Non-Geographic Numbers, Reference: ComReg 14/130, page 52

who lowered its settlement rate by almost 2 Euro cents per minute from 1st December 2015 onwards after their merger. This leaves Vodafone as the only mobile operator whose settlement rate is significantly lower than the other mobile operators.

Mobile to 1850 and 1890

The inter-operator settlement for mobile calls to 1850 and 1890 NGNs is the similar to that for mobile calls to 1800 in that mobile operators are free to set their origination charges. As for 1800, mobile operators are outside of the deemed to be regime for 1850 and 1890. Mobile operators set a settlement rate which the TOs pay the mobile operators when terminating calls to NGNs originated from the mobile operator's network.

Unlike 1800, however, callers do contribute to the cost of the call for 1850 and 1890. Therefore, mobile operators receive a retail rate from callers and will recover additional sums via the settlement rate charged to TOs. Terminating operators in turn recover their costs from SPs.

Figure 29: Payment flow for mobile calls to 1850 and 1890

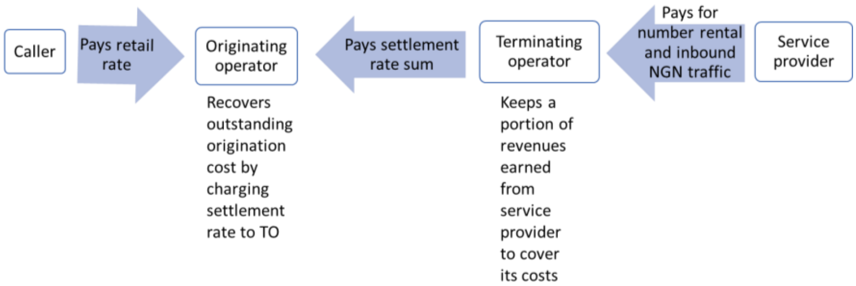


Table 12: Mobile operators' 1850 settlement rate as of STRPL Issue 143

Euro cents minute	Peak	Off-Peak	Weekend
Vodafone	15.60	9.52	9.52
Telefonica	16.74	9.32	9.13
Meteor	16.74	9.32	9.13
Hutchison	16.74	9.32	9.13
Tesco	16.74	9.31	9.12
UPC Mobile	16.74	9.31	9.12
Carphone Mobile	16.74	9.32	9.13

Source: Table 305 in Eir's STRPL Issue 143

Table 13: Mobile operators' 1890 settlement rate as of STRPL Issue 143

Euro cents minute	Peak	Off-Peak	Weekend
Vodafone	4.16	2.54	2.54
Telefonica	4.16	2.54	2.54
Meteor	4.16	2.54	2.54
Hutchison	4.16	2.54	2.54
Tesco	4.16	2.53	2.53
UPC Mobile	4.16	2.53	2.53
Carphone Mobile	4.16	2.54	2.54

Source: Table 307 in Eir's STRPL Issue 143

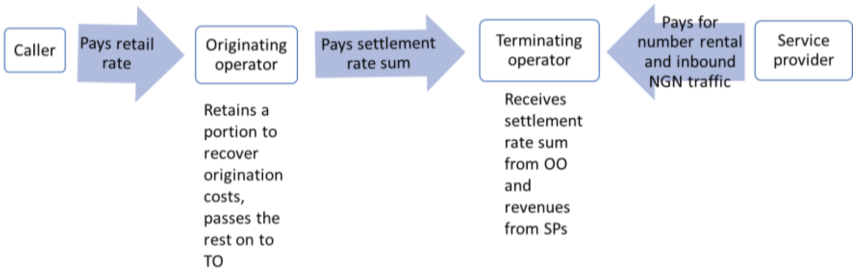
Mobile operators' settlement rates for 1850 are lower than those for 1800 which reflects the fact that callers contribute part of the cost of the call. Likewise, settlement rates for 1890 are lower still as callers contribute a greater proportion of the cost of a 1890 call. There is also greater symmetry amongst mobile operators in the settlement rates for 1850 and 1890. Like the case for 1800, settlement rates for 1890 have not changed since they were introduced. However, Vodafone and Telefonica have updated their settlement rates for 1850 once and twice respectively:

- Vodafone started with settlement rates about a third of current levels in 2000 but **increased** their settlement rate (to the current rates) from 1st December 2007;
- Telefonica started with settlement rates nearly identical to present levels in 2000 but **lowered** its settlement rates to the level of Vodafone's initial rates in May 2006 before **increasing** their rates to present levels a year later from June 2007.

Fixed to 1850 and 1890

Like mobile subscribers, fixed subscribers calling the 1850 and 1890 ranges also contribute to a portion of the call costs via the retail rates they pay their telephony provider. The OO would then retain a portion of this revenue received to cover its origination costs (the amount retained is known as the "retention rate"), passing the remainder on to the TO in the form of settlement rates. Terminating operators will also recover their costs from the sums earned from SPs. Note that the payment of the settlement rate in this case is in the opposite direction to that made when mobile operators originate calls to these ranges. The general payment for operators in the deemed to be regime is illustrated below.

Figure 30: Payment flow for fixed to 1850 and 1890[112]



The amount that Eir can retain for origination (Eir's retention rate) is regulated in the same way as that for 1800 (described above). Fixed operators in the deemed to be regime set the same origination charges as Eir; that is to say they retain the same amount – Eir's regulated retention rate - passing the rest on to the terminating operators in settlement fees. This means that the amount that is passed on by the OOs – the settlement rate – can in theory vary according to the retail rates these operators charge their subscribers. However, in practice, all operators in the deemed to be regime use

[112] Note, that this no longer applies for BT following its departure of the deemed to be regime. As explained below, BT implements a similar payment flow to mobile calls for these numbers (depending on time of call) as set out in Table 16 below.

the same settlement rate and so pass on the same amount per call (for 1850) or per minute (for 1890) regardless of their actual retail rates. In effect, the deemed to be regime is implemented via symmetric settlement rates adopted by operators.

We understand that the use of identical settlement rates is motivated by the practicalities associated with the cascading accounting system used for the billing of these calls amongst operators. It provides for a simple and transparent inter-operator charging mechanism, making wholesale billing simpler. In addition, an operator should be able to recover its origination cost (if it were at least as efficient as Eir) as long as its retail rates were no lower than Eir. In the case where its retail rates were higher, it would make a higher margin on origination when passing on the same settlement rate as Eir. If its retail rates were lower, however, its margins would be squeezed and it may not be able to recover its costs.

Settlement rates for 1850 and 1890 in the deemed to be regime are shown in the table below. In the past decade, the settlement rates for 1850 and 1890 have changed a handful of times, in each instance, increasing by a little. These increases reflect that originating operators are paying out more to termination operators per call (1850) or per minute (for 1890).

Table 14: Fixed to 1850 settlement rate in the deemed to be regime

Euro cents per call	Peak	Off-Peak	Weekend
August 2006	1.74	3.28	3.52
August 2016	2.88	4.11	4.11

Source: Table 204 in Eir's STRPL Issue 143

Table 15: Fixed to 1890 settlement rate in the deemed to be regime

Euro cents per minute	Peak	Off-Peak	Weekend
August 2006	3.06	0.72	0.69
August 2016	4.39	1.15	1.20

Source: Table 205 in Eir's STRPL Issue 143

As with the case of 1800, with effect from 1st November 2014, BT has left the deemed to be regime for 1850 and 1890 as well, its settlement rates are shown in the table below.

Table 16: BT 1850 and 1890 settlement rates after leaving the deemed to be regime as of STRPL Issue 143

Euro cents	Peak	Off-Peak	Weekend
1850 (per call)	-0.02	0.62	0.74
1890 (per minute)	2.46	-1.18	-1.05

Source: Table 204A and 205A of Eir's STRPL Issue 143

BT has set its settlement rates for off-peak and weekend periods for 1850 and for peak periods for 1890 lower than the equivalent settlement rates in the deemed to be regime. This represents paying out less in these periods to TOs than its counterparts in the deemed to be regime. In the case of peak 1850 calls and off-peak and weekend 1890 calls, it has set negative settlement rates which represents demanding payment **from** TOs.[113]

BT is the only operator to date that has left the deemed to be regime for 1850 and 1890.

Fixed and mobile to 0818 and 076

The payment flow for both fixed and mobile calls to 0818 and 076 is similar to fixed calls to 1850 and 1890. The caller pays the OO a retail rate for these calls, of which the OO will retain a portion to cover its origination costs (the "retention rate") and pass the rest on in settlement rates to the TO. As mentioned earlier, the TO may in some cases recover additional sums from the SP even though these numbers are not designated as 'shared-cost' numbers. This is illustrated in Figure 30 above.

Again, Eir's allowed retention for call origination is regulated on the basis of cost orientation. In the deemed to be regime, other fixed operators set origination charges to the same level as Eir's regulated retention.

For calls to 0818 and 076 ranges, all operators use the same settlement rate – this is the sum per minute that is paid to the terminating operator. Notably, BT has not left the deemed to be regime for 0818 and 076 and uses the same settlement rate as other

[113] This may mean that service providers are paying more when calls are originated on the BT network, but this of course depends on the extent to which the terminating operator passes on the full cost of the interconnect settlement charge to the SP.

fixed operators. Mobile operators pass on these same settlement rates to TOs even though they have never formally signed up to the wider deemed to be regime.

Settlement rates for 0818 and 076 have changed only a few times in the past decade (last updated in April 2010 as noted above). In the case of 0818, settlement rates have decreased from a decade ago. On the other hand, settlement rates for 076 have increased.

Table 17: Fixed to 0818 settlement rate in the deemed to be regime

Euro cents per call	Peak	Off-Peak	Weekend
August 2006	5.78	3.88	3.77
August 2016	4.62	2.58	2.04

Source: Table 203 in Eir's STRPL Issue 143

Table 18: Fixed to 076 settlement rate in the deemed to be regime

Euro cents per minute	Peak	Off-Peak	Weekend
August 2006	3.49	0.95	1.21
August 2016	4.92	1.35	1.58

Source: Table 208 in Eir's STRPL Issue 143

Settlement and retention rates at various interconnect nodes

The deemed to be regime requires that all OOs set symmetric and reciprocal origination charges. Origination charges are set at Eir's regulated retention rate determined by ComReg on the basis of cost orientation. In turn, settlement rates, the sum that is passed to or from TOs are derived by netting off retention rates from gross revenue sums. As discussed above, in practice, a common settlement rate - Eir's settlement rate - is passed amongst all interconnecting operators in the deemed to be regime.

The settlement rate, for all NGN classes concerned and for both fixed and mobile operators, is therefore in effect, set by the OO via the amount it chooses to retain to cover its origination costs.

The settlement rates for each NGN class is published in Eir's STRPL. The published rates assume interconnect at tertiary interconnect nodes where all operators support interconnect links. For the NGNs concerned, traffic to Eir's NGNs (Eir owns the NGN and acts as the terminating operator for such traffic) should be handed over at tertiary nodes[114] and Eir's published settlement rate in STRPL would apply.

For NGN traffic to another operator (OAO)'s NGNs, if the traffic is passed to terminating OAO at its tertiary node then the STRPL settlement rate is passed. However, it is possible that some OAOs interconnect with Eir deeper in its network than the tertiary node, for instance at a primary or tandem node.[115] This may allow the NGN traffic originated by Eir to be passed on earlier than the tertiary node. Eir's regulated retentions for each NGN at primary, tandem and double tandem notes are published in Eir's Reference Interconnect Offer Price List. For traffic that is handed off at primary, tandem and double tandem nodes, the actual settlement rate that is passed on to the terminating operator (an OAO) would vary and is recalculated on a quarterly basis based on actual hand off achieved. Specifically, we note that BT interconnects with Eir deeper in its network than any other operator in Ireland and has negotiated specific retention rates with Eir for Near End Hand Over.

4.5.3 Transit fees

Above, we discuss that a NGN call may transit one or more networks before it arrives at the terminating network. Transit for calls to NGNs involve an Intelligent Network (IN) look up which essentially involves the originator issuing a query to identify the related terminator to send the call to.

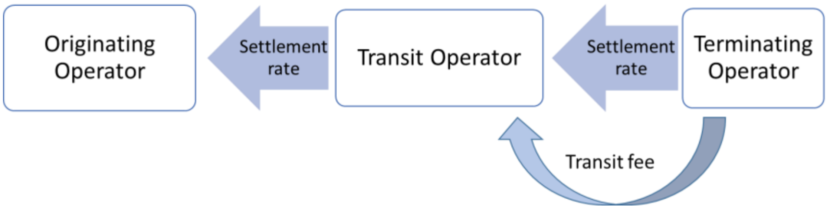
Transit fees for the NGN classes concerned are levied by the transit operator on the terminating operator. Note that while the TO is the purchaser of transit services (and charged for it), it has no control over the choice of transit provider or an efficient routing path for the call which is determined by the originator.

The payment flow of transit fees and settlement rates for calls to the NGN classes concerned is illustrated in Figure 31 (for calls to 1800 and mobile calls to 1850 and 1890) and Figure 32 (for all calls originating on a fixed network to 1850, 1890, 0818 and 076 ranges) below.

[114] These are typically the national interconnect nodes. We understand that all operators support interconnect links at eircom tertiary nodes at Adelaide Rd and Dame Court,

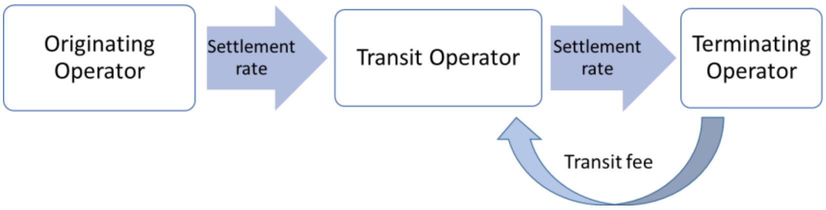
[115] Only some operators interconnect with Eir deeper within its network at primary or tandem nodes that would then avail of near end or far end handover. Primary or tandem nodes tend to be regional or local interconnect nodes.

Figure 31: Payment of settlement rate and transit fee for mobile calls to 1850 and 1890 ranges and all calls to the 1800 range



The payment flow of the transit and settlement rates for calls from fixed subscribers to 1850 and 1890 is illustrated in Figure 32 below.

Figure 32: Payment of settlement rate and transit fee for fixed calls to 1850,1890, 0818 and 076 ranges



Up until 2015, Eir has been designated with SMP in the transit market and its transit rate was regulated by ComReg on the basis of cost orientation. However, in ComReg market review in 2015, it has determined that Eir no longer has SMP in the transit market.[116] Eir's transit rates are published in Table 002 of STRPL, presented in the table below. There is no differentiation in transit rates between different call types.

Table 19: Eir's transit fees as per STRPL Issue 143

	Peak	Off-Peak	Weekend
Euro cents per minute	0.204	0.098	0.621
Euro cents per call	0.621	0.344	0.301

Source: Table 002 Eir's STRPL Issue 143

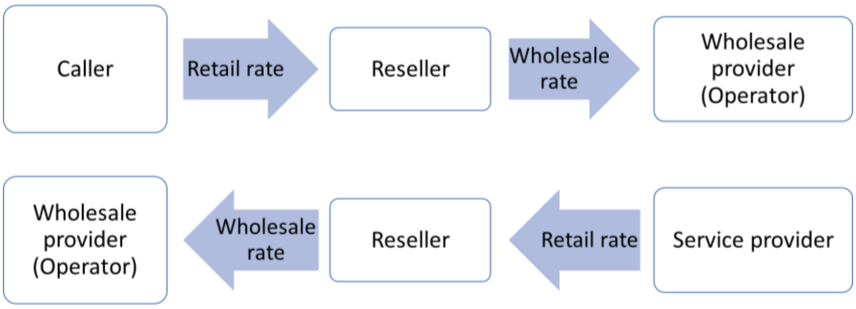
Eir and BT are the two main operators that transit traffic to the NGN classes concerned though Eir accounts for the vast majority of this transit traffic.

[116] ComReg, 24 July 2015, Market Review: Wholesale Fixed Voice Call Origination and Transit Market, Decision D05/15, Reference: ComReg 15/82.

4.5.4 Resellers and their wholesale provider

Resellers add an additional link in the supply chain in between the caller and the operator at the call origination end or between the operator and the service provider at the call termination end. Resellers purchase wholesale services from wholesale providers, paying their wholesalers a wholesale rate/price. In turn, callers or service providers served by a reseller would pay it a retail rate to make or receive a call respectively. This is illustrated in Figure 33.

Figure 33: Payment flows involving reseller



Note that not all resellers resell a "white label" product to their customers. Resellers may provide additional services such as number inventory management, intelligent call routing, etc, in relation to inbound NGN traffic; or may have the infrastructure to manage some of the traffic in part.

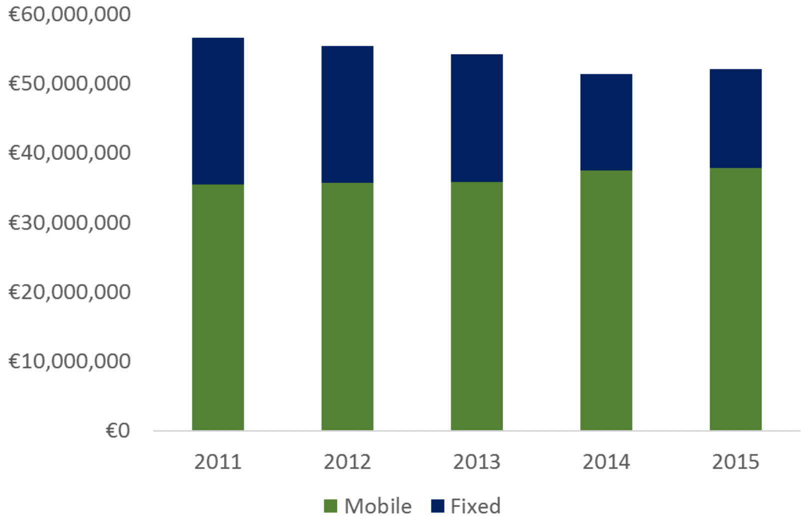
Resellers would typically negotiate individual contracts with their wholesale provider – there are cases where resellers are not charged by their wholesale providers for traffic originated to certain NGNs. More generally, resellers are charged a per minute, per call fee or up to a fixed capacity of minutes by their wholesale provider for calls made or received by its customers. Resellers would in turn recover its cost from the rates charged to its customers. Resellers account for a small proportion (less than 5%) of overall volumes of calls to NGNs. Likewise, resellers also account for a small proportion of revenue share.

4.6 Revenue allocation

Total NGN revenues have been declining

There has been an overall decline in total NGN revenues (which includes both retail and wholesale revenues) between 2011 and 2015 as shown in Figure 34 below, though total revenues still average above €50m per annum. The majority of revenues accrue to mobile operators and mobile operators have increased their overall share of net receipts (net receipt is the amount that an operator receives less the sums it pays out[117] [118]) by 10 percentage points over this period, accounting for 73% of aggregate net receipts in 2015. Aggregate net receipts over all operators is a proxy for total revenues.[119]

Figure 34: Aggregate net receipts 2011-2015



Source: DotEcon from information request responses

Calls to the 18XX range accounts for majority (approximately 85%) of aggregate net receipts as shown in Figure 35 below.[120] Note that mobile operators' high share of aggregate net receipts contrasts with accounting for less than majority of NGN volumes. In particular, in relation to 18XX traffic, mobile operators account for

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[117] The net receipt of an operator includes receipts from origination, termination and transit. In relation to origination, the receipts of an operator with both fixed and mobile subscribers include receipts from all its subscribers (fixed and mobile). Vodafone and Three are considered "mobile" operators though they do serve fixed subscribers as well.

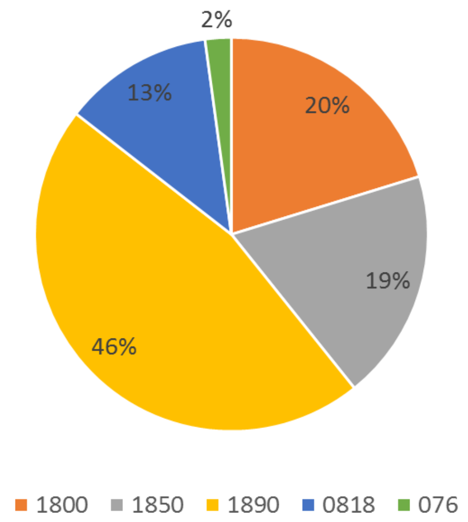
[118] The sum an operator pays out includes interconnect fees or other relevant fees incurred in the course of originating or terminating a call.

[119] As noted in Annex E, we are likely to be missing responses from one or more notable terminating operators, hence the proportion of net receipts accrued to fixed operators should be slightly higher in practice, however we would still expect mobile operators to earn the majority of aggregate net receipts and this share to be not too far from that presented in Figure 34 given terminating operators account for a small proportion of net receipts in general and this market segment is likely to be quite competitive.

[120] [**CONFIDENTIAL**: ✂]

just a third of minute volumes to these ranges on average between 2011-2015 but just over two-thirds of net receipts.

Figure 35: Average share of total revenues across NGNs 2011-2015



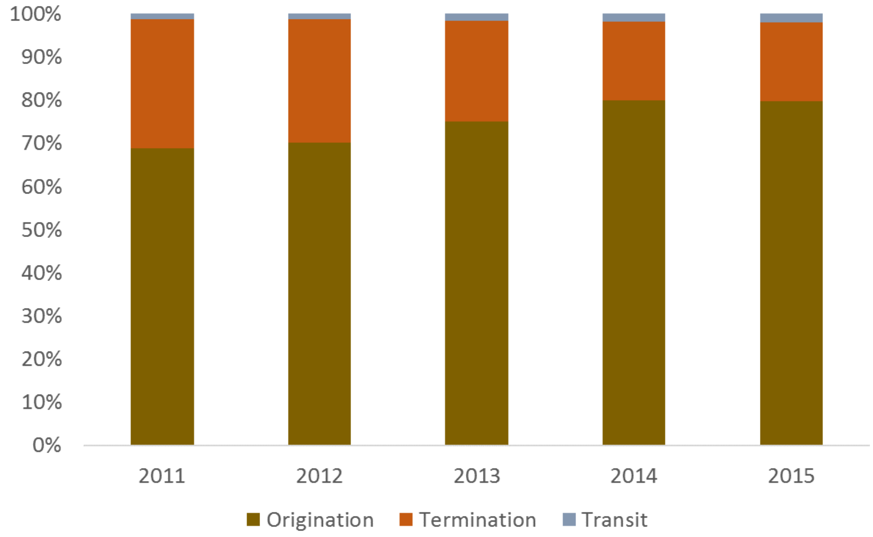
Source: DotEcon from information request responses, average annual net receipt by NGN range over the period of 2011-2015 presented.

Traffic leg share of net receipts

Given mobile's high share of net receipts and that their business models are in most part focused on call origination, it follows that call origination accounts for majority of aggregate net receipts (see Figure 36 below). Note that termination's share of net receipts has dropped from roughly a third in 2011 to a quarter in 2015[121] whilst transit accounts for a small proportion of overall net receipts.

[121] We note that termination share of net receipts is likely to be understated in this case due to missing or incomplete data responses as described in Annex D . For example, a small number of operators did not provide data on revenue they receive from Service Provider's for termination services and so net-receipts from termination may be slightly lower than actuals However, we would expect that figures presented is a good approximation of reality given that the terminating market segment is likely to be competitive.

Figure 36: Traffic leg share of aggregate net receipts across all NGNs



Source: DotEcon from information request responses

Revenues earned from customers

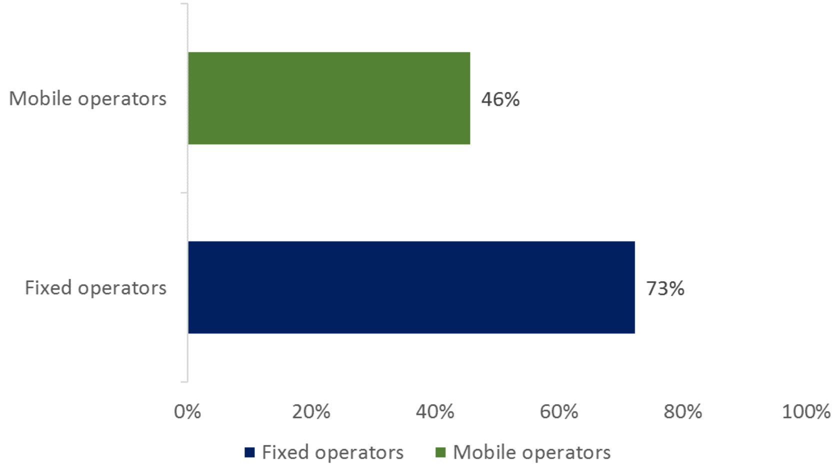
Figure 37 below shows the proportion of revenue fixed and mobile operators earned from customers in relation to origination and termination of calls to NGNs.[122] The majority of revenue earned by mobile operators (54%) comes from interconnect settlement sums it receives. In contrast, just under three-quarters of revenues earned by fixed operators are from their customers, with interconnect revenue accounting for just over a quarter of revenue earned from origination and termination.

Looking solely at call origination (Figure 38 below), there is only slight movement in the proportion of revenues mobile operators earn from their customers. The majority of mobile operators' customers (the callers) are positioned on the origination side of the market, hence excluding termination revenues has little impact on the proportion of revenues earned by mobile operators from their customers. However, on the origination side of the market, fixed operators earn 90% of revenues from customers – just under 20 percentage points higher than that when considering both origination and termination. This is driven by the fact that amongst the NGNs concerned, only the settlement sum for 1800 flows to

[122] Customers include retail customers such as callers or service providers as well as wholesale customers (resellers).

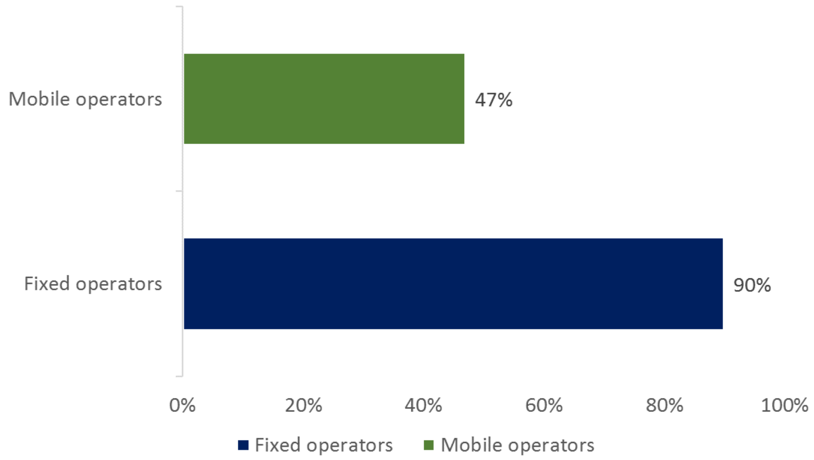
fixed originators and that for all other NGNs concerned, fixed originating operators earn revenues from their customers (the callers) only.

Figure 37: Proportion of revenue earned from customers (origination and termination)



Source: DotEcon from information request responses

Figure 38: Proportion of NGN revenue earned from customers (origination only)



Source: DotEcon from information request responses

As shown in Section 3.4, mobile operators charge higher retail prices for NGN calls than fixed operators. However, mobile operators still earn a majority of their revenues from the interconnect settlement sums they receive. This suggests that the mobile origination charges set by mobile operators is many times higher than that of fixed operators – as is the case presented in Section 4.5.2. Given the retention rate adopted by fixed operators in the deemed to be regime is that of Eir's regulated rate set to reflect costs, the high mobile origination charges set by mobile operators can only be justified if mobile origination costs are that many times higher than that of fixed as well.

Estimated origination margins

We can estimate gross margins earned from NGN call origination for fixed and mobile operators i.e. the contribution earned over incremental costs. For fixed operators, we estimate the incremental cost using average retention rates published in Eir's Reference Interconnect Offer Price List[123] as a proxy for origination costs.[124,125] For mobile operators, we estimate the incremental cost using regulated mobile termination rates as of July 2015 (2.6 cpm) as an upper bound for mobile origination costs; mobile origination does not require activities associated with determining the location of a mobile subscriber and dynamically routing a call accordingly, so it is reasonable to expect the costs of origination to be no more than those of termination. Total costs across all operators are then estimated using the origination volumes for fixed and mobile operators. Profits are calculated by netting off estimated costs from net receipts from origination[126] and finally, margins are calculated by taking the ratio of profits over total origination revenues earned.

Figure 39 below shows estimated origination margins (origination profits as a proportion of origination revenues) for fixed and mobile operators. In the case where the operators are making losses (negative margins) – for fixed operators in the case of 0818 and both fixed and mobile operators in the case of 076, this has been excluded from the figure below.

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[123]Average retention rates here refers the average of the tandem and double tandem retention rates which is what is the rate first applied at billing then later reconciled with actual handover achieved after. (see v2_86 available at http://www.openeir.ie/Reference_Offers/).

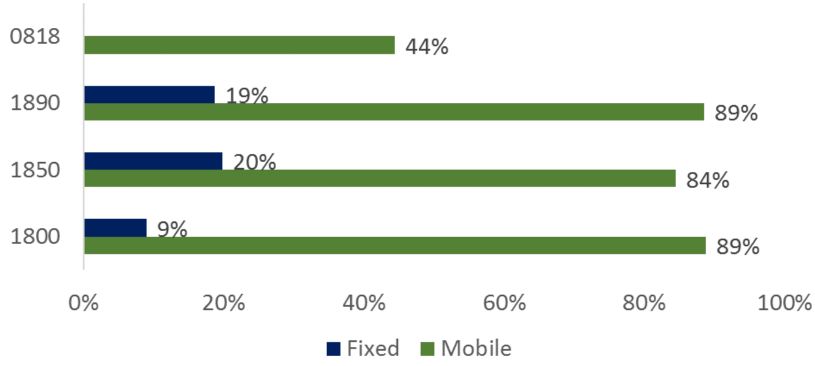
[124] We use a blended average rate per minute per call assuming 60% of traffic is peak, 20% off-peak and 20% weekend. For 1800, we use the blended average of settlement charges rather than average retention rate as this is the sum paid to originators in the interconnect settlement regime.

[125] We would expect that Eir being the largest fixed operator in Ireland will enjoy greater scale economies than other fixed operators and hence using Eir's average retention rates as a proxy of costs to other fixed operators is likely to understate their actual costs and overestimate their profit margins calculated.

[126] For this task, for operators with both fixed and mobile subscribers – Vodafone and Three Services, we have split their net receipts into that from the fixed versus mobile traffic originated and calculated their mobile-only net receipts for the purpose of then calculating profit margins from mobile origination.

In the case of the 18XX ranges, mobile margins are estimated at close to 90% while that of 0818 for mobile operators is half that (as mobile operators do not set their own origination charges for 0818 but rather adopt the same settlement charges and payment regime as the fixed operators). In comparison, fixed operators are making far lower margins – roughly between 10%-20%. Mobile origination cost would have to be seven to eight times that of the regulated mobile termination rate (as of July 2016 – 2.6cpm) in order for mobile margins to be in line with fixed margins.

Figure 39: Estimated origination margins as a percentage of origination revenue



Source: DotEcon from information request responses

4.7 Cost differences between geo and non-geo handling

From a technical point of view, we understand that calls to geographic numbers and calls to NGNs are both originated in very similar ways and both are switched services carried through the network. The TO then "translates" the dialled number in order to deliver the call. Therefore, the scope for genuine cost differences should be minimal and it is unlikely there is a cost-based justification for pricing NGN calls differently to calls to geographic numbers.

To help inform our view, we asked operators whether they considered there to be any significant, inherent cost differences involved in originating a geographic versus non-geographic traffic. The majority of the respondents did not express an opinion as they were either resellers and could not comment, or simply chose not to comment. Of the fifteen operators that responded, there were five who thought that there were cost differences versus ten who indicated that there were no cost differences. We discuss the two views in turn.

BT, Colt, Magnet, Vodafone and Viatel were of the view that there were cost differences that stem from differences in the cost of routing geographic versus non-geographic calls. Only Viatel thought that such costs would differ for 1800 and 076 with the other operators indicating that it would not vary across the different NGN classes.

Viatel, Colt and Magnet specifically refer to the requirement of maintaining an Intelligent Network (IN) infrastructure/database (and the look up there of an IN database) in order to route an NGN call that is over and above the requirement for a geographic call. However, Magnet notes that this reflects higher costs on the set-up side and thus should not reflect higher per minute costs. Viatel added that capital investments in these systems and operating cost associated with this additional routing requirement cannot be recovered in the case of failed calls implying that they may need to be recovered through higher rates for completed calls.

BT had similar sentiments to those expressed about, although it pointed specifically to differences in switching and forwarding functions required by NGNs as the main factor. In particular, it notes that the switching and forwarding infrastructure on its network is quite manual (screening tables are used) and not particularly efficient. This is due to a lack of a "proper" NGNP (Non-Geographic Number Portability) database that would allow BT to more efficiently identify a suitable egress path for NGN calls.[127] Overall, BT notes that NGNs routing is more dynamic and requires higher management input than geographic calls.

Vodafone was somewhat vague in its response, indicating that "*there are possible cost differences in the call routing*" but noted that it is not an observable cost difference as the cost of administrating NGNs and any network costs are not separated out from that of geographical number calls.

Colt noted the potential debt risk associated with NGN as an additional cost driver. Viatel also noted that rating, billing and invoicing requirements for NGNs are more complicated and involve more overheads as not all costs are recovered from the caller but rather from multiple parties.

In contrast to these statements, the ten operators who expressed a "no" view noted that there is minimal or no significant difference in

[127] However, we understand that ComReg has put forward a Fixed Number Portability solution due to go live in August 2017 that will address this issue. See ComReg document 17/07, 'Information Notice – Status update: Industry Project for replacement of Central Reference Database for Fixed Number Portability', 20 January 2017. Available at: https://www.comreg.ie/publication/status-update-industry-project-replacement-central-reference-database-fixed-number-portability/

network utilisation between geographic and NGN calls. Eir in particular, elaborated that the IN query required for routing a NGN call is also required for a geographic call due to the *"requirement to route ported geographical numbers to the recipient network".* Therefore, for calls originating on Eir's network, there are no network cost differences between calling a geographic number and calling a NGN if the NGN call terminates at the same network location as the geographic number. This applies whether the service provider (called party) is served by Eir, BT or some other network operator, i.e. for both on-net and off-net calls for Eir. A similar view was provided by In2tel who noted that both call types used the same switching resources and in theory could terminate across the same points of interconnect.

In general, we note that NGNs differ from geographic numbers because the termination point of a NGN is not identifiable from the number structure. NGNs such as Freephone, Shared Costs and 0818 numbers have to be translated into other numbers type in order to reach real destinations. It may be that there are differences in the switching and forwarding functions or capabilities of different networks that result in some operators experiencing cost differences when routing a NGN versus geographic call and some not. However, no specific details were provided by operators and overall, a greater number of operators supported that there are limited costs differences in network utilisation between geo and non-geo calls. Furthermore, this view received particular support from Eir which carries a lot of NGN traffic (and thus we may put more weight on its response) who stated that IN queries for routing an NGN call are also required for geographic calls. It would appear that maintaining these IN services is a 'normal cost' of operating in electronic communications markets.

On this basis, we consider that there are no unilateral and significant differences in the costs of processing geo and non-geo calls.

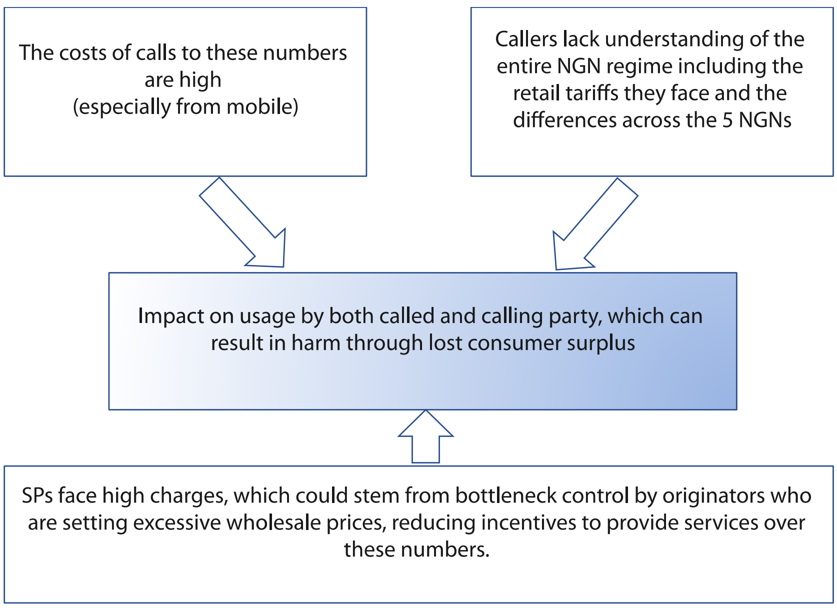
5 Issues identified

Based on the evidence collected and discussed above, there are a number of concerns with the current NGN system in Ireland. We have found:

- retail prices for calls to these numbers are high (particularly from mobile), especially when viewed in the context of the large number of phone tariffs which include 'free' calls within a bundle allocation;
- there is a lack of user-understanding to the extent that retail tariffs for calls to NGNs are not sufficiently clear to customers to calculate the charge for a call upfront;
- there is also a lack of transparency and customers do not appear to understand how calls to NGNs are charged in relation to their subscription package and they may not understand the different designations for each of the five types on NGN;
- SPs have concerns regarding the charges they face for providing services over these numbers and this is likely to stem from bottleneck control by OOs, with originators setting wholesale prices for which there is no competition; and
- the lack of understanding and high retail and wholesale prices appear to be affecting usage of these numbers which can result in harm through lost consumer surplus

This is summarised in Figure 40 below:

Figure 40: Issues identified in the Irish NGN market



We discuss each of these in turn below, before considering the ways in which ComReg could intervene (in Section 6)

5.1 Excessive retail pricing

Very few calls to NGNs are included in calling bundles

We have shown that, but for a small number of exceptions, very few operators or packages include calls to NGNs within the bundle. Calls to 1850 and 1890 are not offered "in-bundle" by any operators but rather are charged on a per-call or per-minute basis. Whilst there are a number of operators who offer a small volume of calls to the 0818 and/or 076 class in-bundle, this is not universal.

In the context of increasing prevalence of phone packages with inclusive bundled minutes for 'standard' calls - where the marginal cost of making calls within the bundle is effectively zero – the charges for NGNs appear particularly high.

There are particular problems with retail mobile pricing

For calls to NGNs falling out of bundle, operators specify per call or per minute charges. Prices charged by the mobile operators tend to be significantly higher than the charges set by the fixed operators. As shown in Section 3.4, a call to 1850 is typically €0.06-0.07 per call from a landline and around €0.30 per call from a mobile. Similarly, calls to 1890, 0818 and 076 are typically charged at around €0.04-0.06 per minute from landline (in addition to a 'set-up' charge of around €0.06 - 0.09) and calls from mobile costing as much as €0.35 per minute from mobiles.[128]

Particular problems with excessive retail prices for mobile-originated calls may be due to intense competition for other calls and services creating incentives to the use of NGN calls as a soft source of revenue to cross-subsidise those services. It is also conceivable that mobile operators might be able to extract an 'immediacy premium' associated with some services provided over NGN that callers cannot delay calling (e.g. helplines, conference service access numbers, fraud reporting etc). In this case, the originator is in effect extracting some of the value associated with the service being provided by the SP, rather than just charging for its role in providing the platform.

In Section 4.6 we estimated margins earned from call origination for fixed and mobile operators and find that in the case of the 18XX ranges, mobile margins are estimated at close to 90% while that of 0818 for mobile operators is half that (as mobile operators do not set their own origination charges for 0818 but rather adopt the same

[128] Although ComReg has effectively imposed a price ceiling on calls to these numbers, it is increasingly unclear what the relevant geographic call price is and the calculation of a "standard rate call" may be somewhat opaque as currently defined.

settlement charges and payment regime as the fixed operators). In comparison, fixed operators are making far lower margins – roughly between 10%-20%. Mobile origination cost would have to be seven to eight times that of the regulated mobile termination rate (as of July 2016 – 2.6cpm) in order for mobile margins to be in line with fixed margins, suggesting that prices are excessive.

Competition for customers is not sufficient to constrain retail prices

For most customers, NGN calls are likely to be too small a share of total spending to allow competition between originators to constrain retail prices for NGN calls to a significant degree. Consumers are much more likely to choose providers based on monthly access charges, the prices of geographical and mobile calls and the volume of minutes and data in bundles. Bundling with other services (e.g. mobile broadband and media content) is prevalent, which further reduces the importance of NGN pricing in consumer choices about providers. Recall that just 5% of customers considered the inclusion of NGN minutes in different call packages when choosing provider/package for their fixed line and 6% for mobile, suggesting that the price of NGN calls or their inclusion in bundles is not a competitive differentiator between operators.[129]

However, just because NGNs might make up a small share of total calls, this does not mean that harm does not occur if retail prices are excessive or unclear. If, at the point of making a call, customers experience (or perceive) any unnecessary barriers to calling these numbers, there may be a reduction in the number of customers calling NGNs. In turn, the value of NGNs to the service providers is reduced. This leads to a feedback effect: if few services are provided over these numbers then consumers are less likely to engage with the platform in terms of understanding what the various number classes mean and may call NGNs less often.

5.2 User understanding

There is confusion about the current NGN system

In addition to evidence of high retail charges, we have established that consumers (and some businesses) do not understand the tariffs and do not understand the differences between the various types of NGNs. Evidence collected from the consumer and organisation surveys provide a clear picture of the lack of awareness and general confusion about the structure of charges and the retail tariffs applying to NGNs.

[129] Question 12 and Question 15: Did you consider the inclusion of NGN minutes in different call packages when choosing your provider/package?
Base: All aware whether or not NGN calls included in their call package (311 for fixed & 642 for mobile)

In Section 3 we discussed evidence from the consumer survey that demonstrates:

- lack of customer awareness of pricing and features;
- customers do not have a clear understanding of differentiation between the number ranges, including the charging structure (free, per minute, per call) or who pays for the cost of the call (caller, called party, both). For example, there appears to be confusion between the 1850 and 1890 range with equivalent proportions considering these numbers to be charged on a per minute or per call basis;[130]
- inability to state true costs – just 14% of respondents to the consumer survey claimed any awareness of cost (either 'Yes I know all of them' or 'Yes, I know some of them');[131]
- perception of high costs - 49% of customers thought that calls to NGNs are expensive;[132]
- contagion in terms of consumers having general perceptions about NGNs and not being able to differentiate between the different types. For example, when asking consumers which (if any) particular NGN they avoid using, there was a fairly even distribution across all NGN types. The consistent point is lack of knowledge about NGN features (and in many cases, little variation / distinction between the different classes).

The fact that consumers often fail to understand the prices or even the charging structure for the various number ranges shows that the current system for NGNs is not working well. Calling may be supressed by uncertainty about pricing or where consumers perceive calls to these numbers to be more expensive than they actually are. Consumer uncertainty about price, both for the affected number prefix and by contagion for other number ranges can lead to:

- suppression of calls if anticipated prices are higher than actual;
- bill-shock if anticipated prices are lower than actual

[130] Question: For each statement I show you, please tell me which NGN or NGNs you think is/are associated with it? [Free to call from mobile; Free to call from landline; Calls are charged per call; Calls are charged per minute]
Base: All aware of NGNs (919)

[131] Question: Do you know how much it costs you per minute/per call when making calls to NGNs (in the case that they are not included in your call package, or calls are made out of bundle)?
Base: All adults aged 18+ (1,023)

[132] Question: For each statement please indicate whether you associate this more with calls to landlines, calls to NGNs or whether there is no difference?
Base: All aware of NGNs (919)

We summarise the impact of consumer understanding and perceptions on calling behaviour and usage of these numbers below.

Whilst measures to improve transparency may help partially address these issues, they are unlikely to be enough by themselves. In particular, in the presence of high retail charges, simply increasing transparency would not fix the retail problem if consumers do not care much about the price of these calls when selecting a network.

5.3 The service provider perspective

We have evidence to show that SPs are unhappy with the cost of providing services over NGNs (especially for Freephone numbers), but often have no choice but to continue to provide the service. In several cases, SPs are facing significant costs for the provision of services over these numbers. This is particularly the case for the 1800 range, where the called party is liable for the cost of the call.

For example, [**CONFIDENTIAL**: ✂] spend €30-60,000 per month on Freephone, with 90% of this on the [**CONFIDENTIAL**: ✂]. In the period between 16.30 and 17.00, spend is often €1,000 per day. To put in perspective, [**CONFIDENTIAL**: ✂] other 1800 helplines incur a cost of a "few hundred" euros per month. Also for perspective, [**CONFIDENTIAL**: ✂] outbound voice traffic is around €1,000 per month.

Some SPs (including [**CONFIDENTIAL**: ✂]) have moved away from 1800 numbers as a result of the high costs. However, other SPs feel that they have no choice but to continue using these numbers. This could be because customer expectation have already been set. For example, [**CONFIDENTIAL**: ✂] started using 1800 to provide a competitive advantage. Now competitors have followed suit, it would be difficult to move to a customer pays number. Alternatively, the type of caller may make it difficult to switch away from Freephone; for example, [**CONFIDENTIAL**: ✂] could not be switched to a geographical number. In both examples, the SP believes no choice but to offer Freephone.

[**CONFIDENTIAL**: ✂] claimed there is a discrepancy between the costs of such calls in the UK and Ireland. It stated that UK mobile call origination for Freephone was 3.5 ppm,[133] compared with 22/23 cents pm in Ireland, with mobile being particularly expensive and

[133] This is substantiated eg UK cost in Ofcom "simplifying NGNs" for purposes of Impact Assessment assumed mobile origination of 1ppm-3.7ppm (para 4.35).

evidence showing that the mobile operator Meteor was charging up to 33/34 cents per minute for these calls.[134]

For other numbers, SPs have no control over retail prices paid by their customers (this is the vertical externality). For example, [**CONFIDENTIAL**: ✂]. Although our desk research and the information request responses suggest that the 076 class is included in-bundle in some cases, this tends to be the exception rather than the norm and was done in error in some cases. Further, as mentioned above, evidence from the business survey shows that SPs are not clear which (if any) of these calls are included in-bundle.

Furthermore, SP interviews suggest that the inclusion of calls to these numbers in bundles is not sufficient on its own to address the question of costs to SPs.[135] [**CONFIDENTIAL**: ✂]

As demonstrated in Section 4.5, the costs faced by SPs reflect the wholesale prices set by OOs under the interconnection settlement regime being passed along the supply chain:

- Any TO serving an SP will face a blended average of origination charges set by OOs according to the mix of traffic received;
- The terminator (or hosting operator) will pass these charges through to the SP. The SP can choose the terminator/hosting provider, so there should be competition in providing such services to SPs. However, the blended origination cost would be faced by all terminators/hosting providers.

There is no direct relationship between an SP and OOs to allow any countervailing bargaining power to be exercised against originators by SPs. Moreover, although SPs can seek competitive offers for NGN termination (whether directly from a termination operator or indirectly via a hosting provider who procures termination), terminators are unlikely to be able to bargain down origination charges as they face many originators; each originator also currently sets uniform terms for all terminators, rather than carving out special bilateral arrangements.

Furthermore, this blending of origination charges creates poor incentives for originators. If an originator raises its charge, this has a limited effect in terms of raising cost for the SP; the originator may judge that such an increase would have a limited adverse effect on

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[134] SP interview with [**CONFIDENTIAL**: ✂].

[135] It would also not be sufficient to correct the retail side issues for all consumers as there are some customers that do not have bundles, or who still needs to be 'protected' even once they have exhausted their bundles.

SPs' incentives to provide services and the utility of the NGN platform as a whole. However, if each OO reasons in this way and increases its origination charge, this will increase costs one-for-one for SPs. In effect, there is a 'tragedy of the commons', where originators do not take account of their impact on utility of the NGN platform to SPs.

Originating operators could be seen as having bottleneck control over NGN origination, leading to single-operator relevant markets analogous to geographic termination

Given that there is a need for SPs (via the TOs) to ensure coverage of all callers regardless of the OO, different originators are complements rather than substitutes for a SP and there may be little option but to accede if an originator seeks to take advantage of its position.[136]

OOs taking advantage of their position are in effect leveraging bottleneck control over SPs reaching their customers. There are strong analogies with the market power that terminating operators have for geographic calls, which has led to the definition of single operator markets and ex-ante regulation of geographic termination rates.

Unlike some other countries where TOs influence the prices charged (with TOs typically setting wholesale charges, though subject to the risk of dispute by originators), in Ireland, problems of excessive pricing may have occurred at both retail and wholesale levels due to OOs setting wholesale and retail prices.

Asymmetry of origination revenues between fixed and mobile operators

High wholesale mobile rates have also led to a large asymmetry between the revenues received by mobile and fixed originators from NGN calls. If fixed rates are significantly lower than mobile rates, increasing call volumes from mobile results in an asymmetry of revenues earned from origination by fixed and mobile operators. This could have several implications, including the possibility of mobile originators who also terminate some NGN calls subsidising the rates they offer to SPs with a view to pushing other TOs out of the market, and/or forcing fixed operators to raise origination rates as well – which is arguably evidenced in Ireland by the departure of BT (and other fixed operators) from the "deemed to be regime".

It is apparent that the wholesale charges of mobile operators are high both in absolute terms and relative to those charged by fixed operators, with these differences unjustified by cost differences.

[136] It may be that the originating operators could argue that the SPs could use alternative methods of contact if they are so unhappy. However, we have evidence from businesses and consumers that phone remains the most important form of contact for most. Even those that offer other contact methods (such as web based etc.) still provide a phone service and some businesses place a value on using a NGN rather than a simple landline or mobile number. Few other options are considered a viable substitute. Even geographic numbers are not a viable substitute for those SPs that want flexibility of a national number or where needed for marketing purposes

5.4 Usage of NGNs

The lack of understanding and high (actual and perceived) retail prices does appear to be affecting calls to these numbers. The high prices faced by SPs may also be affecting incentives to use NGNs to provide services to consumers via this platform.

Where these market failures lead callers to reduce their calling this clearly reduces the usefulness of the platform to SPs and can be expected to reduce incentives to provide services. Not only is this detrimental to SPs, but also to consumers to the extent that services provided over NGNs are not available or lower quality than they otherwise might have been. Notice that this detriment occurs in related non-telecoms markets (i.e. in relation to the service provided over NGNs, such as product support, helplines etc.)

Consumers are avoiding calling these numbers

There is a solid body of evidence to suggest that customer behaviour has been adversely affected by high costs, perceptions and lack of understanding. For example:

- 49% of those 'aware of NGN' considered calls to these numbers to be expensive. Of those that have dialled an NGN but would have a preference for calling a landline or mobile instead 33% and 37% respectively reported it being "cheaper" as the reason for their preference. Furthermore, of those reporting to avoid calling specific NGNs altogether, the most common rationale provided was "I don't know how much it costs per minute / per call but I avoid it because I *think* it's expensive". As noted above, even though perception is that calls are expensive, many have not looked up costs. This is clear evidence of calling behaviour being adversely affected as a result of lack of awareness/transparency.

- 25% of customers who - after receiving a bill or checking call costs - stated that they had discovered the cost and were surprised at how expensive calls to these numbers were (slightly higher for mobile consumers relative to those typically calling from landline). For those callers who were surprised at the cost of calling an NGN, only 17% of landline and 11% of mobile callers stated that their behaviour had not changed as a result. The majority of callers either stopped calling NGNs completely, or reduced the frequency or duration of their contact to only calling NGNs when absolutely necessary.

- Of those avoiding calling specific NGNs altogether, the reasons provided for doing so include: "*I know how much it costs per minute/per call and I think it's expensive*" and "*A previous telephone bill had an unexpectedly large cost for one of these numbers and because of that I prefer to avoid dialing NGNs*" were reported. Interestingly, these options did not receive as many responses as that above where customers "*think it's expensive*", suggesting that there is transparency/awareness issues play a role. This data is consistent with some consumers not ringing NGNs as they perceive them to be expensive and then failing to acquire information about charges as a result of not ringing.

Overall, this would suggest that there is some loss of consumer surplus from callers who modify their behaviour as a result of believing or discovering that prices are "too high".[137]

Costs of NGNs are reported as a barrier to SPs providing services over these numbers

We have also considered how SPs perceive these numbers and whether the actual (or perceived) characteristics of such NGNs are presenting a barrier to providing services over these numbers and found:

- Many businesses in Ireland are not using these numbers. There is a perception that the costs for businesses associated with NGNs are high and/or that the costs to consumers calling these numbers is high, which may be limiting use. For example, amongst those organisations not currently using NGNs, 2 in 5 organisations who think NGNs are too expensive for customers would consider an NGN if call costs were reduced.
- More specifically, when businesses were asked why they would not use an NGN, there were different responses depending on the number class. For 1800, the most common response was that it would be too expensive for the organisation to offer. For 1850 and 1890, the main reason was that it would be too expensive for the organisation's customers, and may also be expensive for the organisation. For 0818 and 076, the main reason for not using numbers in this range was lack of awareness of the existence of the number range.
- Of those businesses using NGNs, some identified that the cost of calling for their customers influences the choice of NGN,[138] and in some cases switched NGN type to lower the

[137] As already noted: this must be placed in context of low level of awareness of cost, and low level of interest in checking costs. For instance, 96% of consumers have not looked up the cost of a call to an NGN in the last 3 months. This compares with 90% and 93% who have not looked up the cost of a call from a mobile and landline respectively. For those who have checked the cost, the most prevalent method was to check their bill. For those checking the cost of a call to an NGN, about the same number checked the SP website as checked the telecoms operator's website.

[138] Q.33: To what extent do you agree or disagree with the following statement: 'The cost to your customers of calling NGNs influences your organisation's choice of NGN'.
Base: All currently use NGN

cost for consumers.[139] However, as discussed previously only a limited number felt confident in being able to state the costs faced by the caller to their main NGN and again, perceptions and lack of clarity/transparency may be resulting in misguided decisions.

- Businesses using NGNs also hinted at switching away from using NGNs in the case that other call types (e.g. landline and mobile) were included in customers' "free" call bundles where NGNs were not.
- Other reasons given for not using NGNs to offer services included not understanding how non-geographic numbers work.

Actual volumes have fallen

We demonstrated in Section 3.5 that in general we have seen a fall in call traffic to NGNs over the past five years. For example, between 2011 and 2015, calls originated to these numbers have fallen from around 300 million calls per annum to around 255 calls per annum million, a reduction of 15%. Over the same period, the total of all other voice calls has fallen by only 3.3%.[140]

To the extent that there are specific benefits to consumers and/or service providers in using an NGN rather than alternative forms of contact, any suppression of call volumes or provision of services over NGNs will have a negative impact on welfare. i.e. there may be harm occurring from reduced calling to these numbers and/or reduced availability of services provided over NGNs. Furthermore, given the two-sided nature of the NGN market, if calling is inhibited (for whatever reason), this reduces the value of the platform to service providers.

[139] Q17A Why does your organisation no longer use this number?
Base: .those that previously used a particular NGN but no longer avails of this number.

[140] Based on figures from ComReg quarterly reporting and the percentage change between total 2011 and 2015 figures. This includes total minutes for: fixed to fixed; fixed to mobile; fixed to international; mobile to mobile; mobile to fixed; and mobile to international/roaming, and excludes fixed and mobile calls to "advanced minutes" which include calls to NGNs.

6 Recommended Remedies

In this section we identify actions that could be taken by ComReg to address problems with the current NGN system identified above. Our assessment of issues suggests that action is required at both a retail and a wholesale level, because there are problems along the whole NGN supply chain, from issues around user perception and understanding, to the pricing structure, and the wholesale relationship between the call originator and the call terminator.

Our discussion of regulatory actions begins by considering the retail market, and focuses on remedies designed to address problems with user understanding and retail pricing. Number types used for non-geographic calls need to work as a coherent set of tariffs that meet the SPs' needs to reach out to originators' subscribers and in some cases by reducing the cost to them of calling the SP through the shared cost arrangement. The approach to the retail market aims therefore to simplify the NGN regime, and to address the actual and perceived cost of retail calls to NGNs.

However, while retail remedies are necessary, they are not likely to be sufficient on their own, because our evidence is that costs to service providers are also too high, and this is a problem which needs to be addressed in the wholesale market.

6.1 Remedies for the retail market

6.1.1 What NGN service features are required?

Based on the evidence we have collected, this section considers what the ideal characteristics of an NGN system would be.

What are the requirements of service providers?

SPs are a very disparate group, and they use NGNs for different purposes. SPs include public sector organisations, helplines run by charities, product support lines, contact numbers to support marketing campaigns, telephone banking, utility company billing enquiries etc. The degree to which the SP would wish to bear some or all of the costs of the caller will vary across these very different groups, and across the different applications using NGNs. SPs may also vary in terms of whether they can afford to subsidise callers; for example, the organisation survey suggested that few small companies considered shared-cost numbers to be cost effective.[141]

The survey evidence gives some insight into the requirements of SPs from the NGN types examined. The main factors given by SPs for using NGNs were to:

- allow customers to access the organisation's services free of charge (61% of those currently using 1800);
- reduce the costs to customers of calling the SPs (62% of organisations whose main NGN is not 1800);
- provide memorable contact numbers (59% of organisations where main NGN is not 1800);
- offer a single contact number (59% of organisations whose main NGN is not 1800); and
- avoid showing where the organisation is based, or facilitate moving without changing contact numbers (11% and 41% of organisations whose main NGN is not 1800).

SPs continue to value the removal of a specific geographical link, whether this is so a single contact number can be provided for a set of geographical locations or whether the provision of a single number offers the SP flexibility to move or restructure its geographical location. This feature is offered by all NGN classes, and can be taken as a given when considering how best to structure NGNs.

Free to caller

In considering the cost of a call faced by its customers, there is a clear requirement amongst some SPs to allow customers to access services entirely free of charge, with the SP bearing all the costs. Examples of this include access to services such as Childline, and Dublin City Council's homeless helpline, where the SP wants to remove as many barriers to calling as possible. However, there are also commercial requirements for a service that is free to the caller, as some businesses offer free calls as a competitive differentiator, and the value of the call is worth the cost to the business. It is clear that an ideal structure for NGNs should therefore include a Freephone number.

Reasonable retail pricing

For those SPs that do not want to offer Freephone, but are still concerned about the cost of a call faced by their callers, there is concern about both the actual and perceived level of cost faced by the caller. For example, as previously discussed, the survey suggests that many callers believe that some SPs are currently making money

[141] 30% of those organisations that do not use NGNs to offer services reported NGNs being too expensive for the organisation to use, with 70% reporting that "the organisation is not big enough/have substantial turnover to warrant a non-geographic number."

from NGN calls. Therefore, even though the perception is not accurate, it is reasonable to expect some callers to be concerned about ringing NGNs in case calls were prolonged by the SP, and their concern may encompass the actual price they would pay or the 'damage' to their bundled minutes.

An NGN structure should, therefore, include a category of NGNs that are not free to the caller (to meet SP needs), but where there are measures to ensure that retail prices are not excessive, and which can be clearly shown not to be excessive (so as not to discourage calling).

Predictable pricing

As well as retail pricing being reasonable, it should also be predictable. The surveys showed high level of confusion amongst callers and service providers about what charges would likely be incurred. There is some concern amongst SPs and consumers about call duration, where call queuing can increase the cost exposure. The current fixed price NGN type (1850) is largely an attempt to counter variable call charges by providing a charge that is capped no matter the length of the call. However, it can be argued that the required characteristic is predictability, and that if measures were put in place to ensure reasonable retail pricing, the need for a fixed price category would diminish, if not dissipate entirely.

Assessment

Overall, we consider that there are benefits to limiting the number of distinct pricing structures so that it is easy to explain to consumers the differences between the NGN classes and what they can expect to pay when making calls to each of these 'types' of NGN.

We conclude that there is a justifiable need for just two main types of NGN:

- Freephone; and
- Calls charged per-minute (treated no differently than a geographic call).

However, the key to the success of a simplified NGN system is getting the pricing right. The next section discusses this in detail, but in terms of the requirement for NGN types, our view is that the need for additional types of NGN would only really be as a remedy for failure in the structure of the 'geo-linked' charge per minute rate rather than being based directly on SP needs.

6.1.2 How should NGNs be priced?

What is the current pricing structure?

Freephone should be free for the caller regardless of whether the call originates from a mobile or a fixed line, and measures introduced by ComReg in the past have already ensured that this is the case.

For the non-freephone NGNs, the current set of NGNs has four number prefixes. 1890, 0818, 076 are all charged on a price per minute basis (with the cost pegged to the cost of a "standard rate" to a national or local geographic equivalent), and 1850 is charged as a fixed cost where the caller pays the cost of a 5-minute standard rate geographic call.[142] In the case of 1850 and 1890, the SP pays any remaining costs of the call.

Therefore, in the current regime, there is some ambiguity given the variation in whether the 'geo-linked' numbers are pegged at national or local geographic equivalents. Furthermore, the current definition of a "standard rate call" does not explicitly address how bundling should be treated.

What is the ideal pricing structure?

An alternative option is to adopt a dynamic geo-linked pricing for each of the non-freephone number ranges, whereby the price of a call to the NGN must be no more than the cost of making a (national) geographic call at point of use.[143]

For a large majority of telephony call packages, most geographical calls are now made within a bundle of minutes for which the consumer pays a lump-sum charge and, therefore, have zero marginal price at the point of use (up to the number of minutes included in the bundle). If a geo-linked NGN type does not follow this same pricing structure (e.g. NGN calls are priced at the out-of-bundle geographic call price), then this will disincentivise SPs from using this NGN type more optimally and would likely restrict SPs use of NGNs given their typical requirements as identified by the survey.

Therefore, there is a strong argument of principle that an NGN type is needed where calls are no more expensive at the point of use than a geographic call. By this, we mean that there will be a 'dynamic' geo-linked rate such that if a geographic call is included 'in-bundle'

[142]According to the 2015 Numbering Conditions of Use and Application Process, the "standard rate" is defined as: "*…the rate charged to the customer during regular working hours (e.g. Mon-Friday; 8am to 6pm)*." However, it is also specified that: "*If individual package effects or other factors cause the calculation of standard rate to be unduly complex or impractical, the undertaking may estimate its value by reference to its average charges for calling geographic numbers. Such variations must however be notified to ComReg.*" Annex 9, p 73, ComReg, December 2015, 'Numbering Conditions of Use and Application Process', Document No: 15/136.

[143] Whilst potentially seen as controversial (given its connotations with a rate increase), setting the price ceiling for all 'geo-linked' NGNs (including 1890) to the rate of a national geographic call would allow the grouping of all of these numbers in a single "basket". We consider that this should not in-fact lead to any price rises, given that there does not appear to be such a clear distinction between the way in which local and national calls are charged these days. For example, according to the eir price list for customer dialled calls, local and national calls are charged the same rate during the daytime and at the weekend. Furthermore, given that retail rates for calls to these numbers from mobiles seem to be a more significant issue and the distinction between local and national geographic numbers is not relevant on mobile, shifting the reference geographic call to a 'national' call in all cases would seem logical.

so should the NGN call. However, recognising that not all callers will have a tariff package with 'bundled minutes' and that some customers may have exhausted their bundled minutes allowance, the NGN call must be charged in such cases at no more than the rate of a geographic call applicable to that customer's tariff. Whilst the survey findings suggest that, by themselves, prices of calls to NGNs are not a significant factor in consumers' choice of provider,[144] defining the price of NGN calls in this way will mean they should be controlled by competitive constraints on the pricing of geographical calls.

It is true that implementing this pricing structure may lead to a reduction in retail revenues of originating operators for NGNs (especially where calls are now included in bundle such that there are reduced margins on NGN calls). One may argue that reducing margins earned on NGNs might lead operators to increase prices for other services. However, we believe that there is insufficient evidence to suggest that particular weight should be given to this argument. First, our revenue allocation model shows that revenues for fixed and mobile operators generated from customers calling NGNs amounted to around €30 million in 2015. In contrast, total retail revenues in the telephony market were around €2.9 billion in the 12 months to December 2015 (and around €2.9 billion in 12 months to December 2016).[145] Given how small a proportion of total revenues NGN revenues account for, the price increase across all other services would have to be very small for it to be revenue neutral (circa 1% with a full waterbed effect). Second, reduced margins on NGNs might also lead to reduced customer retention and acquisition expenditures[146], rather than lower price, and so not create a direct gain to consumers.

Based on this assessment, we feel that there would be significant benefits to moving all geo-linked numbers (1850, 1890, 076, 0818) to a single pricing structure. Therefore, our recommendation is for an NGN system whereby there are two NGN 'types': Freephone and 'geo-linked' with prices of calls to the geo-linked charged on a per-

[144] Only 5% of landline and 6% of mobile customers said they had considered the inclusion of calls to NGNs when considering their telecoms provider, suggesting that customers may not really care about these numbers and provides some evidence that there is no motivation for operators to compete on the cost of calls to these number ranges.

[145] Based on fixed line retail revenue plus mobile retail revenues as displayed in Fig 1.1.1 of ComReg document 17/15(R), 'Irish Communications Market – Quarterly Key Data Report. Data as of Q4 2016', 16 March 2017. Available at: https://www.comreg.ie/publication/irish-communications-market-quarterly-key-data-report-data-q4-2016/

[146] Including additional marketing and advertising expenditures.

minute basis costing the customer no more than the cost of a national geographic call at the point of use.

6.1.3 Should the NGN structure be simplified?

Is there a need to rationalise the number of NGN prefixes?

In the present NGN regime, which is based primarily on the recognisability of the number prefix, we have shown that there is confusion amongst callers regarding both the charging structure and the cost of calling each of the number ranges. Furthermore, given the evidence of contagion across the entire set of NGN classes there may be a benefit of rationalising the number of NGN prefixes. We have concluded that there is a need for a Freephone class, and for a geo-linked class, and now consider whether any numbering changes might be desirable to enable this.

ComReg has several regulatory options in the retail market with regard to increasing transparency and addressing caller and SP confusion. We discuss these in terms of steps that ComReg could take, and expect that the Consultation will invite comment on how far ComReg should go in securing improvements to the NGN regime. The actions begin with simplifying pricing, and then consider how to communicate this to the retail market, and then whether more explicit structural changes are required. ComReg's potential steps are:

1. Impose the new 'geo-linked' requirements on 1890, 0818, 076 and 1850;
2. Introduce a common branding for each NGN 'type' supported by a ComReg campaign;
3. Rationalise NGN classes which fulfil similar functions;
4. Start with a clean slate and introduce new Freephone and geo-linked number prefixes.

We discuss each of these regulatory options in turn.

Step 1: impose geo linked pricing on all 1890, 0818, 076 and 1850 numbers

We have already outlined the justification for changing the pricing structure for non-freephone NGNs and proposed that the adoption of dynamic geo-linked pricing establishes that the price of a call to the NGN must be no more than the cost of making a (national) geographic call at point of use. With regards to capping the cost of calls to the 'geo-linked' NGN, ComReg would essentially be setting a new price ceiling.

Re-defining non-Freephone NGNs in this way would address the retail pricing issue discussed above. It would be a way of directly addressing SP needs, and would reduce the costs faced by callers. It would ensure that calls to the 'geo-linked' NGN would be in-bundle.[147] Furthermore, there would be no costs to SPs in terms of having to undertake any re-branding exercise or change the numbers they are using to provide services over, as all the changes are associated with the retail pricing only.

However, with no supporting action around the changes, consumer perception is unlikely to change and there may even be greater caller confusion if there is misidentification of the newly categorised prefixes so we propose further remedies for the retail market. Furthermore, we must be aware that addressing only the retail side without any corresponding controls on the wholesale side could be an issue for SPs if, for example, OOs seek to recover any lost retail revenues by increasing wholesale origination rates. Therefore, we discuss the possible need for intervention in the wholesale market in Section 6.2.

Step 2: introduce common branding

In parallel with changing the pricing structure in Step 1, Step 2 would directly address consumer confusion by introducing clearer rules and restrictions on each class of NGN to ensure greater transparency and understanding for consumers, service providers and telecoms operators.

One way of doing this could be a "colour coding" or naming approach where each NGN 'type' has a recognisable feature when displayed on promotional material. An example of this approach is that taken by the French regulator. Value Added Service (VAS) numbers (which in France include Freephone, shared cost and premium rate non-geographic numbers) are categorised into three types of numbers to distinguish between numbers where both components are free, where the consumer pays the price of the call but the service is free and where the consumer must pay both for the price of the call and for the service.[148] These have assigned segments in the numbering plan to make a number easily

[147] There are examples of the implementation of this approach in other jurisdictions. For instance, ARCEP introduced measures in France which ensure calls which are billed as a call to a geo fixed number will be included in unlimited calling plans, and that calls to Freephone will not be deducted from the caller's fixed or mobile flat rate plans. See ARCEP, 'Price reforms for value-added telephone services: providing consumers with greater clarity', 30 September 2015, available at: http://www.arcep.fr/index.php?id=8571&no_cache=1&L=1&tx_gsactualite_pi1%5Buid%5D=1776&tx_gsactualite_pi1%5Bannee%5D=0&tx_gsactualite_pi1%5Btheme%5D=0&tx_gsactualite_pi1%5Bmotscle%5D=&tx_gsactualite_pi1%5BbackID%5D=2122&cHash=94d4f7dcb2bb8e1261f5a1205041e53a

[148] ARCEP, 'Price reforms for value-added telephone services: providing consumers with greater clarity', 30 September 2015, available at: http://www.arcep.fr/index.php?id=8571&no_cache=1&L=1&tx_gsactualite_pi1%5Buid%5D=1776&tx_gsactualite_pi1%5Bannee%5D=0&tx_gsactualite_pi1%5Btheme%5D=0&tx_gsactualite_pi1%5Bmotscle%5D=&tx_gsactualite_pi1%5BbackID%5D=2122&cHash=94d4f7dcb2bb8e1261f5a1205041e53a

identifiable and must also be colour coded in all promotional material with a different colour for each of the three types of number: green for Freephone numbers, grey for "normal" rate numbers, and purple for premium rate numbers.

We understand that in Ireland, such conditions on SPs would likely only be imposed as a voluntary measure. Whilst there will be an incentive for the SPs to improve awareness of the features and costs of these numbers to limit any perceived barriers to calling, there will obviously be a cost associated with this in terms of re-branding and updating of all promotional material. For smaller SPs at least, there may be an incentive to free-ride off the promotions of other larger SPs or a ComReg campaign rather than changing existing signage and marketing material.

Step 3: rationalise NGN types

A further step towards improving transparency and addressing structural problems in the retail market, would be to rationalise the number of NGN prefixes, by moving towards a single NGN prefix per NGN 'type'. With this option, we would recommend that the 1800 number could remain the prefix for Freephone, but there should be convergence on a single NGN prefix for the 'geo-linked' number, removing other NGN types where similar functions are offered by more than one type.

The proposed revisions to the pricing structure should make the retention of a fixed rate number like 1850 unnecessary. As discussed above, the current fixed price NGN type (1850) is largely an attempt to counter variable call charges by providing a charge that is capped no matter the length of the call. However, it can be argued that the required characteristic is predictability, and that if measures were put in place to ensure reasonable retail pricing, the need for such a fixed price category would diminish. Therefore, in the absence of a justified need to maintain the range (based on feedback from consultation) we consider that the successful introduction of geo-linked pricing should enable 1850 to be withdrawn. This would likely be done over a phased transition period to minimise the costs associated with closing down an existing number range.

In terms of the other non-freephone NGNs, at present, 1890, 076 and 0818 fulfil similar functions, and so ComReg should consider transitioning to a position where it retains one of these prefixes, and withdraws the other two. However, given that decisions in the NGN market may have significant effects outside traditional telecoms markets, in that many different services across different sectors of the economy may be provided over NGNs, including some of social importance, we must be conscious not to remove an NGN range if the requirements of its users cannot be met by the retained range and with limited costs. Therefore, existing users and the specifics of the transition process are important to the overall decision.

In general, each of the existing classes has particular characteristics that some users value and there is no clear-cut option for which NGN prefix should be retained. There are some disadvantages associated with each of the 1890, 076 and 0818 options and ComReg should consult on which of these numbers should be phased out and which should ultimately remain as the non-freephone NGN. However, we discuss the relative merits of each of these prefixes below.

1890 has the advantage of being visually similar to the Freephone number (1800) and distinct from geographic numbers. However, whilst awareness of this range is high amongst consumers, 1890 has a poor reputation with 52% of those aware of it believing it is expensive, 41% believing that organisations make money out of this number and 31% of consumers actively avoiding using 1890 numbers. Therefore, whilst the adjustments to the retail pricing for NGNs and the associated branding and educational campaigns recommended above may go some way to addressing these issues, it is possible that the damage has already be done and the 1890 range is 'toxic'. Furthermore, the 1890 range is not internationally accessible and this is a feature that may be important to some callers and service providers.

In contrast, whilst our survey evidence suggests that consumers are currently least aware of the 0818 and 076 range, it could also be argued that 076 and 0818 have suffered a lower level of reputational damage than the 1890 range, and so could offer a 'fresh start'. In addition, 0818 and 076 both offer international access, and at present all operators (including mobile operators) are part of the 'deemed-to-be' regime for these numbers meaning that, notwithstanding our proposed wholesale remedies, there would be a pre-existing constraint on the level of wholesale charges (at least in the short-term).[149] These features are not shared with the 18XX numbers, and so a case could be made for retaining one of ether 0818 or 076 as the geo-linked class in order to keep these characteristics. Furthermore, we acknowledge that according to consumers, the 0818 range is considered to be the most memorable among those aware of it with 42% of those who ever dialled 0818 agreeing that it is more memorable than geographic alternatives.

There are however some disadvantages associated with both 0818 and 076 that should be considered. To some extent, the use of 076

[149] We acknowledge that the deemed-to-be regime is only a voluntary agreement between operators and history has shown that this can be fragile (as demonstrated by the departure of BT and others from the deemed-to-be regime for 18XX numbers). Therefore, it would be unreasonable to assume that if 0818 or 076 were the only non-freephone NGN that all operators would necessarily remain part of the regime for any significant time if these changes were implemented. However, during the transition period, and coupled with the recommended wholesale remedies we consider that there will be narrower scope for excessive wholesale charging than might be the case with 1890.

has evolved from its original intended use as a dedicated VoIP range, because such a range is not really necessary, particularly as most VoIP is now provided using geo numbers.[150] We have seen evidence of corporates choosing to use 076 for internal networks, where the aim is to maximise the flexibility of network design by removing a geographic link. We have also seen evidence of government use of 076, which seems to have arisen out of a frustration with the inadequacies of the other available NGN types. In the cases we have seen, the choice of 076 has mainly been in response to failure in other NGN types, rather than as an indication of a need for a dedicated VoIP range. This suggests that, if failures were addressed, these reasons would not preclude ComReg from phasing out 076 in favour of retaining one of the other NGN prefixes. However, the wide range of existing uses for this number also mean that the costs of shifting away from this range may be greater and this could be an argument in favour of retaining 076.

For all its benefits, a potential drawback to retaining 0818 is that it falls in the middle of the mobile number range in Ireland, because the 08 range, except for 0818, is dedicated to mobile. This means that callers may expect to be charged as if they were calling a mobile. This may cause particular confusion for callers ringing from outside Ireland, and also creates some difficulties with international routing where calls may be misclassified as being made to an Irish mobile. Whilst maintaining a prefix that has scope for such confusion would appear to be counter-productive given that we are seeking to impose the simplest and most transparent NGN regime possible, we consider that the scope for confusion will be limited. The 0818 range has been in operation as an NGN for many years and consumers are likely to be familiar with the difference, not least because a four number prefix distinguishes it to some degree from mobile. Further, we do acknowledge that 0818 has been in use for many years (longer than 076) and we can assume that major operators such as eir, BT have to some extent notified international carriers that 0818 numbers are not mobile numbers and are open on their networks.

We provide a summary of the potential advantages and disadvantages of maintaining each of the 1890, 0818 or 076 numbers as the preferred prefix for the newly defined 'geo-linked' number in the table below.

[150] See paragraph 3.37 of ComReg Document 14/26 "Managed VOB FSPs are typically allocated geographic number ranges or 076 number ranges which are in turn provided to their retail customers."

Table 20: Assessment of the options for maintaining one of the existing NGN prefixes for the 'geo-linked' NGN type

	1890	0818	076
Advantages	Similar in appearance to (but clearly distinguishable from) the 1800 range Distinguishable from geographic numbers Most used number[151] (would affect more people if withdrawn)	Internationally accessible Not as well known at present so has less 'bad press' around it Voluntarily in the 'deemed to be' regime Memorable contact number	Internationally accessible Not as well known at present so has less 'bad press' around it Voluntarily in the 'deemed to be' regime Could still accommodate all existing users including VoIP, corporate numbers and government services as well as other SPs using the range
Disadvantages	Not internationally accessible Number range already has a 'bad press' (literally from press and customer survey) and may still suffer from customer avoidance Justified concerns and also linked with the wholesale problems - Not in the 'deemed to be regime' The pricing simplification and associated marketing campaign introduced in parallel may limit this downside. However, there must be a much greater emphasis on the campaign being successful	Sits in the middle of the mobile numbering range in Ireland, which may add some confusion around the 'type' of number being dialled This also creates some issues with international routing with some operators not transcoding correctly and categorising as a call to an Irish mobile phone with associated rates However, this is sufficiently long ago that, supported with the marketing campaign recommended, it should not be an issue	Before being designated as a VoIP range, this was a geographic number However, this is sufficiently long ago that, supported with the marketing campaign recommended, it should not be an issue Particularly low awareness of this range Less memorable number

Whilst we have laid out a number of advantages and disadvantages for each of these ranges, we consider that there is sufficient evidence to suggest that the 1890 range may have become 'toxic' and there

[151] Based on the findings from the organisation and consumer survey's and the operator information request.

are good reasons for phasing this number out. 0818 and 076 have the advantage of having a relatively undamaged reputation and are also internationally accessible, which fulfils additional requirements for some consumers and SPs as well as allowing ComReg to meet its requirements for universal access. 0818 also has that advantage that consumers consider it to be a more memorable number. Therefore, the result of rationalising the number of different 'geo-linked' NGNs should be a consolidation of the number ranges to 0818..

However, removing several number ranges and moving to a single NGN would not be costless. We recognise that SPs are likely to be reluctant to consider changing to a different class because it means changing phone number, which can be inconvenient and expensive. Removing certain number ranges – especially if done rapidly - may impose an unreasonable and costly burden on service providers. Previous work carried out for ComReg[152] attempted to quantify the costs associated with changing NGN prefixes rapidly, and suggested that costs would significantly outweigh benefits. However, it is noted that the objectives of the previous work are not directly comparable with the current analysis – for example, the costs were based on changing all prefixes at the same time, and the benefits were limited to considering international access to NGNs. It is therefore expected that the costs associated with changing one or two numbers would be less significant than those associated with changing all numbers, and a broader consideration of benefits would indicate greater value than that limited to international access. As part of this strategic review of NGNs, ComReg commissioned additional research with B&A to explore the extent to which a number change may impose costs on SPs. See Document 17/70d.

The B&A research shows that the cost of making changes to materials (such as letterheads and promotional material etc) within the next 6 months would be less than €5,000 for 57% of organisations and less than €10,000 for 89% of organisations. Furthermore, we would expect the costs of transition to be minimised in the context of our recommendations on how to manage the transition, detailed below.

In any case, any costs incurred in the short to medium term must be assessed against the benefits associated with the simplification of the NGN regime to meet the needs of SPs and callers of these numbers.

[152] ComReg Document 11/68a: Europe Economics, "International Access to Irish Non Geographic Numbers", 13 September 2011.

Step 4: new number prefixes for all NGNs

Rather than retaining any of the existing NGN prefixes, ComReg could consider a further step of withdrawing all of the existing NGN prefixes and introducing new prefixes for freephone and/or for geo-linked NGNs. This option is effectively a clean slate, and would be introduced if it was felt that all of the current prefixes were contaminated, and no longer trusted by callers and service providers. Creating two new number prefixes would allow ComReg to remove all of the disadvantages identified with current NGN prefixes. This would allow ComReg to identify the required characteristics for both NGN types, without the need to accommodate those features that have arisen as a consequence of historical accident. For example, ComReg could ensure that the new prefixes were internationally accessible, and thematically consistent, without the risk of being mistaken for a mobile number or for a geographic area code.

While the benefits are potentially greater in terms of making the regime much simpler for consumers and would avoid the risk of any residual misidentification or negative perceptions about the existing NGN ranges, the costs of this immediate transition would necessarily be greater than those associated with retaining two of the existing number prefixes, as all SPs using any of the existing numbers would be required to shift over to the new number. There may also be additional costs associated with testing and implementing an entirely new number and further promotional/awareness campaigns to raise awareness of the new number. Furthermore, national operators and international carries would have to be notified and update billing and OS systems adding to the cost. It may also be difficult to introduce a new NGN range that does not already 'look like' an existing type of number given that there is no 'clean' 0XX range available. Given the potentially significant additional costs, and that we believe that the 0818 or the 076 range would meet all the requirements of consumers and SPs it might be difficult for ComReg to justify introducing an entirely new prefix.

6.1.4 Recommended approach in the retail market

Having considered the requirements of callers and of service providers, and having assessed the regulatory options for addressing these requirements, we propose a recommended approach.

Our view is that user needs would be met by having two categories of NGN – Freephone and a geo-linked category – and by addressing pricing issues within each category. The proposed recommendation is that Freephone remains free to callers from fixed and mobile, and that all other NGNs move to geo-linked pricing, where the price is linked dynamically to the price of a national geographic call at the point of use. This would mean also that calls to NGNs would be in-bundle for those callers with a bundle call plan.

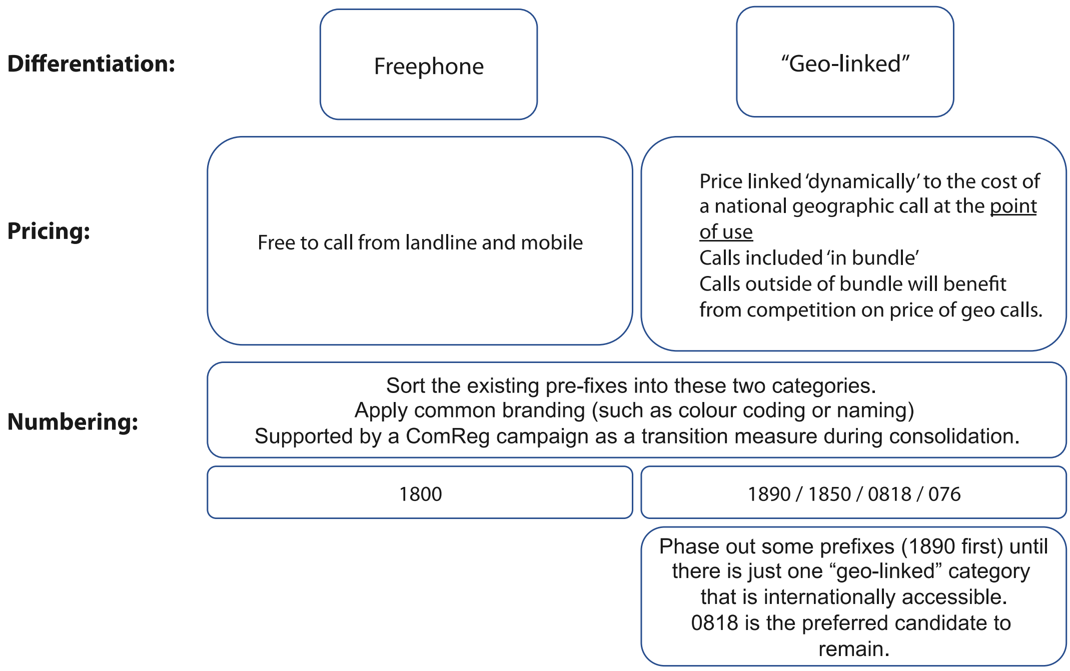
In parallel with this, we recommend that ComReg takes the initiative of introducing common branding for NGNs. Reducing the 'types' of NGN to two categories would considerably simplify the existing structure, and this could be reinforced by a campaign, which would clearly describe the characteristics of each category.

Turning to whether the existing categories of NGN should be rationalised, our assessment is that a 'clean slate' approach is difficult to justify. While there is some appeal to starting again and removing the contagion of the current system, there are high costs associated with this approach and we do not believe the benefits would justify these costs, particularly as most of the benefits could be achieved in other ways. We therefore reject the 'clean slate' approach.

However, we believe there is merit in reducing the number of NGNs that fulfil similar functions. If the recommended approach to geo-linked pricing is introduced, there should no longer be a need for a fixed price call, and so 1850 could be withdrawn. At present, 1890, 0818 and 076 have similar characteristics, and it can be argued that there needs to be only one prefix in the geo-linked category. On balance, our recommendation is that this should not be 1890, because it has become 'toxic' over the years. There are advantages and disadvantages associated with the use of 0818 and 076, however we consider that on balance 0818 has relatively more advantages and suggest this should be the favoured option. We expect that consultation responses will help inform this decision.

The set of recommendations is summarised in the figure below.

Figure 41: Recommended retail remedies



Implementation issues

The key implementation issues are to do with the selection of ranges to remove, and with how ComReg would manage the transition. There is also a question of how exactly ComReg would define the price cap.

We have suggested that ComReg should first define a "geo-linked" category that includes each of 1890, 1850, 0818 and 076 together with common branding. The adoption of dynamic geo-linked pricing establishes that the price of a call to the NGN must be no more than the cost of making a (national) geographic call at point of use.

Pricing of the 'Geo-linked' NGN

With regards to how ComReg would actually cap the cost of calls to the 'geo-linked' NGN, ComReg would essentially be setting a new price ceiling. The current price ceilings on calls to the existing NGNs are specified in the 2015 Numbering Conditions of Use and Application Process, and ComReg has already indicated that it would consider revising the Numbering Conditions to introduce a price ceiling following this investigation and subsequent consultation.[153] ComReg therefore already has the mechanism to introduce this measure.

In establishing the new 'geo-linked' pricing principle, the options available to ComReg would likely fall into two main categories:

- re-defining the 'standard rate' to something more akin to the average incremental price of a geographic call – this has the advantage of being easier to verify ex-post from aggregate revenue data, though care would be needed that certain calls in certain situations were not still excessively priced even if average prices were reasonable; or
- in the form of a non-discrimination obligation enforcing retail prices to be the same for geo and non-geo calls at the point the call is made – this approach is very easy to frame in a condition and should be largely un-gameable, but might be more difficult to police, as where geo rates differ between tariffs and time of call there may be a large number of rates to which the regulator would have to refer when checking compliance.

[153] See ComReg document 15/137, para 308.

ComReg would also need to allow a set period before the changes come into force. This time will allow SPs and operators to make necessary changes to be compliant without excessive costs. For example, the effective date for the current numbering conditions was 10 weeks after publication.

Should ComReg accept our recommendation to rationalise NGNs, it could transition to a position where there is only be a single prefix for geo-linked calls, alongside 1800 for Freephone. This would involve the withdrawal of 1850, and all but one of the other remaining geo-linked types. As a first step, ComReg could decide not to issue any new numbers in the ranges to be withdrawn, and consider whether it can enforce prevention of operators from issuing new numbers from number blocks already allocated to them. ComReg should also consider measures to encourage the take-up of (and migration to) the preferred prefix.

Managing the transition

One option for transitioning to a single geo-linked number prefix would be to impose the new geo-linked requirement on the chosen prefix only and leave the others unchanged.

Re-defining only the preferred prefix as requiring a 'dynamically geo-linked' price would address the retail pricing issue as outlined above, and might be enough to address SP needs and to reduce the costs faced by callers. By only 'fixing' one of the four non-Freephone numbers, there might be an incentive for SPs to shift onto this range and away from others, thus aiding a natural transition to a single 'geo-linked' NGN alongside the Freephone number. However, there will be costs associated with shifting to a new number range quickly and there is also a risk that operators will seek to take advantage of the higher prices on the other ranges during the transition. Therefore, there could actually be an increase in the harm to callers and SPs in the short to medium term during the transition as operators seek to extract inflated margins whilst they can. We consider this approach undesirable as a result.

For this reason, we consider that applying the 'geo-linked' requirements on 1890, 0818, 076 and 1850 from the outset and then managing a phased transition to a single number over time would be preferable.

In terms of the timetable for rationalisation, ComReg will need to strike a balance between the relative merits of a fast versus a slow transition. We recognise that there will be a cost for SPs associated with any transition and the removal of a number range, and a gradual withdrawal may help to reduce the costs to SPs. However, if the change is overly prolonged then the benefits will be reduced. We consider that the exact timescale for transition should be subject to consultation but would suggest a period in the range of two to three years for a full transition. B&A research in Document 17/70d considered the replacement cycle for materials displaying NGNs promotional materials and when such costs were last incurred.

These findings support our view that an implementation period of 2-3 years is appropriate and proportionate in order to provide sufficient time for SPs to migrate to a new number range and minimise associated costs.

In terms of the practicalities of actually phasing out certain numbers, ComReg has previously outlined processes for rationalising number ranges. For example, in the "Number change process" outlined by ComReg in Annex 5 of ComReg document 11/17. Similar principles should be adhered to when removing one or more of the existing NGN ranges. For example with regard to a period of parallel working of both old and new numbers and introducing routing to recorded announcements of calls made to the old numbers over a period of time until they are no longer guaranteed and the old numbers are then 'quarantined' for a set period to ensure they are not re-introduced..

Common branding

As soon as the 'geo-linked' requirements are imposed, our recommended approach is that SPs and operators should adopt shared branding of NGN types in order to simplify and clarify the presentation of the number to the caller. Our understanding is that common branding could only be imposed as a voluntary measure, at least on SPs, because ComReg has no powers to enforce action upon SPs. However, ComReg could initiate a campaign to explain why it is a good idea, and encourage SPs and operators to adopt shared branding. ComReg should be able to draw on internal resources to prepare guidance for such a campaign, with the numbering and retail teams working together. There may also be merit in getting support from the Advertising Standards Authority (ASAI) to help encourage SPs and operators to adopt the branding and raise consumer awareness.

In countries such as the UK or France, where the regulator has imposed requirements and/or recommendations for SPs and operators to inform customers of the cost/charging structure of NGNs, different approaches to enforcement have been taken:

- Ofcom imposed a new condition on service providers[154] requiring them to include the cost of the 'Service Charge' in "*any advertising and promotion of the Unbundled Tariff Number*" and to ensure that it is displayed in a "*prominent position*",[155] relying on Section 59 of the Communications

[154]Service providers fall within the category of non-provider because they are companies other than CPs.

[155] See Annex 12 'Notification of telephone numbering condition binding non-providers under section 48(1) of the Act', Ofcom, December 2013, 'Simplifying non-geographic numbers – Final Statement on the unbundled tariff and making the 080 and 116 ranges free-to-caller'

Act 2003 gives Ofcom powers to make conditions applying to persons other than CPs ("non-providers") in relation to the allocation, transfer of allocations and the use of telephone numbers by non-providers.[156] [**CONFIDENTIAL**: ✂]

- Ofcom did also impose specific requirements on Communications Providers themselves when, on 23 April 2009, it published a statement to implement changes to the regulation of calls to 0870 numbers.[157] CPs were *"obliged to include a prominent statement in advertising/promotional material whether or not 0870 calls are included in inclusive packages and bundles"* and CPs would *"only be permitted to refer to 0870 calls as 'national rate' in their advertising and promotional material and retail bills where their 0870 and national geographic prices are the same as for geographic calls";*
- ARCEP (France) introduced a graphic representation of number categories, where each category was assigned a colour, and all SPs and operators were asked to follow this shared approach. Responsibility for monitoring rests with France's Directorate-General for Competition, Consumer Affairs and Fraud Repression, DGCCRF, based on the perceived need to ensure the quality, accuracy and fairness of the pricing information made available to consumers.

Approaches elsewhere suggest that operators could be obliged to present their charging in a way that reduces confusion. ComReg could consider including such an obligation. However, we do not believe there is merit in imposing obligations on SPs in the way that regulators such as Ofcom have done. The framing of the obligation and its subsequent monitoring and enforcement would be resource intensive, and the aim of improving the presentation to customers may be better met by encouraging SPs and operators to work with ComReg on a voluntary basis.

[156] See paragraph 3.16 of Ofcom, April 2013, 'Simplifying non-geographic numbers – Policy position on the introduction of the unbundled tariff and changes to 080 and 116 ranges'

[157] Ofcom, April 2009, 'Changes to 0870', Statement, available at: http://stakeholders.ofcom.org.uk/consultations/0870calls/statement/

6.2 Remedies for the wholesale market

Are the retail remedies discussed above sufficient to address issues identified in the NGN market?

The retail remedies proposed above aim to simplify the NGN regime, and to address the costs faced by callers to all NGN classes. Therefore, the expectation is that the imposition of the recommended remedies would lead to an increase in the number of calls to NGNs.

However, we must also ensure that there are no significant barriers to use remaining, particularly for SPs providing services over NGNs. Even if we have simplified the NGN regime and have met SP needs in terms of the differentiation between the number ranges, we must ensure that costs to SPs are not inflated. Distorted wholesale pricing could lead to SPs not using NGNs, or distorting choice of NGN type. For example, if Freephone were particularly costly to SPs they might decide to choose an option which means the caller will have to incur a charge.

If SP costs are excessive (and our evidence suggests these costs are stopping many businesses using these numbers), then intervention may be needed to address the underlying issues that lead to the high charges faced by SPs. It is also possible that retail remedies without corresponding wholesale remedies could even worsen the situation for SPs if originators seek to recover lost retail margins through higher wholesale charges.

We have presented evidence to show that SPs are unhappy with the cost of providing these services (especially for Freephone numbers), and that this has a negative impact in the market. This has also been found to be the case elsewhere (for example as described in the Netherlands case study evidenced by research undertaken by SEO Amsterdam Economics). In both the Netherlands case and in Ireland there is evidence of SPs discontinuing their use of Freephone numbers in favour of a number where the calling party incurred a charge[158]. In many cases (as outlined earlier) where there is a need to provide a Freephone service, some SPs simply have no choice but to continue to provide the service and pay the associated charges, which can be significant.[159] Wholesale charges in the shared cost

[158] [**CONFIDENTIAL**: ✂]

[159] This could be because customer expectation has been set (for example, Paddy Power started using 1800 to provide a competitive advantage. Now competitors have followed suit, it would be difficult to move to a customer pays number); or because of the type of caller (for example, Dublin City Council homeless Freephone, where homeless people call to look for bed for the night). In both cases, SP believes no choice but to offer Freephone.

numbers can also be high and cause SP dissatisfaction as discussed in Sections 4 and 5 above.

This suggests that wholesale measures may be needed to limit the extent to which originators can leverage their bottleneck control, and provide incentives for all parties in the supply chain to limit charges to those required to cover costs. This would apply to excessive origination charges, particularly from mobile, and to the incentive to over-recover the costs of origination through double charging on the shared-cost numbers (i.e. from both the called and the calling party). The whole point of the shared-cost is that together, the contributions from the calling and the called party should be sufficient to cover costs (i.e. origination charges cover costs net of retail revenue) and no more. Ideally, the service provider will only be paying to cover the costs of the call that are not covered by the retail price charged to the caller and should be content to do so where the NGN meets its other requirements.

It is significant that there is less concern in the market around the prefixes where all operators participate in the 'deemed to be' regime – that is, 076 and 0818 – than with the 18xx number prefixes, where mobile and some fixed operators have either not participated or have withdrawn from the regime. The difference in origination charges between 076 and 0818 on the one hand, and 18xx on the other cannot be explained by differences in the cost of supply.

Therefore, while remedies in the retail market are necessary to address some of problems identified, they are not sufficient on their own. There are problems faced by SPs that also need to be addressed, and these arise from the structure of the market whereby the originator has bottleneck control and we have shown that this is leading to excessive origination rates in the wholesale market, which are ultimately passed through the value chain and faced by SPs.

For these reasons, we recommended that measures to intervene in the wholesale market are considered in parallel with our proposed remedies for the retail market.

However, as the objectives of this project focussed mainly on the retail market, the assessment of wholesale is limited to an outline of issues as indicated by our evidence, and the identification of regulatory options to address these issues. We have not therefore considered implementation of wholesale remedies in the detail in which we have considered measures in the retail market, and understand that ComReg intends to carry out a separate project to assess wholesale charges for NGNs in more detail.[160]

[160] ComReg document 17/53, 'Information Notice – Wholesale Charges for Non Geographic Numbers', 14 June 2017.

6.2.1 Options available to ComReg to address wholesale issues

In considering options available to ComReg in the wholesale market, we have identified regulatory approaches that would be justified given the nature of the problems identified, and are likely to be within ComReg's powers. A more detailed examination of the desirability, appropriateness and proportionality of each option would be carried out in a Regulatory Impact Assessment, and more detailed legal advice would be required, but at this stage we are concerned primarily with the extent to which ComReg could use its various powers to address the issues that have been identified.

We have not included a continuation of the 'deemed to be' regime in the consideration of options below. While eir's origination charges continue to be regulated, and the 'deemed to be' regime linked other operators' origination charges to this, only fixed operators participated for 18xx, and several have now withdrawn from the regime. Mobile operators never participated. This highlights the disadvantage of an option which is voluntary on the part of the operator – it is inherently fragile, and by its nature unenforceable. The disintegration of the regime indicates that it cannot be considered a viable regulatory option.

We consider there to be four broad options available to ComReg to address the underlying wholesale issues in this market:

1. Ex-ante regulatory approach, defining single operator non-geo origination markets (requiring an Article 7 procedure) and then setting a price control;
2. Ex-post competition law approach based on abuse of dominance by non-geo originators in single operator markets;
3. Own initiative investigation in line with Article 5 of the Access Directive (Regulation 6 of the Access Regulations) and/or Article 28 of the Universal Service Directive (Regulation 23 of the Universal Service Regulations);
4. Issuance of (ex-ante) guidance about how ComReg would resolve a dispute to provide better incentives for originators' pricing. This could involve specifying some reference level of price beyond which any wholesale price would prima facie be considered excessive (i.e. a rebuttable presumption of abuse).

We discuss each in turn:

Impose ex-ante regulation on the basis of SMP at the wholesale level

ComReg could consider imposing remedies following a market review and subsequent finding of SMP. This would require ComReg to identify structural market failure, which would require definition of a market under the Article 7 procedure (because there is not a recommended market for any aspect of NGNs under the current

Recommendation), market review, and the imposition of remedies following any finding of SMP. Given the nature of the problems identified, our preliminary view is that the starting point for the definition of a new market would be call origination to NGNs.

The key advantage of carrying out a formal market review would be that, should there be an SMP finding, ComReg would be able to put in place targeted remedies designed to address actual and potential competition problems. Ex ante measures may include a range of remedies such as access, transparency and non-discrimination, as well as price controls.

Ex post competition law approach

Many NRAs (including ComReg) have recourse to competition powers, which allow the investigation of instances of abuse of dominance. Competition power investigations are generally used in markets that have not been identified by the EU as susceptible to ex ante regulation, or have been found to be no longer susceptible to ex ante regulation. Competition investigations are ex post, and focus on instances of abuse of dominance rather than on potential abuse. Section 5 of the Competition Act and Article 102 TFEU (Treaty for the Functioning of the European Union) concern abuse of a dominant position in a defined market.

ComReg is able to use its competition powers to investigate any complaints regarding abuse of dominance, or it can launch an investigation on its own initiative if it suspects an abuse of dominance. A competition investigation is not limited to those markets where ComReg already has ex ante powers. Although ComReg and the EC have defined markets for the purpose of applying ex ante regulation, these markets are considered to be without prejudice to any markets that may be defined for the purposes of applying ex post competition law. At the end of its investigation, if there appears to be a breach of competition law, ComReg would be able to issue civil or criminal court proceedings, and it is the court which rules on whether or not there has been a breach of competition law.

Own initiative investigation

ComReg could consider undertaking an own initiative investigation into the wholesale issues which have been identified. As discussed above, it is our view that the evidence which has been presented in this report would be sufficient to justify further investigation. We would expect that ComReg would have recourse to Article 5 of the European Access Directive (Regulation 6 of the Irish Access Regulations) and/or to Article 28 of the Universal Service Directive (Regulation 23 of the Irish Universal Service Regulations:

Regulation 6 of the Access Regulations provides that:

"6. (1) The Regulator shall, acting in pursuit of the objectives set out in section 12 of the Act of 2002, encourage and, where appropriate, ensure, in accordance with these Regulations, adequate access, interconnection and interoperability of services in such a way as to —

(a) promote efficiency,

(b) promote sustainable competition, and

(c) give the maximum benefit to end-users.

[…]

(5) With regard to access and interconnection, the Regulator may exercise its powers under these Regulations, the Framework Regulations, the Authorisation Regulations and the Universal Service Regulations on its own initiative, where justified, or, in the absence of agreement between undertakings, at the request of either of the parties involved, in order to secure the policy objectives and regulatory principles set out in section 12 of the Act of 2002, in accordance with these Regulations and Regulations 19, 20, 31 and 32 of the Framework Regulations."[161]

[161] S.I. No. 305/2003 - European Communities (Electronic Communications Networks and Services)(Access) Regulations 2003

Regulation 23 of the Universal Service Regulations provides that:

"23. (1) The Regulator may, where technically and economically feasible and except where a called subscriber has chosen for commercial reasons to limit access by calling parties located in specific geographical areas, specify requirements for compliance by an undertaking operating a public telephone network or providing publicly available telephone services for the purpose of ensuring that end-users are able to—

(a) access and use services using non-geographic numbers within the European Union, and

(b) access all numbers provided in the European Union, regardless of the technology and devices used by the operator, including those in the national numbering plans of Member States, those from the European Telephony Numbering Space (ETNS) and Universal International Freephone Numbers (UIFN)."[162]

Issue guidance

ComReg could consider issuing guidance on its view of acceptable behaviour in the NGN market, particularly on origination rates. Guidance could include an indication of the conditions under which ComReg would launch an investigation, either using its competition powers, or using its powers as set out in the Access Regulations and/or the Universal Service Regulations. Guidance could also include setting out the conditions under which a dispute would be considered, and indicating the factors that ComReg would take into account in any dispute that was submitted. This could include, for example, specifying a reference price level beyond which any wholesale price would prima facie be considered excessive – a rebuttable presumption of abuse.

6.2.2 Assessment of options

The evidence which has been collected and analysed during this project indicates that ComReg would have grounds for further investigation of wholesale pricing, particularly prices charged by mobile operators for originating NGN calls. The main advantage of carrying out a full ex ante market review is that it would provide a sound economic assessment of the market, and should there be an SMP finding, would allow ComReg to put in place a set of remedies designed to directly address actual and potential problems.

[162] S.I. No. 335 of 2011 - European Communities (Electronic Communications Networks And Services) (Authorisation) Regulations 2011

The ex ante approach would involve ComReg defining a new separate market for NGN call origination. ARCEP partially followed this approach in France. In 2012, ARCEP adopted a decision that introduced reforms to the pricing methods applied to what it referred to as value-added services (VAS).

The implementation of the 2012 reforms was not straightforward, and ARCEP had to intervene in disputes between originating and terminating operators. In 2014, ARCEP published a decision on a market for calls to Value Added Services (VAS). ARCEP's decision was intended to provide clarity on the relationship between originating and terminating operators, particularly to allow terminating operators to negotiate with SPs[163]. In parallel with its consultation on VAS, ARCEP was reviewing the wholesale call origination market, and proposed to exclude calls to VAS, due to the evolving structure of the call origination market.

The purpose of the VAS decision was therefore to facilitate commercial negotiation rather than to introduce ex ante SMP regulation, but ARCEP's process involved defining a separate VAS market. While ARCEP does not appear to have gone through the Article 7 process in defining and notifying a separate market, comments from the EC on its review of the wholesale call origination market have requested that ARCEP does conduct a review in line with Article 7 procedures[164].

The example of France does not therefore provide precedent for defining a separate NGN market for the purposes of ex ante regulation, but it does provide an indication that ARCEP's analysis of the market has led the EC to suggest that such a review may be required.

As with the ex ante approach, an ex post competition investigation would involve an economic analysis of the NGN market, and should the court find evidence of abuse of dominance, a range of fines and penalties could be imposed. An adverse competition finding could also provoke third-party damages claims for historical excessive wholesale pricing. This would seem a real possibility for SPs, who may be large and well-resourced businesses. Such a possibility could mean that even the threat of competition action could provide a

[163] ARCEP has had a system of symmetrical regulation in place since 2007, such that all originating operators have obligations on access, billing and cost recovery, with Orange (the SMP operator) subject to the equivalent but with stricter access and pricing obligations (price caps).

[164] Commission Decision concerning Case FR/2014/1644: Call origination on the public telephone network provided at a fixed location, Brussels, 18.9.2014 C(2014) 6809 final

strong incentive for originators to modify their behaviour to avoid such a formal finding.

However, an ex ante market review and a competition investigation are time-consuming and resource intensive, for operators and the regulator. The timescales are generally long, particularly as they eventually depend on external bodies – the EC Article 7 process in the case of an SMP investigation, and the courts in the case of a competition investigation. This means that it is likely that it would be some time before remedies were in place. ComReg would need to balance the increased certainty in the market and the ability to impose targeted remedies, which an economic review would provide, against the length of time these approaches would take to develop and implement.

Should ComReg decide to investigate under the Access Regulations and/or the Universal Service Regulations, it would be considering potential excessive wholesale origination charges. ComReg has two broad means of assessing this:

- On the basis of modelling costs of origination for various classes of operator (fixed/mobile);
- Using a proxy as a level beyond which the wholesale non-geo origination rate would be considered excessive.

Cost modelling

We understand that in the past, the mobile operators have cited higher costs associated with processing calls to these numbers relative to the fixed operators. As part of a separate workstream, ComReg has been developing a mobile cost model to determine the actual costs faced by mobile operators.

With this model, it would be possible to determine directly to what extent the costs faced by mobile operators might differ from those faced by fixed operators. If no material difference is identified, there would be sufficient evidence for ComReg to demonstrate that the current charges are excessive and impose an explicit cap on retention rates based on this detailed cost-based pricing.[165]

An alternative to cost modelling could be the use of a proxy for mobile origination costs, and indeed this could also be introduced as an interim solution in advance of a solution based on cost modelling. Evidence from the information request responses suggest that few operators consider there to be a cost difference associated with origination for geographic and non-geographic calls.[166] We would

[165] We note that in order to maintain benefits of a 'deemed to be' type regime amongst operators, any price controls should be implemented in such a way that limits variability of rates across operators. There could, for example, be one agreed rate for fixed operators and one agreed rate for mobile operators.

[166] Discussed in Section 4.7 of this report.

therefore expect that there should be little objectively justifiable difference in the operators' geographic and non-geographic origination rates.

Ideally, ComReg could define a simple proxy rule that caps the wholesale NGN origination to another observable (and regulated) price. Possible proxies for mobile origination could be either fixed origination rates, or mobile termination rates (MTRs), both of which are regulated.

The 'deemed to be' regime attempted to link all fixed and mobile operator origination rates to the regulated origination rate of eir, but the weakness of the regime is its voluntary nature, and the disintegration of the regime reflects this. An alternative would be capping mobile wholesale origination to regulated mobile geographic termination charges (that can be observed, as all mobile operators have SMP in termination of geographic calls on their own networks, and rates are regulated). This would appear to be a suitable proxy, given that it presents an upper ceiling on what we would reasonably expect the pure LRIC costs of origination to be.[167] Whether an additional allowance for recovery of common costs should be allowed (i.e. LRIC 'plus') would need to be considered.

Our initial assessment is that using a proxy in this way (such that the mobile origination rate calculated with reference to the regulated mobile termination rate) would result in an origination rate to NGNs which is likely to be higher than the pure LRIC of origination. Even if some mark-up were added for recovery of fixed and common costs, this would still result in wholesale NGN origination rates significantly lower than those currently prevailing.

We note that there are examples from other countries that have linked the prices for non-geographic calls to those for geographic equivalents including for the wholesale market. For example, conditions linking wholesale charges for NGN calls to those of a geographic equivalent have been applied in the Netherlands in line with Article 28 of the Universal Service Directive, and in Malta in line with power to specify conditions to a right of use of numbers including any requirements linked to the provision of that service.[168]

[167] We note that this approach has been taken in Malta where, for calls to freephone numbers, the terminating operator shall pay the originating operator either "*a charge equal to the originating operator's interconnection termination rate (default option) or a charge agreed by negotiation with the originating operator.*" See http://www.mca.org.mt/sites/default/files/pageattachments/201202%20Decision%20Freephone%202008_0.pdf

[168] See http://www.mca.org.mt/sites/default/files/pageattachments/201202%20Decision%20Freephone%202008_0.pdf

In the Netherlands there are restrictions on both retail and wholesale prices for NGNs, stating that the charges can be no more than the equivalent price for geographic calls unless it can clearly be demonstrated that the costs are different. These conditions were imposed in line with Article 28 of the Universal Service Directive through an amendment to the decree on interoperability (Besluit Interoperabiliteit; "the BI"). Article 5 of the BI obliged certain telecommunications providers[169], in respect of certain ranges of non-geographic numbers[170], to "*apply tariffs or other charges which are comparable to the tariffs or other charges levied by those providers for calls to geographic numbers, and that they may levy a different tariff or different charge only if that is necessary in order to cover the additional costs related to the calls to those non-geographic numbers*". We understand that an explanatory note to Article 5[171] obliges providers to include calls to non-geographic numbers in any bundle they offer in line with the statement above.

Our view is that further investigation is warranted, and that, should ComReg confirm that mobile origination charges are excessive, it would have mechanisms under the Access Regulations and/or the Universal Service Regulations to address this.

The option of issuing guidance in the wholesale market would provide a framework setting out ComReg's expectations, and to be an effective option, the guidance would be very clear, particularly on pricing, about what is regarded as acceptable and what is not. Guidance would allow SPs and terminating operators to consider how best to deal with potentially excessive pricing of origination, and any dispute which was brought would be likely to be better focussed because the terms would be understood. There is precedent for this approach in the UK.

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[169] Article 5(1) of the BI clarifies what telecommunication providers the policy change applies to: "providers of public telephone services or associated providers of public electronic communications networks which also control access to end-users…"

[170] Article 5(2) of the BI lists the following number ranges: 0800, 084, 085, 087, 088, 0900, 0906, 0909, 116, 14 or 18 that the policy change applies to.

[171] See page 22 of "Staatsblad van het Koninkrijk der Nederlanden – Jaargang 2012", with the following translation: *"If a call bundle is used with a fixed number of call minutes, as is often the case with mobile telephony, calls to the aforementioned non-geographical numbers can only be settled outside the call bundle when a caller has actually made his call minutes. If there is a subscription form that allows the caller to call unlimited, whether or not at certain times (eg at night and at weekends), as is the case with fixed telephony, calls to these numbers may only be charged separately. If the call occurs on a day or time that does not fall within the scope of the relevant subscription form. The call should therefore be treated equally as a call to a geographical number."* Original text available at: https://zoek.officielebekendmakingen.nl/stb-2012-236.pdf

It should be noted that issuing guidance does not preclude ComReg from adopting any of the options discussed above, and in that sense it is not a mutually exclusive alternative. Guidance would not provide the level of certainty in the market that would be provided by the other options discussed, and compliance would be voluntary. However, we would expect that guidance would indicate the consequences of any continuing excessive pricing, in terms of further regulatory response.

Ideally, guidance would be issued in parallel with the imposition of retail remedies. Given the timescales associated with the other wholesale options, it may therefore act as a statement of intent in the wholesale market.

Annex A Glossary

Call	means a connection established by means of a publically available electronic communications service allowing two-way voice communication.
Call origination	means the source of the call is from the originating operator's network
Call termination	means the call was terminated on the terminating operator's network
Called party	means any party in a call other than the caller
Caller	means the party that initiates the call establishment
Communications Provider (CP)	means a provider of telecommunications services including those operators providing fixed and/or mobile telephony services.
ComReg	means the Commission for Communications Regulation in Ireland
Geographic number	means a number from the National Numbering Scheme where part of its digit structure contains geographic significance used for routing calls to the physical location of the network termination point (NTP)
Hosting providers	means any entity (i.e. operator or reseller) that provides hosting services
Intelligent Network (IN) lookup	means a lookup involving the originating operator issuing a query to identify the related terminator to send the call to
Local geographic call	means a call within a local calling area as defined by the undertaking that originates the call
Minimum numbering area (MNA)	means one of the 106 geographic areas associated with Geographic Numbers, as defined in the National Numbering Plan
National geographic call	means a call that originates and terminates on

	Geographic Numbers within the state.
Non-geographic number	means a number from the National Numbering Scheme that is not a Geographic Number in that its geographic network termination point (NTP) is not identifiable from its digit structure.
Operator	means an undertaking providing or authorised to provide a public communications network or associated facility
Originating operator	means the fixed or mobile operator in whose telephone network the traffic is originated
Origination fee	means a payment made by a terminating operator to the originating operator
Origination rate	means the per minute or per call rate (typically in Euro Cent) charged by the originating operator for originating a call on its network
Re-seller	means a telecoms provider that purchases wholesale services from an operator in relation to outbound (call origination) and/or inbound (call termination) and compete in the retail market for callers and/or service providers.
Service Provider	means any party providing a product or service through the use of a non-geographic number
Settlement rate	means the sum per minute or per call that is passed between originating and terminating operator, sometimes via a transit operator, to compensate for the cost of connecting an NGN call
Standard rate	means the rate charged to the customer during regular working hours (e.g. Mon-Friday; 8am to 6pm). If individual package effects or other factors cause the calculation of standard rate to be unduly complex or impractical, the undertaking may estimate its value by reference to its average charges for calling Geographic Numbers, such variations must however be notified to ComReg.
Termination rate	means the per minute rate (typically in Euro Cent) charged by a terminating operator for terminating a call on its network

Terminating operator	means the operator in whose telephone network the traffic is terminated
Transit operator	means the fixed of mobile operator through whose network the traffic passes without originating or terminating in that network
Transit rate	means the per minute or per call rate (typically in Euro Cent) charged by a transit operator for passing traffic between the originating and terminating operator
Transit revenue	means the revenue earned by the transit operator from passing traffic through its network
Voice over internet protocol (VoIP)	means a technology that allows end-users to make and receive calls over an Internet Protocol (IP) transmission network (including the Internet) rather than the public switched telephone network.
White label service	means an unbranded service provided by one company to another that adds its own branding to market and sell the service to end customers.

Annex B Overview of consultations of retail tariff principles for NGNs

B.1 The 2010 review and consultation of the National Numbering Conventions

The most recent revisions to retail tariff principles for NGNs came into force in 2011 following a 2010 consultation as part of ComReg's sixth review of the 'National Numbering Conventions'.

The 2010 review and consultation of the National Numbering Conventions and the associated Numbering Applications Procedures took account of changes to the EU Regulatory Framework[172] and the new regime for regulating Premium Rate Services ("PRS").[173] Revisions of both the Numbering Conventions and the Numbering Applications Procedures were provided in draft form alongside the consultation paper.[174]

The consultation tackled a range of issues surrounding the Conventions, particularly for NGNs including Shared Cost Numbers ('1850' and '1890' ranges), Universal Access Numbers ('0818' range), Personal Numbers ('0700' range), and IP-based Numbers ('076' range).[175] Following the consultation, ComReg published the updated versions of the National Numbering Conventions and Numbering Applications Procedures in March 2011. In the remainder of this section we give an overview of the changes relevant to the NGNs covered by our review and the reasons for the changes.

Shared Cost Numbers (1850 and 1890)

The general purpose of these numbers is to allow customers to access such services at a cost equal to (or in the case of a national

[172] The 2009 amendments to the 2002 EU Regulatory Framework.

[173] Communications Regulation (Premium Rate Services and Electronic Communications Infrastructure) Act, 2010, enacted in March 2010

[174] See ComReg 10/60 and 10/60a

[175] ComReg 11/16 Available at: http://www.comreg.ie/csv/downloads/ComReg1116.pdf

call, lower than) calling the underlying geographic number directly, with the service provider paying for the remainder of the cost of the call.

The Conventions have remained largely unchanged in respect of Shared Cost Numbers since they were first introduced. However, since their introduction mobile phones have become ever more popular and, according to ComReg, the cost of calling a Shared Cost Number from a mobile phone had increased significantly relative to the cost of calling an ordinary fixed-line (geographic) number.[176]

In the 2010 consultation, ComReg considered that because the terminating service provider contributes to the cost of call, the retail charge to the consumer should be lower than if he/she had called the underlying geographic number directly even when the call was being made from a mobile phone. However, ComReg reported that service providers were dissatisfied that they were contributing to the cost of the call, while the cost to the caller was seemingly not being reduced.

ComReg proposed two options for making changes to the shared cost ranges:

- change the designation of the 1850/1890 services so that the caller pays the total cost of originating mobile calls to these numbers; or
- introduce new conditions in the conventions addressing the charge for calls made from mobile phones, introducing the concept of a 'Mobile Equivalent Rate' against which the retail price can be pegged.

The first approach did not receive much support from respondents and was ultimately ruled out by ComReg given that this would likely increase the costs faced by the calling party.

The second approach was favourable, thereby bringing mobile calls to Shared Cost Numbers into line with the long-standing rules governing calls from fixed lines. However, the specific wording was changed slightly. Although the term 'Mobile Equivalent Rate' was intended to be a conceptual equivalent of the term 'local rate' applied for fixed-line calls, the final wording referred instead to a 'standard rate' intended to apply equally to calls originating from either a fixed or mobile operator. In implementing the change, ComReg had updated the National Numbering Conventions to set tariff ceilings to calls to 1850 and 1890 numbers from both fixed lines and mobiles to protect consumers from excessive pricing "*insofar as ComReg's numbering powers will presently support".*

[176] Page 11, ComReg 11/16

Box 1: Final wording included in the 2011 Numbering Conventions (and now included in the 2015 Numbering Conditions of Use and Application Process) – 1850 and 1890

Calls to 1850 numbers:

"The charge made by undertakings to Irish-based callers to 1850 numbers shall be independent of the duration of the call, and shall in no case exceed the retail charge for a 5 minute call calculated at the originating undertaking's standard rate[177] *for calling Irish geographic numbers.*

Where the rate for calling Irish geographic numbers is distance-dependent, the rate shall not exceed the originating undertaking's standard rate applicable for local calling (within the MNA)."

Calls to 1890 numbers:

"The charge made by undertakings to Irish-based callers to 1890 numbers shall in no case exceed the retail charge for a call of the same duration calculated at the originating undertaking's standard rate for calling Irish geographic numbers. Where the rate for calling Irish geographic numbers is distance dependent, the rate shall not exceed the originating undertaking's standard rate applicable for local calling (within the MNA)."

Despite these changes, ComReg was aware that this did not address directly the issue of ensuring that the full contribution paid by service providers is reflected in the calling cost. Whilst not including anything more in the Conventions at that time, ComReg did provide guidance to operators, stating that it "…*very strongly exhorts all undertakings to provide value to the consumer for the whole amount of the call 'subsidy' received from the Service Provider by setting their actual charges below, or well below, these new ceilings."*[178]

Furthermore, ComReg mentioned that it would continue to consider whether stronger transparency measures might be needed to ensure all users fully understand how the shared cost model is expected to work.

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[177] "Standard rate" means the rate charged to the customer during regular working hours (e.g. Mon-Friday; 8am to 6pm). If individual package effects or other factors cause the calculation of standard rate to be unduly complex or impractical, the undertaking may estimate its value by reference to its average charges for calling geographic numbers. Such variations must however be notified to ComReg.

[178] Page 4 of ComReg 11/16.

Universal Access Numbers (0818)

ComReg held the view that the cost of calling 0818 from a mobile phone was high and charges to these numbers from mobiles were not directly addressed in the Conventions at the time. Therefore, ComReg proposed a similar approach to that outlined for Shared Cost Numbers, to remove any ambiguity regarding how the terms "local call rate" and "national call rate" apply to calls to 0818 numbers originated from a mobile network.

ComReg also proposed reducing the tariff ceiling for calling 0818 numbers from a rate equivalent to a *national* geographic call to one equal to a *local* geographic calls. Whilst most respondents were in favour of the proposal, there were some respondents who were against the idea considering that there should continue to be a tariff distinction between 0818 and 1890 and that in some cases out payments made for calls to 0818 were significant compared with calls to local geographic numbers.

Whilst ComReg did not agree on the need to keep a tariff distinction between 0818 and 1890, it did accept that "*many fixed-line geographic calls will travel outside the local calling area and it is mindful of the difficulties […] of negotiating wholesale rates that generate a margin in such cases.*"[179]

ComReg ultimately decided to introduce the tariff ceiling for calls made from mobile phones (in line with the changes to Shared Cost Numbers) but not to reduce the fixed-line reference from national rate to local rate. However, ComReg noted that the latter decision might be reviewed again in future

[179] Page 27 of ComReg 11/16.

Box 2: Final wording included in the 2011 Numbering Conventions (and now included in the 2015 Numbering Conditions of Use and Application Process) – 0818

Calls to 0818 numbers:

"The charge made by undertakings to Irish-based callers to 0818 numbers shall in no case exceed the retail charge for a call of the same duration calculated at the originating undertaking's standard rate[180] for calling Irish geographic numbers. Where the rate for calling geographic numbers is distance dependent, the rate shall not exceed the originating undertaking's standard rate applicable for national calling."

IP-based Numbers (076)

ComReg asked stakeholders whether two separate price ranges should exist for IP-based Numbers (076), as since the 076 number range was first opened with a single price range the number range has been used for both VoIP services and other suitable IP-based services or services with 'nomadic characteristics'.

In any case, given that ComReg had noticed 'disappointing' take-up of the range, possibly as a result of perceived high cost of calling these numbers, it considered it should re-align tariff ceilings for 076 calls with geographic rates.

Therefore, in the 2010 consultation, ComReg proposed:

- that the tariff ceiling for the current single range should be aligned with the local call rate instead of national rate; and
- if two separate price ranges were introduced, then it should be set at the higher of the two.

Respondents were uniformly in favour of continuing with a single price range for calling 076 numbers and there was good support for ComReg's proposal to align the tariff ceiling for calls to 076 numbers with tariffs for calling geographic numbers. This included ComReg's proposal to also align the tariff ceiling for mobile calls to 076 numbers with charges for calling geographic numbers, in line with the changes proposed for other number ranges as described above. However, most respondents disagreed with the proposal to align

[180] "Standard rate" means the rate charged to the customer during regular working hours (e.g. Mon-Friday; 8am to 6pm). If individual package effects or other factors cause the calculation of standard rate to be unduly complex or impractical, the undertaking may estimate its value by reference to its average charges for calling geographic numbers. Such variations must however be notified to ComReg.

with local rate rather than national rate and ComReg did not follow through with that proposal.

Box 3: Final wording included in the 2011 Numbering Conventions (and now included in the 2015 Numbering Conditions of Use and Application Process) – 076

Calls to 076:

"The charge made by undertakings to Irish-based callers to 076 numbers shall in no case exceed the retail charge for a call of the same duration calculated at the originating undertaking's standard rate for calling Irish geographic numbers. Where the rate for calling Irish geographic numbers is distance dependent, the rate shall not exceed the originating undertaking's standard rate applicable for national calling."

Whilst not including a formal requirement ComReg did also "strongly encourage" those operators who can do so to include calls to most[181] non-geographic numbers in call bundles.

B.2 The 2015 Numbering Conditions

On 26 June 2015, ComReg launched Consultation 15/60 on a proposal to create a new document, titled the "Numbering Conditions of Use and Application Process". The document is referred to herein simply as the "Numbering Conditions".

The "Numbering Conditions" replaced the current "Numbering Conventions" and the "Numbering Applications Procedures and Application Forms", merging both documents into one. On the whole, all of the existing numbering conditions were carried through to the new document and in some cases were re-drafted to make them easier to understand and use consistent terminology,[182] however were generally unaltered as to their purpose and effect.

The main change was that many of the conditions would now be presented as GA conditions, rather than RoU Conditions, affecting the way in which numbers are regulated. The consultation document 15/60 was clear as to the reasons why, including:

[181] ComReg accepted that it would not be 'useful' to include calls to PRS numbers or to Freephone numbers in bundles.

[182] ComReg noted: "*…the draft Numbering Conditions omits much of the text from the existing documents which, in ComReg's view, makes them overly duplicative and repetitive It also seeks to set out the conditions more clearly and concisely in order that undertakings may have greater certainty as to their obligations*." See paragraph 7 of ComReg Document No. 15/60 entitled 'Numbering Conditions of Use and Application Process – Consultation', 26 June 2015.

- *"ComReg considers that this approach would be in accordance with the modern framework for regulation of electronic communications."*
- *"ComReg considers that numbering conditions which are intended to have general effect - meaning that they are intended to apply to all undertakings or to some category or group of undertakings - should form part of the General Authorisation"*
- *"… against this, the conditions attached to an individual right of use for a number should only apply to the undertaking which was granted that right of use."*[183]

The conditions applied to the NGNs considered in this review (with regard to the tariff conditions including the effective price ceilings) were transferred from the Numbering Conventions into the Numbering Conditions. The conditions on NGNs appear in Section 4.2 – Section 4.8 of the 2015 Numbering Conditions of Use and Application Process,[184] with the conditions on the maximum charges for calls to these numbers specified as GA conditions. They have the same purpose and effect.

GA Conditions v RoU Conditions

The General Authorisation grounds the entire regulatory framework. All undertakings must be authorised under the GA and conditions also attach to the GA. These are referred to as "GA Conditions".

Any undertaking, once authorised, may apply to be granted individual rights of use for numbers or spectrum. Conditions also attach to such rights of use. These are referred to as "RoU Conditions".

Prior to 2015, the numbering regime has been based exclusively on RoU Conditions. Following the introduction of the 2015 Numbering Conditions, the numbering regime is now based on RoU Conditions and GA Conditions. This split is the main change being made to the number regime.

Conditions intended to have general application must be GA Conditions because a RoU Condition only binds the individual undertaking that was granted the right of use – it does not bind other undertakings.

[183] See paragraphs 4-5 of ComReg 15/60.

[184] ComReg Document No. 15/136 entitled 'Numbering Conditions of Use and Application Process', 22 December 2015

B.3 On-going work by ComReg

On 20 March 2014, ComReg issued a call for input on the wholesale retention charge associated with the provision of call origination for non-geographic numbers (the "Call for Input"[185]). The aim of the Call for Input was to gather views from interested parties on the effectiveness of the current regime and where issues were raised, seek recommendations on possible solutions.

Update on the Treatment of Non-Geographic Numbers (Dec 2014)

Following review of CFI response, in December 2014, ComReg provided an Information Notice regarding its work on the treatment of NGNs.[186] ComReg published the responses to its CFI and noted that it was in the process of developing a mobile cost model.

At this point ComReg also noted that it had "*identified a number of concerns regarding retail tariffs associated with non-geographic numbers*" and that it would "*carry out a review of the functioning of different categories of geographic numbers at a retail level and the possible effects of changes to their conditions of use, for example those related to tariff principles*". The work carried out by DotEcon has been used to help inform this review.

Mobile Retention Rate model CFI (May 2015)

Following it becoming aware that certain fixed-line operators had broken from the long standing deemed-to-be regime and were setting higher retention charges compared to Eircom's regulated wholesale interconnection rates ComReg issued a further call for inputs in May 2015.[187]

ComReg considered that although the increased retention charges from those fixed-line operators remain lower than that of the mobile retention charges, this, coupled with higher charges from mobile operators, could have an "*adverse impact on the economic welfare of callers to non-geographic numbers and the associated service providers."*[188] Therefore, ComReg wanted to develop a mobile cost model (to supplement an existing fixed cost model) that could be used to inform it in respect of any future determination on the appropriate charge for call origination for non-geographic numbers. ComReg also felt that the cost model "*may help inform ComReg in*

[185] ComReg Document No. 14/23 entitled 'Wholesale charges for non-geographic numbers', 20 March 2014.

[186] ComReg Document No. 14/130 entitled 'Update on Treatment of Non-Geographic Numbers', 5 December 2014.

[187] See ComReg Document No. 15/40 entitled 'Wholesale charges for non-geographic numbers', 8 May 2015.

[188] See page 3 of ComReg 15/40.

the event of a potential dispute regarding the rates currently charged by mobile operators..."[189] *As* such, ComReg issued an information request to mobile operators as part of the CFI in order to gather data on Mobile Retention Rates (MMR) with a view to developing a model.

ComReg sent the MRR request File (.xls file) and the MRR request Guidance Document to the following mobile operators which were listed on Eircom's Switched Transit Routing Price List (STRPL):

- Lycamobile;
- Meteor;
- Tesco Mobile;
- Three; and
- Vodafone.

[189] See page 3 of ComReg 15/40.

Annex C Overview of market research

In parallel with the research conducted by DotEcon, ComReg commissioned Behaviours & Attitudes together with The Research Perspective (B&A) to conduct market research in the form of surveys issued to consumers (as the calling party) and organisations, including those offering services using NGNs (the called party).

The market research was designed to gather information on the awareness and attitudes towards NGN usage of both calling and called parties including:

- the degree to which consumers understand the different classes of NGN and the costs of calling such numbers;
- businesses' level of understanding of NGNs and their associated costs; and
- the factors that influence the use of NGNs by both the called and calling parties.

DotEcon helped ComReg and Behaviours & Attitudes (B&A) design the questionnaires for the surveys, which B&A conducted in the form of face-to-face surveys (for consumers) and telephone surveys (with businesses).

Fieldwork for the consumer study was conducted in May 2016. Fieldwork for this organisation study was conducted from May 2016 - July 2016.

More information on the research methodology and the results can be found in Documents 17/70b and 17/70c published alongside this report. However, in this Annex, we give an overview of the key research themes we had in mind when helping draw up the surveys and provide details of the sample obtained for each of the surveys.

C.1 Key research themes

Key research themes for questions to the calling party

For the calling party, we were interested in gathering information on their understanding of the different classes of NGNs including the costs of calling these numbers (and whether they believe costs vary between fixed and mobile calls) and the extent to which this affects their behaviour.

Therefore, we prepared questions that would gather information on the following:

- consumer understanding of services available via NGNs;

- consumer understanding of the different categories of NGN, and the characteristics of the different categories;
- consumers' current usage of calls to these numbers and what influences them to make/not make a call to an NGN;
- consumer perception of choice in how to access the service, including whether to make calls from fixed or mobile (including instances of preferring to make a call from fixed rather than mobile phones, and the extent to which other alternatives such as websites, apps etc. are reasonable substitutes);
- the importance/value of having access to the services provided over these NGNs (this may differ significantly across social class and between residential and business callers);
- how informed consumers are about call costs to these NGNs, how this influences their calling behaviour;
- whether customers call behaviour is based purely on a perception about the costs of calls to these numbers or whether they actually look up costs or have experience of the charges for these numbers (and the reasons why they are or are not aware of the actual costs);
- consumers' understanding of the extent to which calls to NGNs are included in their package (be that a fixed or mobile bundle, pre-paid offering etc.) and level of influence this understanding has in terms of call behaviour (including choices on making a call from fixed or mobile);
- whether cost of calls to NGNs has any influence over their choice of telecoms operator or the package they subscribe to;
- how much customers think they are spending on these calls;
- whether customers have experienced bill shock due to calls to these numbers and how this has affected their behaviour;
- where customers actively avoid calling these numbers, the reasons for doing so.

Key research themes for questions to the called party

We were also interested in understanding the decisions made by business on their decisions to use (or not use) these NGNs to provide a service. We sought to understand their reasoning behind their choice of NGN class to provide their service, reasons for switching between NGN classes (if this has occurred in recent years), and their attitude towards using these numbers (possibly in spite of the originator control) as compared with geographic alternatives. Questions for the called party were targeted at gathering information on the following:

- why businesses may prefer using an NGN than a geographic alternative;

- the types of service typically provided under each NGN class (distinguishing between service providing information content, helplines, product support, customer enquiries, supporting marketing campaigns, government services etc.)
- understanding business decision-making process when deciding which NGN class to use. For example, is this influenced by the charge to customers (including accounting for different charges to mobile/fixed line customers), brand image, cost to the service provider etc.
- migration decisions including the extent to which businesses have switched NGN class in recent years and the reason for this switch
- the extent to which they understand costs to themselves for each NGN class (and if this has changed over recent years how it has affected the business);
- the extent to which they understand costs to consumers for each NGN class, how important it is for them that consumers are aware of the costs, and whether they make efforts to inform their customers of these costs.

C.2 The survey samples

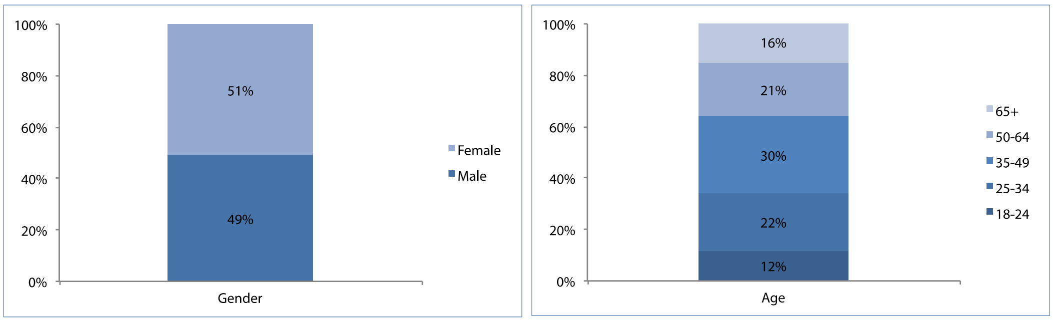
Consumer survey

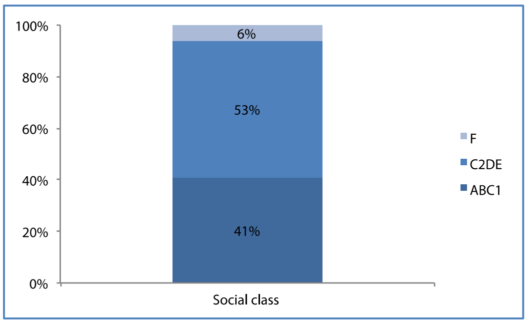
Survey data collection methodology was 'face to face' interviewing via CAPI (Computer Aided Personal Interviewing). All interviewing was administered at the respondents own home - 1,023 respondents were interviewed in total.

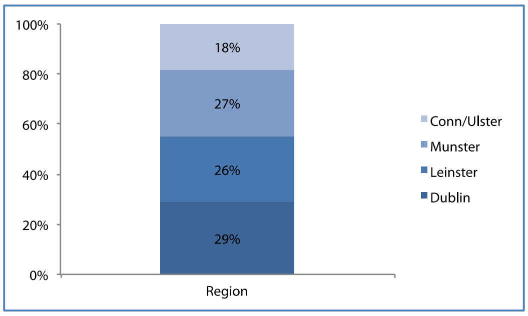
Interlocking quotas were applied across region, gender, age and socio-economic status to ensure that the findings are fully representative of Irish adults aged 18+.

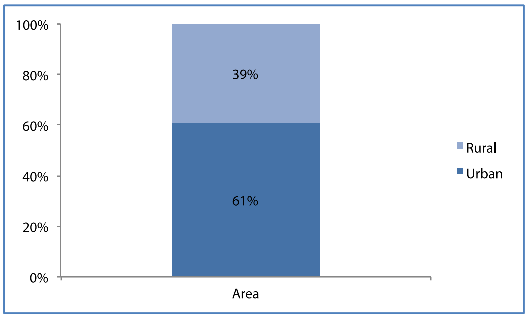
A corrective weight has been applied to the data to ensure that it is fully representative of all adults

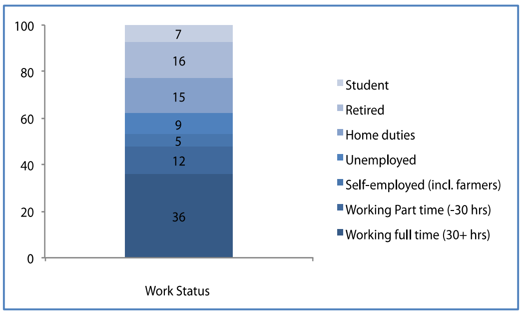
Figure 42: Profile of consumer sample











Business survey

Survey data collection was administered via telephone from B&A's call centre in Milltown Dublin.

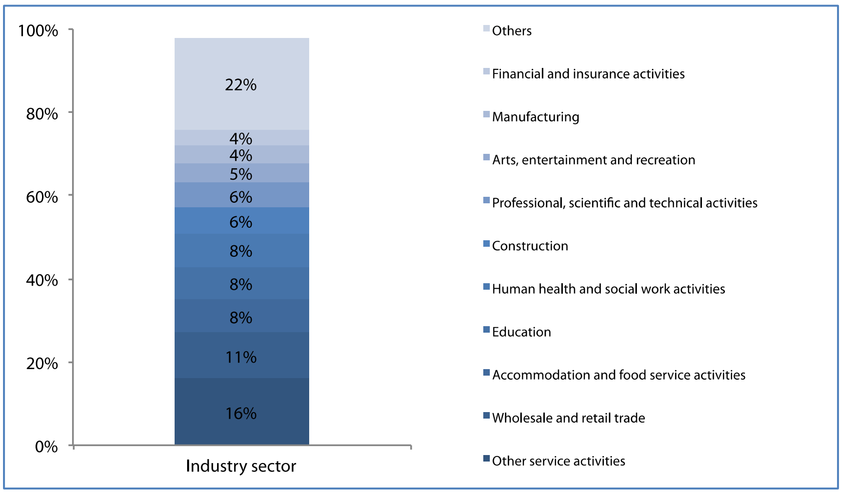
881 respondents were interviewed in total. All interviews were conducted with the person responsible for making decisions regarding the telephone numbers their organisation provides to its customers to call.

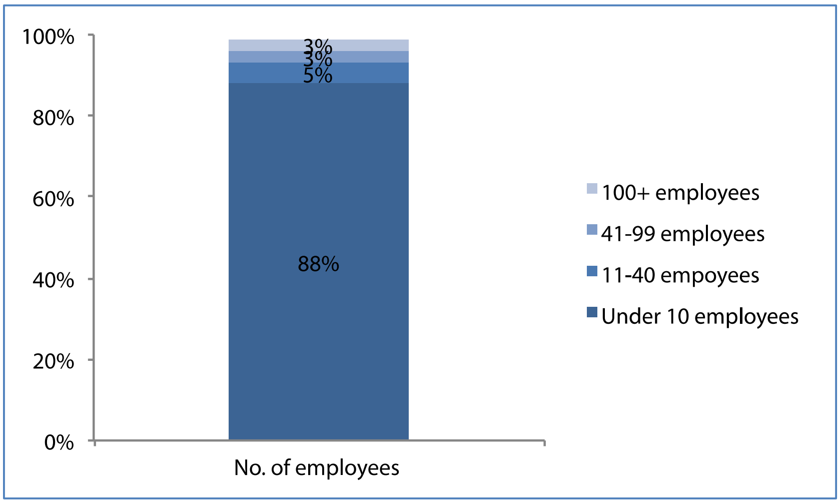
Interviewing was conducted in two parts:

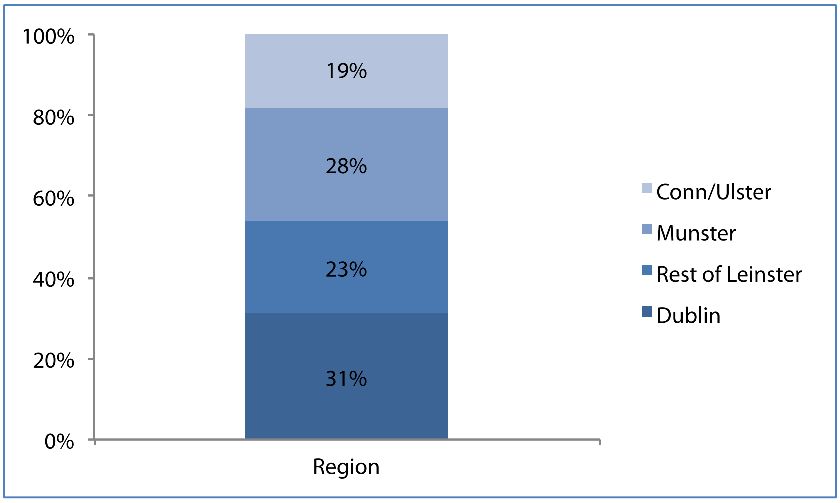
- Part 1: Nationally representative sample of 790 organisations, with enhanced representation of larger organisations i.e. a higher proportion of interviews were conducted with larger organisatins as they were more likely to use NGNs. The sample was then weighted to be reflective of all Irish organisations by organisation size and region. This sample includes interviews with 127 organisations who currently use non-geographic numbers (NGNs).
- Part 2: Booster sample of 91 organisations who currently use NGNs. This sample was merged with the nationally representative sample and weighted to match nationally representative proportions. Therefore, the total number of interviewed organisations who currently use NGNs is 218.

The weighted sample composition was modelled upon universe estimates derived from a combination of leading organisation directory sources: The Irish Times, Business & Finance Top 500 companies in Ireland, Bill Moss and Data Ireland, as well as industry representative groups and CSO estimates.

Figure 43: Profile of organisation sample







Annex D Operator information request

This Annex details the Information Request (IR) issued by ComReg to operators. The IR sought data for originating, terminating and transit operators about:

- NGN volumes;
- whether "in-bundle" NGN calls were offered;
- revenues earned from the provision of NGN telephony services;
- fees paid in relation to the provision of NGN telephony; and
- whether there are any significant cost differences in relation to handling geographic versus non-geographic calls.

A brief overview of the IR process in Section E.1 and provide an overview of the responses received in Section E.2. In Section E.3 we discuss the review of responses and the updates and amendments made to the date including the calculation of estimates by operators and DotEcon. Section E.4 gives an overview of any missing or inconsistent data and discusses how we have taken this into account in our analysis.

D.1 IR process and responses

D.1.1 Voluntary Information Request

A Voluntary Information Request (VIR) was issued in line with ComReg's Information Notice[190] in order to gather information from operators regarding the use of NGNs in Ireland. The questions in the VIR were drafted by DotEcon and ComReg with an aim to gather information that would allow ComReg to evaluate concerns regarding the use of NGNs in relation to consumer interests and competition in the market.

The questions were drafted in the form of a spreadsheet template. There were five tabs in the spreadsheet:

[190] ComReg Document 16/11 - Strategic Review of Non-Geographic Numbers: Project Update – published 11 February 2016

- Call Origination – Traffic volumes, wholesale originate rates, revenues and fees associated with NGN traffic that an operator originates were to be provided in this tab.
- Call Termination – Traffic volumes, wholesale termination rates, revenues and fees associated with NGN traffic that an operator terminates were to be provided in this tab.
- Transit and Hosting – Transit rates and fees associated with NGN traffic that an operator transits were to be provided in this tab.
- Tariffs – Details of any "in-bundle" minutes or calls to any of the NGN classes were to be provided in this tab.
- Costs – Qualitative questions on whether there is an intrinsic cost difference between originating a geographic versus non-geographic call was included in this tab.

The spreadsheet template was designed to be general enough to cover operators with different business models, for e.g. mobile versus fixed operators or operators that served business only customers. Operators were asked to only fill in the tabs and answer the questions relevant to their respective business models and leave others blank. The IR sought sufficient data to allow financial flows within the sector to be followed for the last five years.

Further, an accompanying note was issued with the spreadsheet template explaining what data was being requested. This included a glossary defining key terms.

The VIR was sent to thirty-nine operators on 12th Feb 2016. Responses were requested by 22nd Mar 2016. Operators were also informed of a briefing on the VIR to be held on 23rd Feb 2016. The briefing was meant to explain the data sought in the VIR and provided an avenue for operators to raise clarification questions with regard to the information that was sought. However, only five operators were represented at the workshop – Eir, Meteor, Three, Tesco Mobile and Sky Ireland. Following a letter received from some respondents prior to the workshop, and comments made during the workshop there were a number of operators considered that it would be infeasible to provide data over the full 5-year period on a quarterly basis. Therefore, in response to these views, the time period for which the data should be provided was reduced from five years to three (namely quarterly data for 2013-2015) with data for 2011 and 2012 to be provided on a full year basis where possible.

Following extensions of the deadline April 2016, twenty-two submissions to the VIR were received. However, many of the responses were not fully completed – not all relevant questions were answered or data was not provided over the period requested. In addition, clarifications had to be sought on the majority of the responses in relation to the information that had been provided.

D.1.2 13D Information Request

In order to collect the information that was required, ComReg decided to formalise the Information Request (IR) under its powers afforded by 13D(1) of the Communications Regulation Act 2002. The formal IR was issued to 31 operators on 3rd June 2016. There were five operators whom ComReg deemed to have complied with the VIR and hence did not issue 13D requests to. However, these five received requests for clarification of their previous responses. Three of these provided updated responses or answers to the clarification questions raised. A further four operators were issued with a formal IR on the 15th June 2016 and 16th September 2016.

The operators receiving formal 13D requests were asked to complete the IR in full, providing estimates where data might be missing as well as answer a list of clarification questions that were raised regarding their VIR responses (clarification questions formed part of the 13D request). A number of requests for extension of the deadline for the IR were granted.

The majority of the 13D responses received still required further clarification questions, as some operators did not explain why some data could not be provided and did not provide estimates in lieu of data despite instructions in the 13D request to do so. In some cases, operators did not respond to the clarification questions raised regarding their initial responses.

In the case of operators who could not provide data over the entire period requested, this was mainly due to data archives stretching back for a limited time. In some cases, archives were not kept for longer in part due to data protection and retention requirements. Data for some number ranges was also not provided in some cases as these ranges are not recorded in particular operators' billing systems – for instance in the case of 1800 where the customer is not billed for these calls or where calls to 076 are sometimes not differentiated from geographical numbers.

Eventually, thirty-five responses were received. [**CONFIDENTIAL**: ✂] responses were empty as they indicated that they have no relevant data for calls to NGNs. Further, a number of responses had to be excluded in part or in full, however as this does not include any of the major fixed or mobile operators we do not consider this to have a major impact on the validity of our results:

- [**CONFIDENTIAL**: ✂] response had to be excluded in its entirety as it did not revert back in time on clarifications sought regarding the data provided in the origination and termination tabs the wrong way round.
- [**CONFIDENTIAL**: ✂] also did not respond in time to clarifications sought on some of its revenue and fee figures it provided. [**CONFIDENTIAL**: ✂] revenue and fee figures

were excluded from the revenue allocation but its traffic volumes provided have been used.

- Clarifications from [**CONFIDENTIAL**: ✂] were sought in relation to the fee figures it provided in relation to 076 traffic – revenue and fees figures provided for 076 excluded were from our analysis.
- [**CONFIDENTIAL**: ✂] was asked to provide estimates of its 1800 call and minute volumes – this was not provided, the remainder of Edge's response was used.
- [**CONFIDENTIAL**: ✂] - wholesale fees paid and retail revenue figures earned were not provided. Only [**CONFIDENTIAL**: ✂] traffic volumes provided in its response was used.

Overall, we are satisfied that the initial information request issued was no more onerous than necessary to address the questions that ComReg has posed about the functioning of the NGN sector. Whilst some operators sought to respond as best as possible, seeking clarification of any questions that they did not understand in the context of their particular operations, this was not uniformly the case, making the issue of formal 13D requests necessary. A number of operators pointed to difficulties in accessing historic data (in particular citing difficulties in accessing individual call records), though we note that the data sought was all aggregated in nature (e.g. call volumes by number range).

[**CONFIDENTIAL**: ✂]

D.2 Responses received

Table 21 below provides an overview to the responses to the information request received as well as whether traffic volumes and/or revenue and fee figures provided were used in our analysis. Majority of the operators did provide a response and most of the responses were used to the fullest extent possible, though estimates were required in some cases.

Table 21: Information request responses received

CONFIDENTIAL: ✂

Most of the operators provided data over the requested period of 2013-2015 or provided estimates in lieu. However, there were a number of cases where breakdown of data across different subscriber types was not provided and this had to be estimated by DotEcon. Data for 2011 and 2012 was also only provided in approximately half the responses and DotEcon estimated data for 2011 and 2012 based on views expressed by operators on likely trends for this period or where that is not provided, based on a view of likely trends inferred from that suggested by the data provided between 2013-2015.

Overall, with the estimates, we have a reasonable amount of data across 2011-2015 to infer trends over this period. We consider that the trends exhibited over 2013-2015 would accurately reflect actual developments as data over this period is more complete. Given the number of estimates for 2011-2012 and in some cases missing data where estimates could not be reasonable made, data for these years are more uncertain and should be interpreted with care. However, we note that in general, the trends for 2011-2012 are consistent with that exhibited in 2013-2015. In addition, while we presented only annual data in this report, we have also examined quarterly data provided across 2013-2015 and note consistent trends with little loss of information from reporting annual trends.

D.3 Missing and inconsistent data

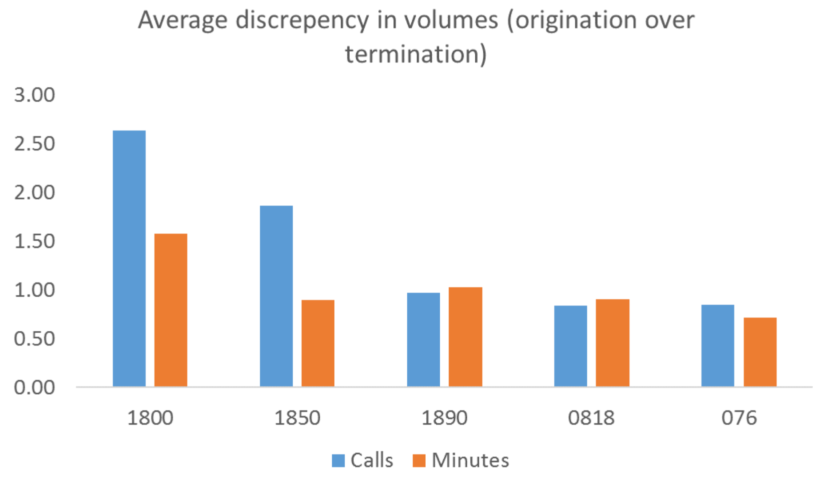
As noted above, we have performed a number of checks on the data responses we received as well as queried data points that look odd. We also note that we have a good number of responses from most of the major operators in Ireland. Nonetheless, given the market for calls to these NGNs is quite concentrated, any compilation errors or missing data from significant players can mean that our picture of market developments is incomplete or skewed. In particular, we found a significant discrepancy in origination and termination volumes. This discrepancy is present across the entire period of 2011-2015 and is most stark for 1800 volumes. Figure 44 shows the ratio of average origination volumes over average termination volumes for each NGN.[191]

A ratio of one would indicate that origination volumes match up to termination volumes – which is what we would expect. In practice, due to data collection and response inconsistencies, we would not expect the two volumes to match up perfectly, but that the ratio should not be too far away from one if responses of all major operators in Ireland have been included. Nonetheless, for calls to the 076 range, we would expect termination volumes to exceed origination volumes as several operators have highlighted that they could not provide relevant volumes for 076 as their billing systems do not differentiate between 076 and geographical numbers. In the case of 1890, 0818 and the minute volumes of 1850, the ratio is sufficiently close to one to not warrant significant concerns. In the

[191] Annual averages over 2011-2015 taken.

case of 1800 volumes and 1850 call volumes however, we observe that origination volumes are two to two and a half times termination volumes.

Figure 44: Ratio of origination volumes to termination volumes



Source: DotEcon from information request responses

This discrepancy in volumes suggests that either origination volumes for 1800 and for 1850 calls have been over stated or termination volumes have been understated by one or more operators, or a combination of both.

Based on the sums of settlement payments received by originating operators for calls to the 1800 range, we can calculate implied minute volumes originated using a blended average settlement rate.[192] Using the split of volumes between fixed and mobile from this calculation, we also calculated implied termination volumes of calls to 1800 based on the settlement fee sums paid by terminating operators to originating operators.

If the volumes provided by operators in the information request are complete and accurate, we would expect the volumes implied by the interconnect revenue and fees to match the volume figures provided in the information request (with the latter potentially exceeding the former as we have incorporated data form more operators in compiling the traffic volumes). Figure 45 compares origination and

[192] We have calculated a blended average settlement rate assuming 60% peak, 20% off-peak and 20% weekend traffic based on settlement rates in Eir's STRPL Issue. For mobile operators, whose rates vary, we have taken the average of Vodafone's, Three's and Meteor's settlement rates and calculated a blended mobile settlement rate with the same traffic distribution assumptions. The blended rate we derive for fixed operators is 0.656 cpm and for mobile operators is 22.942 cpm.

termination volumes for calls to the 1800 range with implied volumes calculated from settlement rate sums received (by originating operators) and paid (by terminating operators). It shows that origination volumes from the information request map to implied volumes more closely though origination volumes from the information request fall short of implied volumes in 2015. Taking a closer look at origination volumes of fixed and mobile operators and comparing these volumes to those implied by interconnect revenue received by originating operators in Figure 46 suggests that the discrepancy is down to fixed operators' volumes.

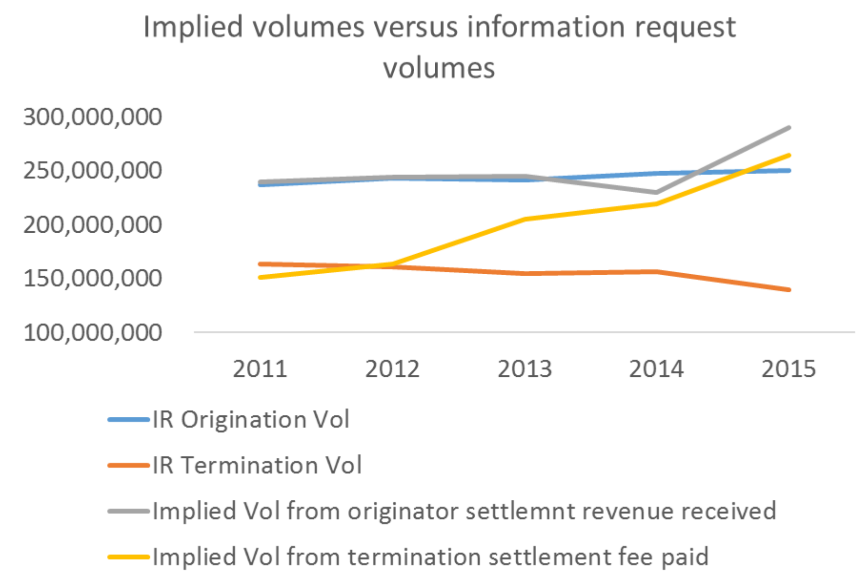
Termination volumes for 1800 from the information request seem to fall far short of implied volumes calculated from settlement rate sums. This suggests that the data on 1800 terminated volumes and arguably more generally for the other NGNs as well is far from complete. We note that this is also supported by evidence provided by Eir in clarifying the volume figures. Specifically, from Eir's supporting evidence, we note that [**CONFIDENTIAL**: ✂] seems to have understated its minute volumes in 2015. Further, Eir's evidence also suggests that there might be some notable terminating operators who did not respond to the information request, whose volumes we might be missing.[193] This would imply that aggregated terminating volumes, revenues and fees are likely to understate actual figures and that this understatement is particularly stark for 1800 traffic as there seems to be more operators (with non-trivial volume share) serving service providers.

Finally, we note that implied volumes derived from settlement rate sums paid by terminating operators to originating operators exhibits a different trend between 2011 – 2015 to the rest of the series in Figure 45. Specifically, while the other lines are relatively more stable, the implied termination volume trend suggests growth in termination volumes. We note that this is probably because of the significant amount of data missing for the periods of 2011 and 2012 – therefore the upward trend exhibited does not necessarily reflect significant volume growth but rather that more data was available from 2013 onwards. This also means that care should be taken in interpreting trends of volumes, revenues and fees of terminating operators over this period, particularly for calls to the 1800 and 1850 ranges.

Overall, to analyse volume trends, we will use and present origination volumes trends from the information request given this exhibits greater consistency with implied volume figures calculated.

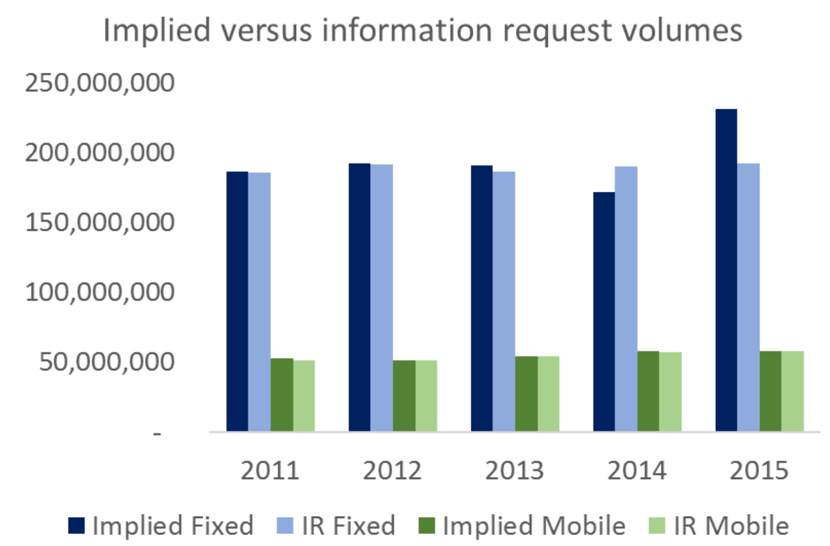
[193] [**CONFIDENTIAL**: ✂]

Figure 45: Implied volumes from interconnect revenue and fees versus volume figures provided in the information request



Source: DotEcon from information request responses

Figure 46: Fixed and mobile operators 1800 volumes implied by interconnect revenue versus origination volumes provided in information request



Source: DotEcon from information request responses

We also note that in terms of revenues and net-receipts calculations, a small number of operators did not provide data on revenue they receive from Service Provider's for termination services and so net-receipts from termination may be slightly lower than actuals. In this case, the termination share of net receipts is likely to be understated in this case due to missing or incomplete data responses. However, we would expect that figures presented is a good approximation of reality given that the terminating market segment is likely to be competitive.

This is notwithstanding the fact that there are some terminating operators who do not provide service provider revenues because they do not earn any revenues from service providers, including calls to the 1800 range. [**CONFIDENTIAL**: ✂] are two such examples. [**CONFIDENTIAL**: ✂], does not have any third party service providers using its NGNs. Rather, [**CONFIDENTIAL**: ✂]. In other words, [**CONFIDENTIAL**: ✂] is vertically integrated in relation to the termination of calls to NGN and the services provided via its NGNs. [**CONFIDENTIAL**: ✂] on the other hand does terminate calls on behalf of third party service providers, but it makes no revenues from hosting or other charges to these service providers.

Annex E Retail Tariffs

As part of this project, we have been asked to gather information on:

- the retail tariffs currently charged by (Fixed And Mobile) operators for each NGN class, under the various subscription packages;
- the extent to which certain classes are included in bundles; and
- the extent to which bundles are included in different subscription packages.

As part of our desk research we have reviewed the offerings of the main fixed line and mobile operators in the Irish market. In the first instance, our research mainly involves viewing the retailers website as if we were a customer. Conducting the review in this way allows us to both gather the necessary information, and comment on the level of transparency and ease of finding information about calls to non-geographic numbers.

We acknowledge that reviewing operators' websites will only provide a snapshot of the tariffs and the information available at the time of investigation. Where we make reference to particular offers or price lists, we have noted the date at which this information was gathered, provided a full reference, and have also taken PDF copies of any material relied on in this note.

In Section E.1 of this Annex, we consider fixed line operators. Mobile operators (both MNOs and some MVNOs) are considered in Section E.2.

For each operator, we aim to gather the following information:

- the main packages offered to customers. This includes pre-pay or post-paid propositions for mobile and may include dual, triple or quad play packages offered by fixed line operators;
- the main 'bundles' available to phone customers;
- the extent to which calls to NGN numbers are included in the bundle or not;
- any other tariff options that may provide free or discounted calls to these numbers;
- the ease of finding this information on the operator's website;
- where calls to the five main classes of NGN considered in our report (1800, 1850, 1890, 0818, 076) fall outside of the bundle, the charges that apply to customers making calls to these numbers.

It is important to be clear from the outset what we mean by 'in-bundle' and 'out-of-bundle' calls. We consider there to be three possible structures to the charges that a customer may incur when calling an NGN on any given tariff:

- NGN calls 'in bundle' –where calls to NGNs are included in the primary bundle to which a consumer is subscribed, that includes a set number of calls and possibly SMS/data for a headline fee. This is more likely to be (although not exclusively) the case for post-pay packages;
- NGN calls 'out of bundle' –where customers are charged an explicit fee for calls to NGNs. These calls may be listed as a specific line and charge on the customer's bill. In this case customers either may or may not be subscribed to a bundle;
- NGN calls from an 'opt-in' package – where a customer has chosen a particular (optional) package that provides free or discounted calls to NGNs by actively 'opting-in'. This may be in the form of a 'bolt-on', or additional fee over and above the customer's base tariff/package. Examples of such 'opt-in' packages may include additional calls, SMS, data or discounted/free NGN calls.

E.1 Fixed Line Operators

E.1.1 eir

eir offers fixed line phone plans either standalone or as part of dual, triple or quad-play offers together with broadband, mobile and television services[194].

There are three main phone plans[195]:

- eir Talk Off Peak Mobile;
- eir Talk Unlimited Mobile & UK;
- eir Talk International.

The plans differ in whether international, UK or mobile calls are included in-bundle, and whether "unlimited" calls are limited to peak-times or are available any time of the day.

[194] The main packages offered by eir include: Broadband and phone; broadband & phone; Mobile, broadband & phone; TV, mobile, broadband and phone. See: https://www.eir.ie/bundles/ (accessed on 31 May 2017)

[195] See: https://www.eir.ie/phone/ (accessed on 31 May 2017)

A customer can choose from a selection of "off the shelf" dual, triple or quad-play offers, or can "build their own bundle", selecting what phone, broadband, television and/or mobile plans are included to meet their own requirements.

Discovering whether a particular phone plan includes or excludes NGNs in the bundle requires the user to find and read the "Products Explained" link towards the bottom of the 'Phone plans' product site[196] as shown in Figure 47 below. Within this fairly text-heavy information section there is a sub-section entitled "unlimited home phone" that simply says "Bundled minutes exclude premium rate and non-geographic usage". However, no details about what charges apply for these calls are provided at that point.

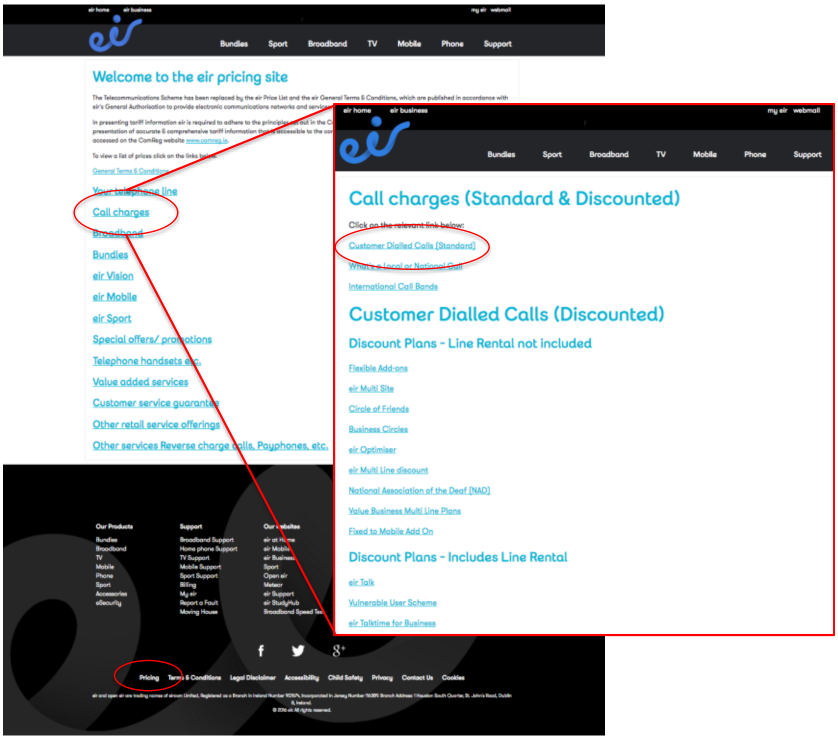
Figure 47: The eir website does not obviously signpost information regarding charges for NGNs.

Source: eir Phone plans page: https://www.eir.ie/phone/ (accessed 31st May 2017).

[196] https://www.eir.ie/phone/

In order to find out the charges that apply to NGN calls, the customer would have to go to the eir pricing page, accessed by clicking the 'Pricing' link displaced at the footer of each page. From eir pricing site (See Figure 48)[197] it is possible to find call charges for a full range of eir tarrifs by following through the 'Call charges' link..

Figure 48: The eir pricing site, which can be accessed from the footer of every page on the website



Source: eir, Pricing: https://www.eir.ie/group/pricing/ (accessed 31st May 2017)

We refer to the call charges listed under the "Customer Dialled Calls (Standard)" link that provides a pdf file containing all call charges[198]

For eir's fixed line customers, the prices for calls to the NGN classes covered in our report are as follows:

[197] eir Pricing site, available at: https://www.eir.ie/group/pricing/ (accessed 2nd June 2017).

[198] See: https://www.eir.ie/opencms/export/sites/default/.content/pdf/pricing/Part2.1.pdf (accessed 31st May 2017).

Table 22: Cost of calls to NGNs for eir customers (incl. VAT)

Freephone (1800)	CallSave (1850)	LoCall (1890)	Universal Access (0818)	Nomadic (076)
Free	6.77c per call	Set-up fee of 9.66c per call plus: **Day:** 5.25c per min **Evening**: 1.34c per min **Weekend:** 1.34c per min		Set-up fee of 29c per call plus: **Day:** 9c per min **Evening**: 3c per min **Weekend:** 3c per min

Source: eir Pricing, Available at: https://www.eir.ie/opencms/export/sites/default/.content/pdf/pricing/Part2.1.pdf (accessed 31st May 2017).

E.1.2 Vodafone Home

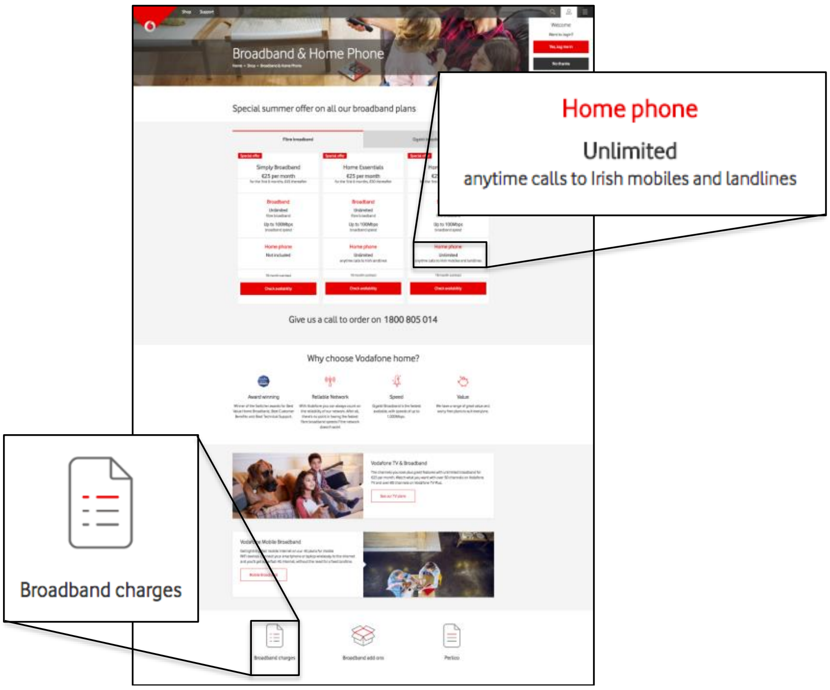
Vodafone offers bundled broadband and home phone talk packages with the Vodafone "Home Essentials" and "Home Unlimited" packages. 'Essentials' allows unlimited phone calls to Irish landlines, and 'Unlimited' also includes calls to Irish mobiles in bundle[199].

Calls to non-geographic numbers are not included in the bundles. Although this is not explicitly stated anywhere on the main 'Broadband & Home Phone' website, customers may assume that non-geographic numbers are excluded based on the statement that such packages only include "Unlimited anytime calls to all Irish landlines/mobiles"[200].

[199] Vodafone Broadband and home phone packages, available at: https://n.vodafone.ie/shop/broadband.html (accessed 31st May 2017).

[200] https://n.vodafone.ie/shop/broadband.html

Figure 49: Vodafone's Broadband & home phone page provides a quick overview of different products



Source: Vodafone Broadband & home phone: https://n.vodafone.ie/shop/broadband.html (accessed on 1st June 2017)

In order to find the charges for calls out-of-bundle numbers (including NGNs), the customer must click on the 'Broadband charges' icon further down the page. (See Figure 49). This leads the user to a page providing extra details on Vodafone home phone, Broadband and TV charges[201]. However, the page does not provide any up-to-date information on charges for calls to 1890 or 0818 NGNs, although they are included in further information about legacy tariffs.

For Vodafone customers, the prices for calls to the NGN classes covered in our report are as follows:

Table 23: Cost of calls to NGNs for Vodafone fixed customers (incl. VAT)

Freephone (1800)	CallSave (1850)	LoCall (1890)	Universal Access (0818)	Nomadic (076)
Free	0.00	No information found	No information found	Set-up fee of 9.80 4.5c per minute

[201] See: https://n.vodafone.ie/shop/broadband/charges.html (accessed 6th June 2017).

Source: Vodafone Home Phone and Broadband charges, available at: https://n.vodafone.ie/shop/broadband/charges.html (accessed on 1st June 2017).

E.1.3 Sky Talk

Sky offers landline services either as separate plans or as part of broadband packages.

Two phone plans are available: Sky Talk Freetime and Sky Talk Anytime[202]. Line rental (Sky Talk Line Rental) is required for both plans. Sky Talk Freetime has "inclusive"[203] calls to ROI local and national landline numbers for the Evening and Weekend. Sky Talk Anytime has "inclusive" ROI daytime and evening landline calls, and "inclusive" international landline calls to "20 destinations"[204]

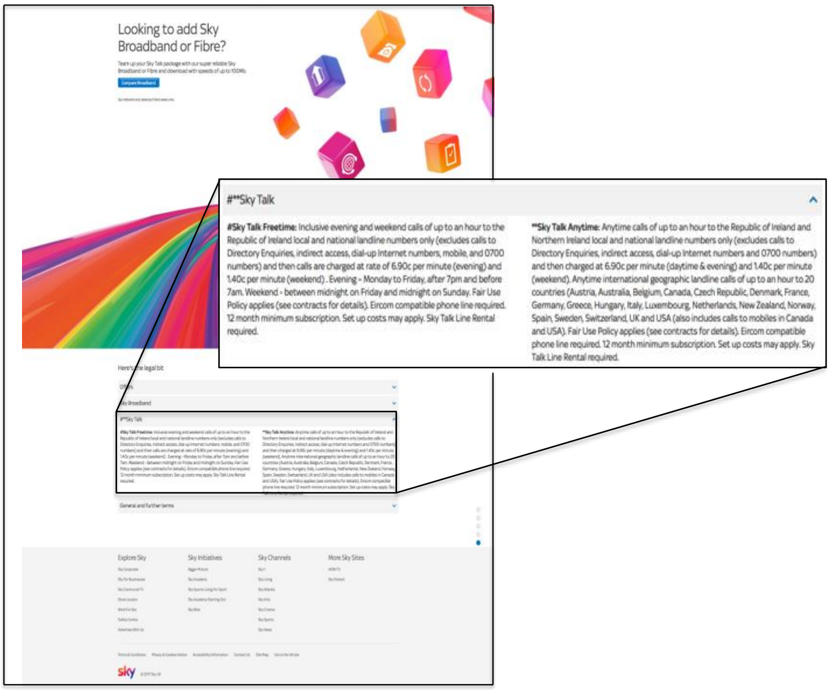
Neither plan includes non-geographic calls in the bundle, so the caller is charged at per minute or per call rates. For example, the "legal bit" box at the bottom of the page makes clear that only calls to ROI landlines (and international landlines for Sky Talk Anytime) are included in plans (see Figure 50).

[202] Sky Talk Compare website, http://www.sky.com/ireland/broadband-talk/talk-compare/ (accessed 5th June 2017).

[203] Calls of up to an hour are free. ROI landline calls are then charged at 6.90c per minute (daytime and evening) and 1.40c (weekend). See: http://www.sky.com/ireland/broadband-talk/talk-compare/ (accessed 5th June 2017).

[204] These destinations are: Austria, Australia, Belgium, Canada, Czech Republic, Denmark, France, Germany, Greece, Hungary, Italy, Luxembourg, Netherlands, New Zealand, Norway, Spain, Sweden, Switzerland, UK and USA (also includes calls to mobiles in Canada and USA)

Figure 50: The "legal bit" box at the bottom of the page clearly states that only calls to ROI landlines (and international landlines for Sky Talk Anytime) are included.



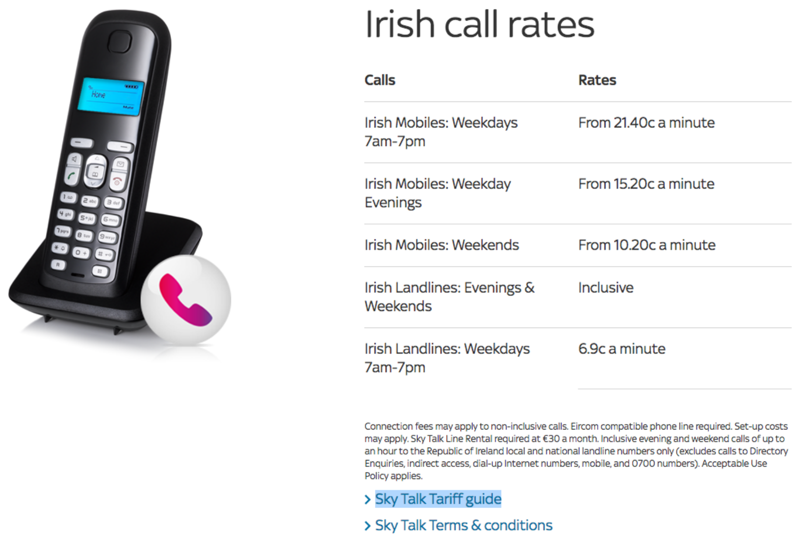
Source: Sky Talk Compare: http://www.sky.com/ireland/broadband-talk/talk-compare/ (accessed 1st June 2017).

Finding more detailed tariffs, including the cost of calling non-geographic numbers, must be done by accessing other pages on the website. The webpage for each plan provides a link to the tariff guide underneath the Irish call rates section (see Figure 51 for the Sky Talk Freetime plan[205]). Following this link takes the user to the Sky Talk Tariff Guide[206] page that offers links to current and historical tariffs.

[205] http://www.sky.com/ireland/broadband-talk/talk-freetime/ (accessed 1st June 2017).

[206] http://www.sky.com/ireland/terms-conditions/talk/code-of-practice/tariff-guide/ (accessed 1st June 2017)

Figure 51: The Irish call rate section on the Sky Talk Freetime page prominently links to tariffs (highlighted).



Irish call rates

Calls	Rates
Irish Mobiles: Weekdays 7am-7pm	From 21.40c a minute
Irish Mobiles: Weekday Evenings	From 15.20c a minute
Irish Mobiles: Weekends	From 10.20c a minute
Irish Landlines: Evenings & Weekends	Inclusive
Irish Landlines: Weekdays 7am-7pm	6.9c a minute

Connection fees may apply to non-inclusive calls. Eircom compatible phone line required. Set-up costs may apply. Sky Talk Line Rental required at €30 a month. Inclusive evening and weekend calls of up to an hour to the Republic of Ireland local and national landline numbers only (excludes calls to Directory Enquiries, indirect access, dial-up Internet numbers, mobile, and 0700 numbers). Acceptable Use Policy applies.

› Sky Talk Tariff guide

› Sky Talk Terms & conditions

Source: Sky Talk Freetime: http://www.sky.com/ireland/broadband-talk/talk-freetime/ (accessed 1st June 2017).

For Sky Talk customers, the prices for calls to the NGN classes covered in our report are as follows:

Table 24: Cost of calls to NGNs for Sky Talk customers (incl. VAT)

<table>
<tr><th>Freephone (1800)</th><th>CallSave (1850)</th><th>LoCall (1890)</th><th>Universal Access (0818)</th><th>Nomadic (076)</th></tr>
<tr><td>Free</td><td>6.80c</td><td colspan="2">6.90c per minute (daytime and evening) or 1.40c per minute weekends;
plus a connection charge of 9.70c.</td><td>6.90c per minute (daytime and evening)
or 2.50c per minute weekends;
plus a connection charge of 9.70c.</td></tr>
</table>

Source: Sky Talk Freetime and Anytime Tariff Guide from 11 May 2016, available at: http://www.sky.com/ireland/__PDF/ROI_SkyTalkTariffGuide_May_2016.pdf (accessed 1st June 2017).

E.1.4 Virgin Media Ireland

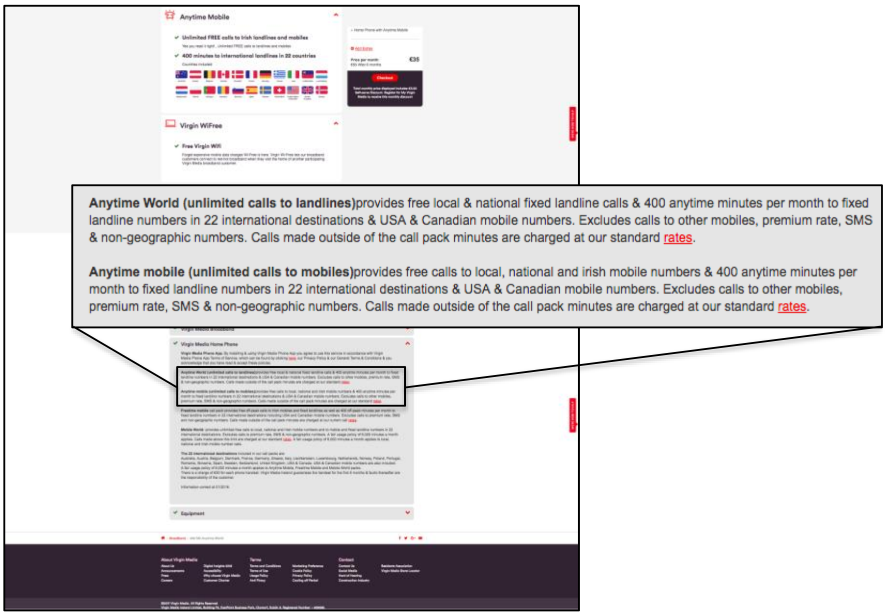
Virgin Media Ireland, previously known as UPC Ireland, offers mobile, television and broadband services. Fixed line telephone is included "free" with all broadband services. As with eir, consumers can choose from off-the-shelf multi-play offers or can build their own bundle.

There are two Virgin Media phone plans: Anytime World (unlimited calls to landlines) and Anytime Mobile (unlimited calls to landlines and mobiles)[207]. As with eir, these two plans are constituent parts of multi-play offers. For example, the "240Mb Broadband and Home Phone" multi-play offer includes a Virgin Media Hub, 240Mb Broadband and the Anytime Mobile phone plan[208].

Neither plan includes non-geographic calls in the bundle; therefore the caller is charged at per minute or per call rates.

It is relatively easy for the consumer to find out that NGNs are excluded from all telephone packages: each full-page "Tell me more" description of a package includes a brief 'Terms and Conditions' section for each of the constituent parts of the bundle. The 'Virgin Media Home Phone' subsection details what number ranges are classed as out-of-bundle, explicitly citing non-geographic numbers as not included (see Figure 52).

Figure 52: Virgin Media's terms and conditions clearly state that NGNs are excluded from the bundles.



Source: Virgin Media, Buy a Bundle: https://www.virginmedia.ie/bundles/broadband-tv-phone/anytime-world-and-horizon-tv/ (accessed 1st June 2017).

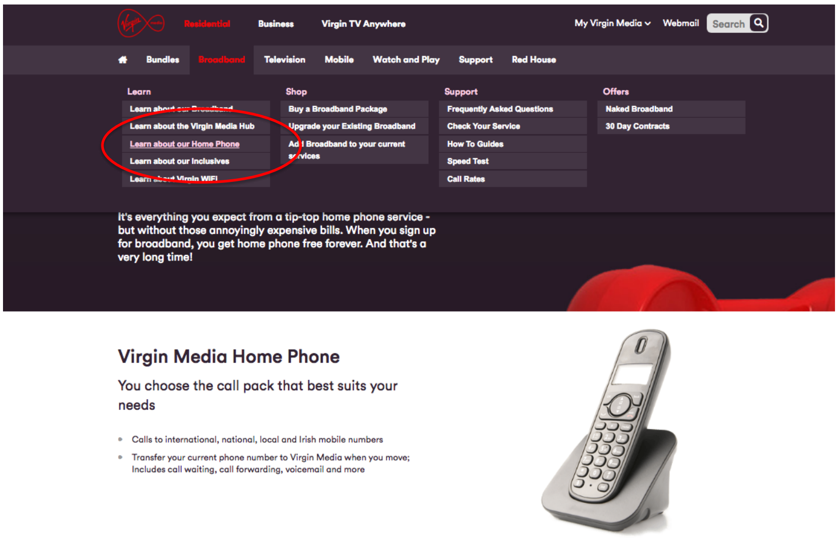
[207] Virgin Media, Learn about home phone. See: https://www.virginmedia.ie/broadband/learn-about-home-phone/ (accessed 5th June 2017)

[208] Correct as of 1st June 2017. See Virgin Media Ireland 'Buy a broadband package', https://www.virginmedia.ie/broadband/buy-a-broadband-package/

Clicking the red hyperlinks in the Terms and Conditions directly leads the user to a description of the standard out-of-bundle call rates for each phone plan. However, this actually leads the user to an out-dated version of the tariff sheet[209].

The latest version of the tariff sheet can be found by navigating to the "Learn about our Home Phone"[210] page (see Figure 53) and following the "list of call rates" hyperlink.

Figure 53: Finding the "Learn about our Home Phone" page on Virgin Media Ireland's website.



Source: Virgin Media Ireland, https://www.virginmedia.ie/broadband/learn-about-home-phone/ (accessed 7th June 2017).

For Virgin Media customers, the prices for calls to the NGN classes covered in our report are as follows:

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[209] As of 7th June 2017, the ;'40Mb Broadband and Home Phone' page (see: https://www.virginmedia.ie/broadband/buy-a-broadband-package/240-mb-anytime-world/) links the user to March 2015 standard call rates (see https://www.virginmedia.ie/broadband/buy-a-broadband-package/240-mb-anytime-world/)..

[210] https://www.virginmedia.ie/broadband/learn-about-home-phone/ (accessed 6th June 2017).

Table 25: Cost of calls to NGNs for Virgin Media Ireland customers (Standard call rates for Basic Home Phone, Anytime World & Freetime World.)

Freephone (1800)	CallSave (1850)	LoCall (1890)	Universal Access (0818)	Nomadic (076)
Free	7c per call plus set up charge of 7c	4c per min plus set up charge of 6.6c	4c per min plus set up charge of 20c.	4c per min plus set up charge of 20c

Source: Standard Call Rates, Virgin Media. Available at: https://www.virginmedia.ie/pdf/standard_call_rates_may_2016.pdf (accessed 1st June 2017).

E.1.5 Digiweb

Digiweb offers three main telephone packages: Talk Off-Peak, Talk Mobile, and Talk Unlimited. These plans differ in terms of available minutes, off-peak and on-peak timing and international calls[211].

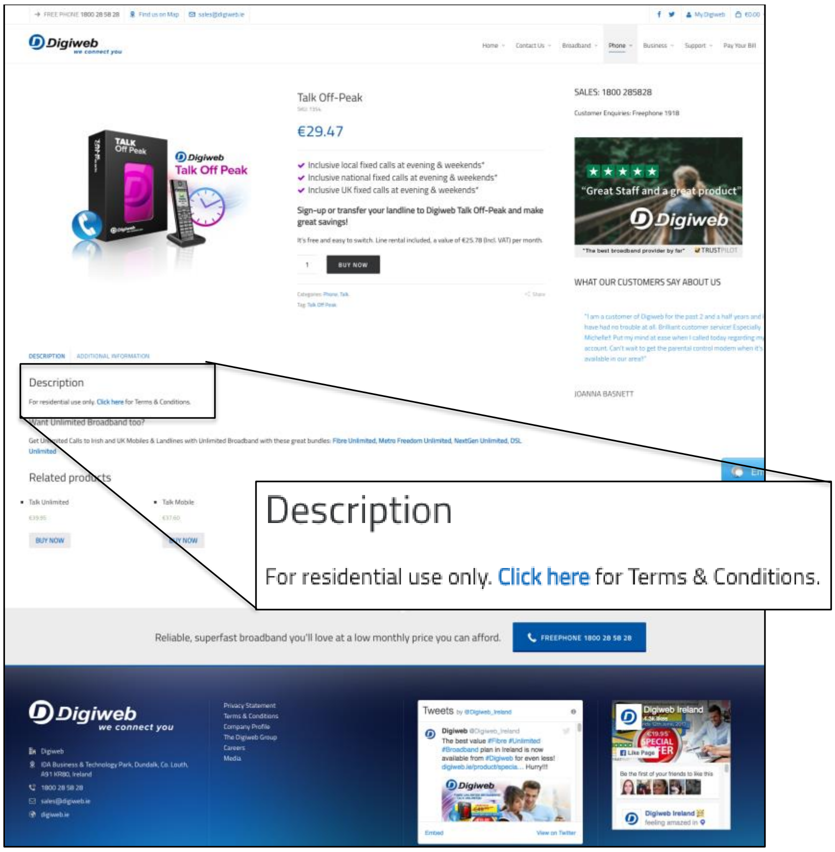
Unlike eir and Virgin Media, Digiweb's broadband and telephone offers are not made up of bundled broadband and telephone plans, but instead the broadband package includes a "free" phone plan. However it is possible to upgrade to a "Talk World" phone plan if the consumer wishes to have international calls included in-bundle.

Although it is relatively easy to find that some calls are out of bundle when browsing a phone plan by clicking the 'Additional Information' tab[212], it less obvious what numbers are excluded and their corresponding charges. There is a clear link to 'Terms and Conditions' (see Figure 54) for both phone-only and broadband bundles, but this leads users to the 'Talk' or "Broadband' terms and conditions rather than 'Call Charges'. However, once directed to Terms and Conditions, the customer can then navigate to 'Call Charges' (see Figure 55).

[211] https://www.digiweb.ie/ (accessed 5th June 2017).

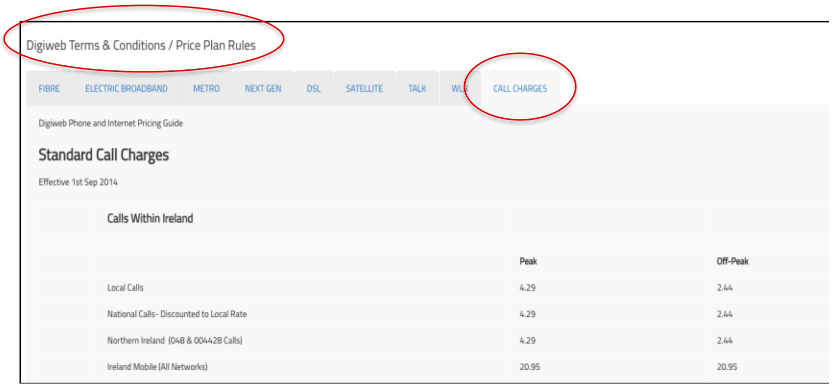
[212] For example, the Talk Off-Peak Plan. See: http://www.digiweb.ie/product/talk-off-peak/ (accessed 5th June 2017).

Figure 54: Digiweb 'Talk Off-Peak' page.



Source: Digiweb 'Talk Off-Peak': https://www.digiweb.ie/product/talk-off-peak/ (accessed 5th June 2017).

Figure 55: Digiweb Terms & Conditions – Standard call charges.



Digiweb Terms & Conditions / Price Plan Rules

FIBRE | ELECTRIC BROADBAND | METRO | NEXT GEN | DSL | SATELLITE | TALK | WL | CALL CHARGES

Digiweb Phone and Internet Pricing Guide

Standard Call Charges

Effective 1st Sep 2014

Calls Within Ireland	Peak	Off-Peak
Local Calls	4.29	2.44
National Calls- Discounted to Local Rate	4.29	2.44
Northern Ireland (048 & 004428 Calls)	4.29	2.44
Ireland Mobile (All Networks)	20.95	20.95

Source: Digiweb, Terms & Conditions, available at: https://www.digiweb.ie/price-plan-rules/#call_charges_terms_conditions (accessed 1st June 2017)

For Digiweb's customers, the prices for calls to the NGN classes covered in our report are as follows:

Table 26: Cost of calls to NGNs for Digiweb customers (incl VAT)

Freephone (1800)	CallSave (1850)	LoCall (1890)	Universal Access (0818)	Nomadic (076)
Free	8.95 connection charge plus 6.7c per call	8.95c connection charge plus: 4.29c per min peak; 2.44c per min off-peak and weekend.	8.95c connection charge plus: 12.5c per min.	8.95c connection charge plus" 8.95c per min.

Source: Digiweb Call Charges Terms & Conditions, available at: https://www.digiweb.ie/price-plan-rules/#call_charges_terms_conditions (accessed 1st June 2017).

E.2 Mobile Operators

E.2.1 Meteor

Meteor is a wholly owned subsidiary of eir and offers both Prepay and Bill Pay plans, including SIM only plans[213].

Meteor Bill Pay phone plans are available on 24-month contracts. SIM Only plans operate on 30 day contracts. There are four plans to choose from for both phone-inclusive and SIM only – Lite, Regular Extra, Super Extra and Super Deluxe Extra – with each plan having varying data allowances, minutes, and international and EU roaming.

Meteor has two pre-pay offers: "Simply Top Up" [214] and "Simplicity"[215]. "Simply Top Up" is a conventional pay-as-you-go scheme, where calling credit is used to pay for calls, data and text-messages at fixed rates. "Simplicity" is an opt-in scheme, where the customer opt-ins to offers by topping up a minimum amount each month. Options range from the cheapest data- or –calls only packages to unlimited calls, texts and data at the higher end.

Every Bill Pay bundle excludes calls to most NGN numbers. Although this is not immediately obvious from the plan overviews, NGN charges can be found by following the "Other charges" link in the

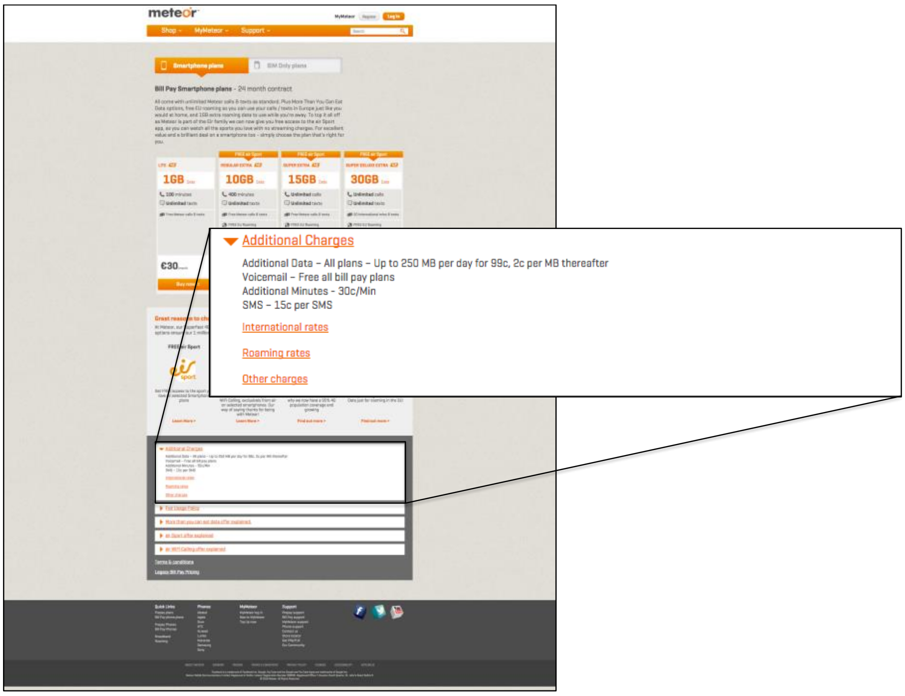
[213] See: https://www.meteor.ie/ (accessed 2nd June 2017).

[214] https://www.meteor.ie/pay-as-you-go/simply-top-up/ (accessed 2nd June 2017)

[215] https://www.meteor.ie/pay-as-you-go/simplicity/ (accessed 2nd June 2017)

"Additional Charges" box prominently placed at the bottom of the Bill Pay plan page (see Figure 56).

Figure 56: Finding additional charges on the Meteor Bill Pay plan website



Source: Meteor, Bill Pay Smartphone plans: https://store.meteor.ie/bill-pay-mobile-phone-plans (accessed 1st June 2017).

It is not quite so easy for pre-pay customers to find the charges for calling non-geographic numbers: the "Other charges" hyperlink is positioned less prominently, and the user must search significantly further down the page. .

For Meteor's customers, the prices for calls to the NGN classes covered in our report are as follows:

Table 27: Cost of calls to NGNs for Meteor customers

Plan	Freephone (1800)	CallSave (1850)	LoCall (1890)	Universal Access (0818)	Nomadic (076)**
Meteor (Pay As You Go)	Free	30c per call	15c per min	15c per min	35c per minute (1 minute minimum charge, 30 second charging intervals thereafter)[216]
Meteor (Bill Pay)	Free	30c per call	15c per min	15c per min	30c per minute [217]

Sources: Meteor, Pay As You Go Other Charges, available at: https://www.meteor.ie/pay-as-you-go/other-charges/; Meteor Bill Pay Other Charges, available at: https://www.meteor.ie/bill-pay/other-charges/; accessed 1st June 2017).

***For 076, Meteor states: "Charged at the per minute rate appropriate to your price plan, for national calls to Irish landlines (does not avail of inclusive minutes." Therefore we refer to: Meteor Bill Pay and pay as you go phone plans to find the "standard rate";*

E.2.2 Three

Three offers both Prepay and Bill Pay phone plans, each available on either a SIM only or phone inclusive basis[218].

Three's Bill Pay plans ('Mini Flex Max', 'Unlimited Flex Max' and 'Classic Flex Max') differ to offerings of other providers in that instead of setting a fixed number of minutes or text messages each month, they set a fixed number of "flexi-units" per month. Each of these units is equivalent to 1 minute of calling time or two texts, and the plans differ from each other in terms of data allowance and the number of 'flexi-units' granted: 100 units for 'Mini', 350 for 'Classic' and Unlimited units on the 'Unlimited' plan[219].

Information about out-of-bundle charges is clearly visible to consumers: the page has a prominent "*Other rates and useful info*" box (see Figure 57), which offers the consumer links to Three's

[216] The standard rate charged for calls on the pre-pay 'simply top up' phone plan.

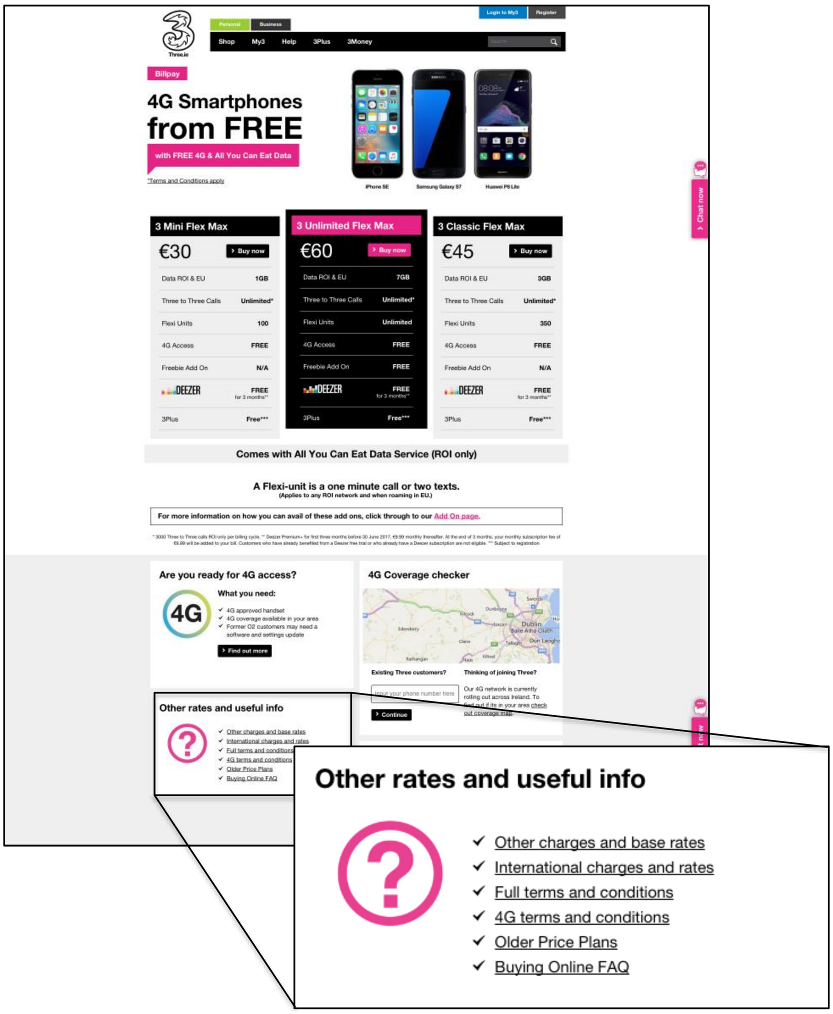
[217] The standard rate charged for additional minutes on the Bill Pay phone plan

[218] See: http://www.three.ie/ (accessed 2nd June 2017).

[219] Correct as of 2nd June 2017. See Three Bill Pay plans, http://www.three.ie/eShop/phone-plans/bill-pay/

current pricing guide, detailing standard rates and which calls are in/out-of-bundle.

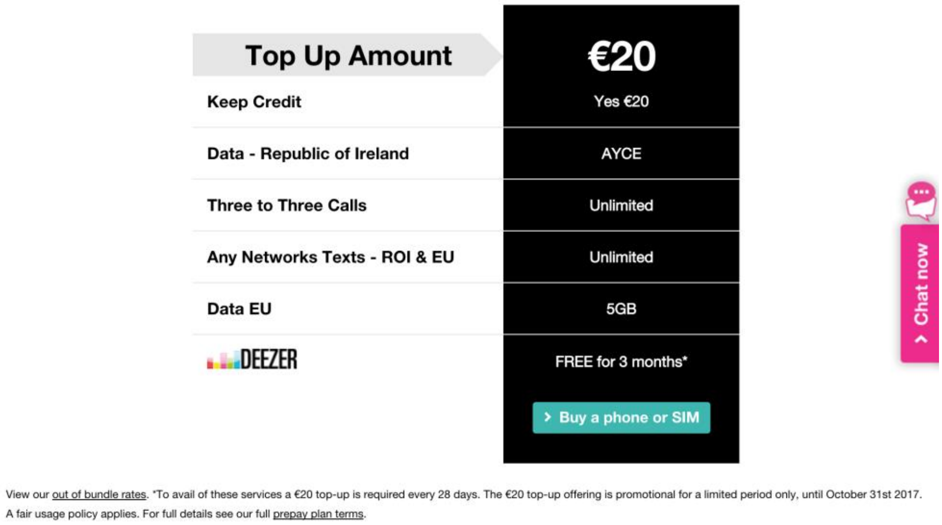
Figure 57: Three's 'Flex' Bill Pay plans.



Source: Three, Bill Pay plans: http://www.three.ie/eShop/phone-plans/bill-pay/ (accessed 1st June 2017).

Three's Prepay phone plan page similarly makes finding further information straightforward: a link referring to 'out of bundle rates' is placed in the small print immediately below the offer summary (See Figure 58).

Figure 58: Three's Prepay plan page links directly to out-of-bundle rates.



Top Up Amount	€20
Keep Credit	Yes €20
Data - Republic of Ireland	AYCE
Three to Three Calls	Unlimited
Any Networks Texts - ROI & EU	Unlimited
Data EU	5GB
DEEZER	FREE for 3 months*
	Buy a phone or SIM

View our out of bundle rates. *To avail of these services a €20 top-up is required every 28 days. The €20 top-up offering is promotional for a limited period only, until October 31st 2017. A fair usage policy applies. For full details see our full prepay plan terms.

Source: Three Prepay plan website: http://www.three.ie/eShop/phone-plans/prepay/ (accessed 1st June 2017).

For Three's customers, the prices for calls to the NGN classes covered in our report are as follows:

Table 28: Cost of calls to NGNs for Three's customers

Plan	Freephone (1800)	CallSave (1850)	LoCall (1890)	Universal Access (0818)	Nomadic (076)
Three Bill Pay	Free	30.49c per call	30.49c per min	30.49c per min	No information found
Three Prepay	Free	30.49c per call	29.48c per min	29.48c per min	No information found

Source: Three Price Guide, available at: http://www.three.ie/pdf/current-priceguide.pdf (accessed on 1st June 2017).

E.2.3 Vodafone Ireland (Mobile)

Vodafone offer both Bill Pay and Pay As You Go packages. Consumers can choose a plan that includes a phone, or keep their existing mobile and purchase a SIM-only plan.

Vodafone's Bill Pay plans are as follows:

- RED Connect Essentials;
- RED Connect;
- RED Connect Super;
- RED 30 Day (SIM-only); and
- RED Connect 12 Month (SIM-only).

The plans vary in terms of data, text and call allowance, and to what networks these texts or calls are included (only Vodafone or any network)[220].

Vodafone Pay As You Go consists of 'Chat Extra' 'Data Extra' and 'Extra' plans, as well as a 'Vodafone X' offers for students. Customers can 'opt-in' to these offers by topping up a minimum of €20 each month[221]. We refer to these as "with top up offer".

Additionally, Vodafone offers add-ons for both types of plans, such as 100 text messages or international calling minutes. These add-ons differ from "top up offers" as they are one-off payments, opposed to an opt-in scheme[222].

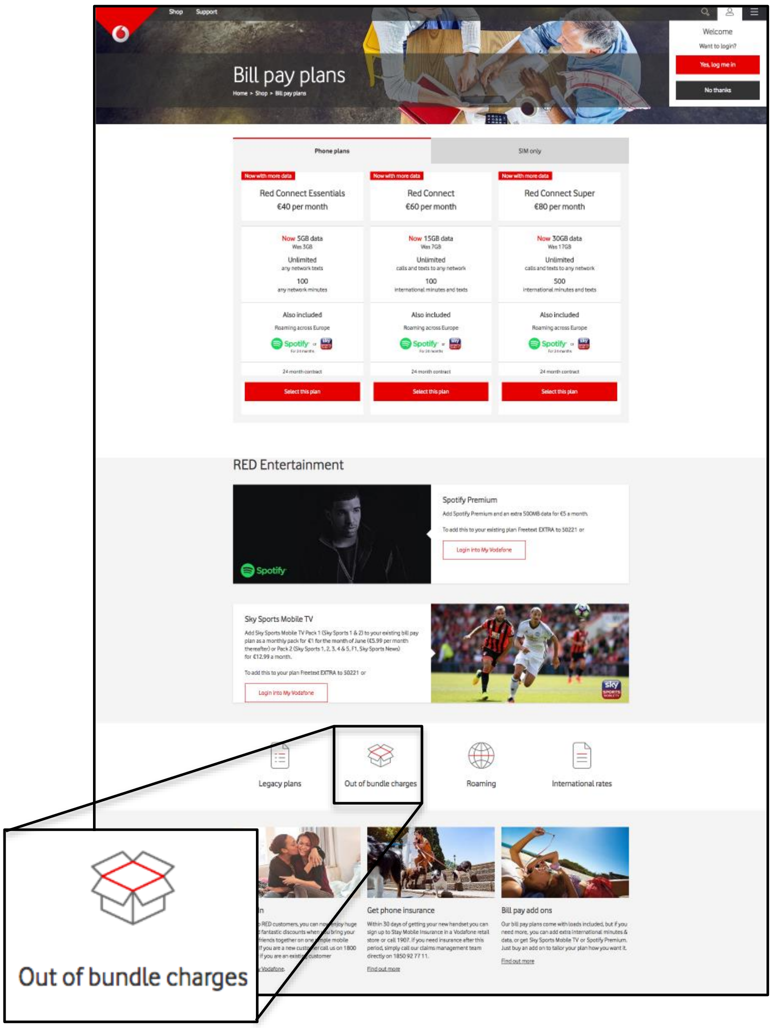
Bill Pay customers can easily find charges for calling non-geographic numbers: there is an icon clearly pointing to 'out of bundle charges' (see Figure 59).

[220] See Vodafone bill pay plans https://n.vodafone.ie/shop/bill-pay-plans.html (accessed 1 June 2017).

[221] See Vodafone Pay As You Go plans, https://n.vodafone.ie/shop/pay-as-you-go-plans.html (accessed 1 June 2017).

[222] See Pay As You Go add-ons at https://n.vodafone.ie/shop/pay-as-you-go-plans/add-ons.html and Bill Pay add-ons at https://n.vodafone.ie/shop/bill-pay-plans/add-ons.html (accessed 1st June 2017).

Figure 59: Out of bundle charges are well signposted on the Vodafone Bill Pay plan website.



Source: Vodafone, Bill Pay plans and costs: https://www.vodafone.ie/bill-pay-plans/ (accessed on 1st June 2017).

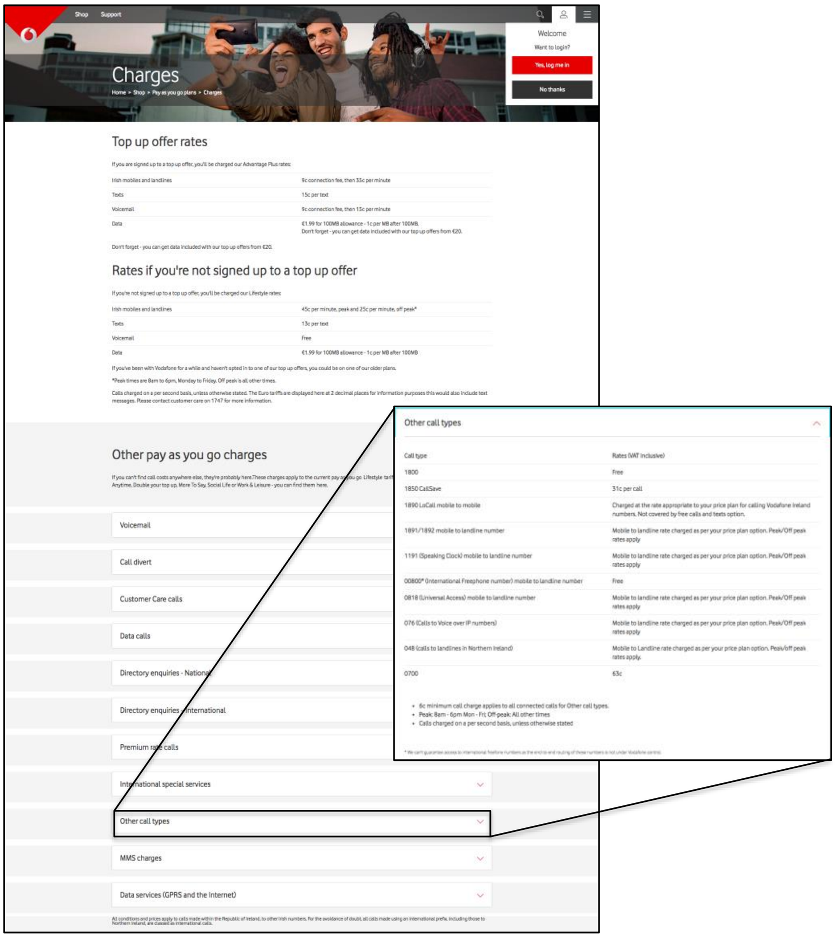
Similarly the Pay As You Go page features a prominently placed "Rates and Charges" icon at the bottom of the page, which redirects the user the Vodafone Pay As You Go charging site (see Figure 60). From here, it is trivial to find the 'Other call types' costs.

For both Pay As You Go and Bill Pay 'other call' charges, the information given is largely descriptive rather than quoting a price explicitly. For example, the cost for calling a Universal Access (0818) number is simply describes that "[c]alls are deducted from your price plan minutes first, then mobile to landline rates are charged as per your price plan"[223] and for 1890 that "Mobile to mobile rate charged

223 https://n.vodafone.ie/shop/bill-pay-plans/out-of-plan-charges.html (accessed 2nd June 2017).

as per your price plan. Peak/off peak rates apply." as shown in the figure below.

Figure 60: It is easy to find NGN charges on the Vodafone Pay As You Go pay page.



Source: Vodafone, Pay As You Go charges: https://n.vodafone.ie/shop/pay-as-you-go-plans/Charges.html (accessed on 2nd June2017)

The text for both Bill Pay and Pas As You Go refers to prices "as per your price plan" . In the case of Pay As You Go, we have assumed that this is either the Vodafone basic 'LifeStyle' rate or the rate customers receive if they sign up to an offer[224].

However, it is not possible to similarly find charges for Bill Pay plans; despite referring to calls being charged *"as per your price plan"* charges for several of the relevant NGN numbers[225], the page does

[224] See: https://n.vodafone.ie/shop/pay-as-you-go-plans/Charges.html (accessed 2nd June 2017).

[225] See Vodafone Bill Pay 'Out of plan charges', https://n.vodafone.ie/shop/bill-pay-plans/out-of-plan-charges.html (accessed 6th June 2017).

not specify what exactly these charges entail, nor do the Vodafone Bill Pay terms and conditions[226].

For Vodafone's customers, the prices for calls to the NGN classes covered in our report are as follows:

Table 29: Cost of calls to NGNs for Vodafone's mobile customers

Plan	Freephone (1800)	CallSave (1850)	LoCall (1890)	Universal Access (0818)	Nomadic (076)
Vodafone Bill Pay	Free	30c per call	*"Mobile to mobile rate charged as per your price plan. Peak/off peak rates apply."* No further information found.	*"Calls are deducted from your price plan minutes first, then mobile to landline rates are charged as per your price plan."* No further information found.	*"Mobile to landline rate charged as per your price plan. Peak/off peak rates apply."* No further information found.
Vodafone Pay As You Go	Free	31c per call	*"Charged at the rate appropriate to your price plan for calling Vodafone Ireland numbers. Not covered by free calls and texts option."* **With Top up offer:** 9c connection fee; plus 35c per minute. **Without Top Up offer*:** 45c per minute peak; 25c per minute off peak.	*"Mobile to landline rate charged as per your price plan option. Peak/Off peak rates apply."* **With Top up offer:** 9c connection fee; plus 35c per minute. **Without Top Up offer:** 45c per minute peak; 25c per minute off peak.	*"Mobile to landline rate charged as per your price plan option. Peak/Off peak rates apply."* **With Top up offer:** 9c connection fee; plus 35c per minute. **Without Top Up offer:** 45c per minute peak; 25c per minute off peak.

Source: Vodafone, Pay As You Go charges, available at: https://n.vodafone.ie/shop/pay-as-you-go-plans/Charges.html and Vodafone, Out of plan charges for Bill Pay, available at: https://n.vodafone.ie/shop/bill-pay-plans/out-

[226] See: https://n.vodafone.ie/terms/bill-pay.html (accessed 6th June 2017).

of-plan-charges.html (accessed 2nd June 2017)
**base on the "lifestyle" rate.*

E.2.4 Tesco Mobile

Tesco Mobile offers both Bill Pay and Prepay plans. Consumers can buy a phone as part of a plan, or keep their current phone and buy a SIM only plan.

Tesco offers four Bill Pay plans, each with varying minutes, texts and data allowance[227], and also three Prepay plans – Basic, Unlimited Talk and Unlimited Text[228]. Every new customer is initially signed up to the 'Basic' plan, and can then opt-in to either Unlimited plan.

Customers may also purchase add-ons, giving them extra data and unlimited texts.

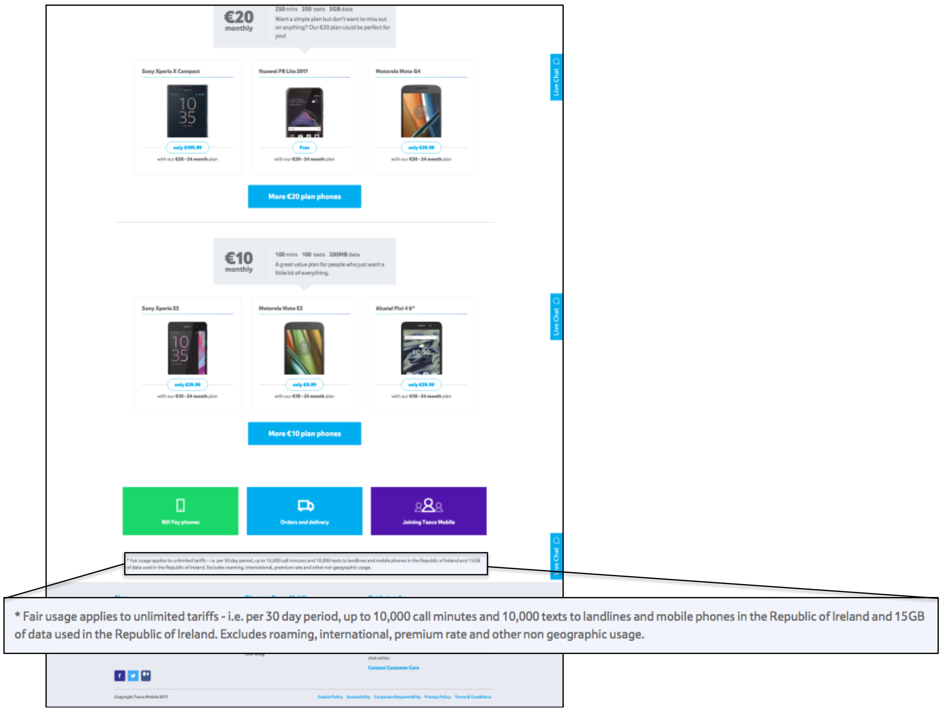
Although the Bill Pay plans[229] all cite '"Unlimited" minutes, this statement is followed by an asterisk (*) leading the user to the bottom of page, which states that plans "*[exclude] roaming, international, premium rate and other non geographic usage*" (See Figure 61).

[227] https://www.tescomobile.ie/bill-pay-plans.aspx (accessed 2nd June 2017).

[228] https://www.tescomobile.ie/prepay-plans.aspx (accessed 2nd June 2017).

[229] http://www.tescomobile.ie/bill-pay-plans.aspx

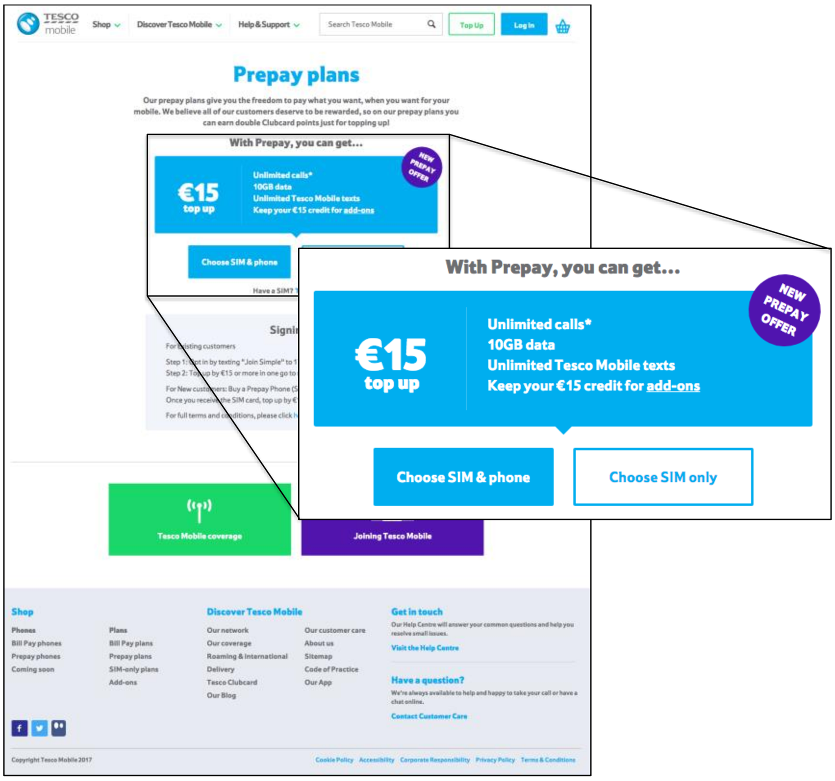
Figure 61: The Tesco Mobile Bill Pay page explicitly states that NGNs are excluded from bundle calls.



Source: Tesco Mobile Bill Pay plans: https://www.tescomobile.ie/bill-pay-plans.aspx (accessed 2nd June 2017).

The Prepay plans website is much less clear about what calls are included or excluded in the tariff than the Bill Pay page. As for the Bill Pay site, 'Unlimited calls' is presented with an asterisk (See Figure 62). However, no corresponding explanatory statement can be found on the page (See Figure 62). Although this information can be found by following the full terms and conditions hyperlink in the 'Signing Up' box, the user needs to read through several irrelevant (to call rate) terms and conditions to do so.

Figure 62: Tesco Mobile 'Prepay plans' page does not state what calls are included or excluded from the tariff.



Source: Tesco Mobile Prepay Plans: https://www.tescomobile.ie/prepay-plans.aspx (accessed 2nd June 2017).

Finding the rates for non-geographic calls is difficult. Neither the Bill Pay nor Prepay plan pages have a direct link to these charges, nor do the Prepay plan terms and conditions[230]. Users need to navigate to the Tesco "Help Centre"[231] where NGN charges can be found by following the "Other Call Charges" link in the "Your Plan" section.

For Tesco Mobile customers, the prices for calls to the NGN classes covered in our report are as follows:

Table 30: Cost of calls to NGNs for Tesco's customers

Plan	Freephone (1800)	CallSave (1850)	LoCall (1890)	Universal Access (0818)	Nomadic (076)**

[230] https://www.tescomobile.ie/about-us/terms/tcs-prepay-10gb.aspx (accessed 5th June 2017).

[231] http://www.tescomobile.ie/help-centre/ (accessed 2nd June 2017).

Plan	Freephone (1800)	CallSave (1850)	LoCall (1890)	Universal Access (0818)	Nomadic (076)**
Prepay and Bill Pay rates	Free	35c per call	15c per min	20c per min	32c per minute[232]

Source: Tesco Mobile, Other Call Charges, available at: http://www.tescomobile.ie/help-centre/Your-Plan#Other-Call-Charges (accessed 2nd June 2017)
***"Charged at the per minute rate appropriate to your price plan, for national calls to Irish landlines (does not avail of inclusive minutes). The call charge per minute will be billed on a per second basis."*

E.2.5 Virgin Media Ireland

Virgin Media is a virtual mobile network operator running on Three's network.

Two plans are available: Virgin Mobile 1GB and Virgin Mobile Unlimited.[233] The '1GB' package is somewhat cheaper for existing Virgin Media customers. Where the 1GB plan puts restrictions on usage, the 'Unlimited' option provides unlimited calls, texts and data. There is also an "International Add-On" available.

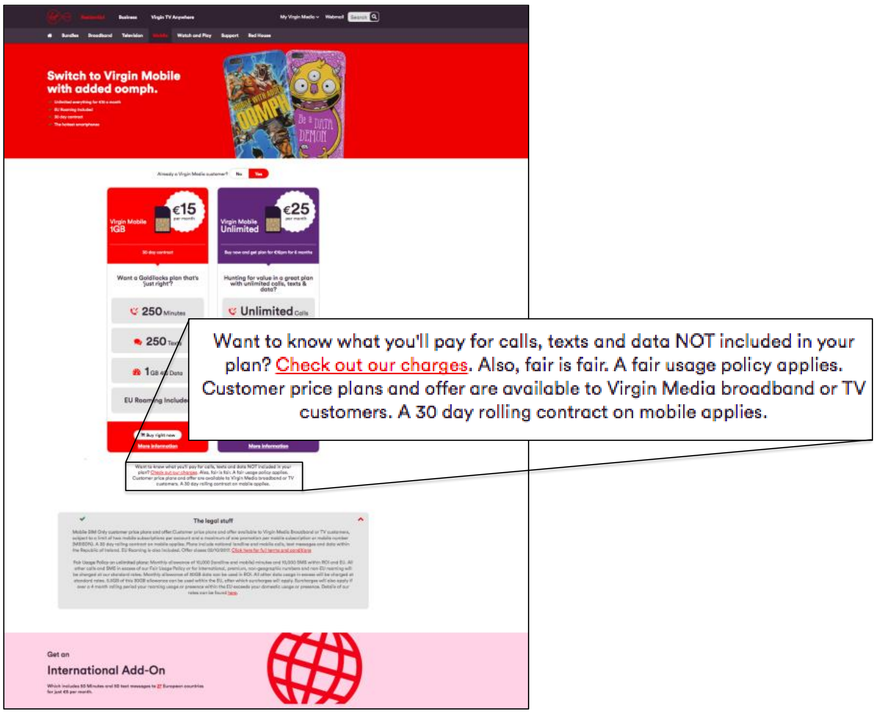
What numbers are not included in the plan is well signposted; there is a noticeable link to Virgin Media's standard mobile rates[234] underneath the summary of both plans. Moreover "The legal stuff" box immediately underneath this concisely states that "...*nongeographic numbers and roaming will be charged at our standard rates* ...", and again directs users to Virgin Media's standard mobile rates (see Figure 63).

[232] Based on the standard charge for calls to landlines and mobiles in the Republic of Ireland for both Prepay and Bill Pay customers.

[233] https://www.virginmedia.ie/mobile/ (accessed 2nd June 2017).

[234] Virgin Media, Standard Virgin Mobile Rates https://www.virginmedia.ie/pdf/Mobile/june/Mobile-Standard-Rates-Online-01062017.pdf (accessed 2nd June 2017).

Figure 63: Virgin Media's website straightforwardly directs users to out-of-plan charges.



Source: Virgin Media, Mobile SIM only plans: https://www.virginmedia.ie/mobile/sim-only/ (accessed 2nd June 2017)

For Virgin Media's customers, the prices for calls to the NGN classes covered in our report are as follows:

Table 31: Cost of calls to NGNs for Virgin Media's customers

Plan	Freephone (1800)	CallSave (1850)	LoCall (1890)	Universal Access (0818)	Nomadic (076)
Virgin Media	Free	30c per call	25c per min	25c per min	4c per min

Source: Virgin Media, Standard Virgin Media Mobile Rates, available at: https://www.virginmedia.ie/pdf/Mobile/june/Mobile-Standard-Rates-Online-01062017.pdf (accessed 2nd June 2017).

Annex F Case studies

As part of our evidence gathering for this report, DotEcon also sought to gain insight from the types of concerns, complaints and regulatory interventions taking place in other jurisdictions with regards to NGNs.

We conducted research of the current regulatory management and use of NGNs in a selection of comparable jurisdictions. The purpose of this research was to help improve our understanding of the types of market failure and consumer harm that is prevalent in other comparable jurisdictions.

As well as helping us to build our economic framework and hypotheses to be tested in the market research and data gathering stages, this research provided a good overview of the types of regulatory measures taken in comparable jurisdictions to remedy market failure and consumer harm. Where the regulatory remedies have been in place for a sufficiently long duration we sought to assess the success or failure of such measures through drawing on and analysing any existing surveys, literature, reports and other documentation, such as regulatory consultations that had been published since the interventions.

The comparator jurisdictions would be chosen to cover a range of regulatory approaches, selecting those areas where relevant work has been done recently, where there are unique features, or where there have been disputes that have led to changes in the regulatory process. As explained above, one of ComReg's concerns was the lack of transparency regarding the price of NGNs in Ireland. Therefore we tried to include examples of measures targeted at levels of price transparency and regulatory measures taken to promote price transparency in other jurisdictions. In addition to price transparency issues, consumer harm may arise from other market failures such as vertical externalities leading to high retail prices for calling NGNs. Therefore, we also searched for examples of any regulatory obligations imposed on retail price levels such as retail price ceilings as well as the principles behind the use of certain price caps or pricing methods (such as ladder pricing).

In addition to regulatory measures imposed by individual NRA's in their jurisdictions we also considered any relevant judicial decisions, including of the EU Court of Justice, relating to regulatory measures taken in respect of NGNs. Therefore, providing some potentially vital case precedent in terms of remedies proposed as part of this project, to ensure that they are in line with those proposed in other jurisdictions and the European Union's legislative framework.

Following discussion with ComReg we agreed to present three detailed case studies, covering investigations and interventions that have taken place in the UK, Netherlands and Portugal.

In addition to the three 'maxi' case studies, we also capture key points regarding complaints, use and legal cases related to NGNs in the following countries:

- France (ARCEP).
- Switzerland (BAKOM);
- Croatia (HAKOM); and
- Poland (UKE).

All of these case studies have been prepared through a combination of desk-research and specific questions to the relevant national regulatory and competition authorities in response to a questionnaire issued to NRAs throughout Europe using the BEREC platform.

F.1 The Netherlands

High costs of calls to NGNS (in particular from mobiles) was the subject of significant debate in the Netherlands for a number of years. Sepcifically, the focus was in relation to rates for call origination, given that the origination rates far exceeded regulated termination rates.

After commissioning a study into the high costs of mobile origination, the Dutch regulator (then operating as OPTA), ammended the 'Decree on Interoperability' ending extra charges for mobile calls to 088, 0900 and other non-geographic numbers. In accordance with the Decree on Interoperability issued by the Dutch Government, wholesale tariffs for calls to non-geographic numbers should be comparable to tariffs for calling geographic numbers, unless clear additional costs are involved. KPN has contested this measure, claiming that such measures can only be imposed under a significant market power regime. The appeal reached the Administrative Court for Trade and Industry, which later sent a request for a preliminary ruling to the European Court of Justice.

The Court asked three questions of the European Court of Justice concerning the compatibility of the tariffs that the incumbent KPN is allowed to charge for transit services to non-geographic, premium rate numbers (focussing on Article 28 of the Universal Service Directive).

The Netherlands case is highly relevant to the issues being considered by ComReg. There is a body of evidence that identified issues in theory and practice, regulatory intervention following the collation and review of this evidence, and then legal challenge of the resulting intervention. Thus, this case study covers many different aspects that ComReg should be aware of.

Availability of NGNs in Netherlands

The following NGNs are available in the Netherlands:

- 0800: freephone;
- 084: location independent, premium rate (used mostly for fax-to-email and voicemail services);
- 085: location independent, basic rate (for private use);
- 087: location independent, premium rate;
- 088: location independent, basic rate (for companies);
- 097: m2m (machine to machine) and automated applications;
- 0900: premium rate, information;
- 0906: premium rate, adult content;
- 0909: premium rate, entertainment;
- 112: emergency services number;
- 14xxx(x): public authorities, where xxxx is the three- or four-digit area-code of the municipality;
- 16xx: carrier select prefixes; and
- 18xx: number information.

Review of NGNs

Research

In 2011 the Netherlands Authority for Consumers and Markets (ACM), then operating as the Netherlands Independent Post and Telecommunications Authority (OPTA), commissioned SEO Amsterdam Economics (an economic research agency) to conduct a study on costs of call origination for freephone numbers.

SEO compared tariffs for mobile call origination with those for mobile call termination and found that mobile origination rates were significantly higher than mobile termination rates. Origination for mobile calls averaged €0.25 per minute; this was significantly above mobile termination rates regulated at €0.07 per minute, which in theory, should be comparable in cost terms.[235]

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[235] SEO Amsterdam Economics (2011), *Buying power for the purchase of call origination to 0800 numbers*. Page 9

SEO also calculated the costs for number users for call termination using the bottom-up long run incremental cost (BULRIC) and BULRIC-plus methods, finding that the mobile tariffs for call origination to 0800 numbers were "*roughly 20 and 10 times higher respectively than the BULRIC and BULRIC-plus for mobile call termination*".[236] Assuming that costs of call origination to 0800 numbers did not significantly differ from the costs of call termination to other numbers, SEO concluded that "*charges for mobile call origination to 0800 numbers (far) exceed the costs*".[237]

In addition, SEO found that mobile origination rates tended to be higher than the average retail price for a mobile call: this may also suggest that mobile origination charges are priced significantly above cost.[238]

SEO concluded that OCPs, both fixed and mobile, effectively had a monopoly in the market for call origination, for the following reasons[239]:

- while there may be other OCPs operating in the market, call origination relating to a specific caller is restricted to a single OCP;
- there are no real substitutes for being able to offer a freephone service to callers; and
- service providers have limited bargaining power.

Each of these points are expanded upon in more detail below.

Call origination is restricted to a single OCP

While there are often many OCPs competing in the market, and while callers can change operators, callers do not change operators on a per-call basis (there may be exceptional circumstances where this is not the case, for example dual SIM mobile phone or multiple fixed lines however these are so limited that they can be safely discounted).

[236] SEO Amsterdam Economics (2011), *Buying power for the purchase of call origination to 0800 numbers*. Pages 9-10

[237] SEO Amsterdam Economics (2011), *Buying power for the purchase of call origination to 0800 numbers*. Page 9

[238] SEO Amsterdam Economics (2011), *Buying power for the purchase of call origination to 0800 numbers*. Pages 10-11

[239] SEO Amsterdam Economics (2011), *Buying power for the purchase of call origination to 0800 numbers*. Pages 27

There are no substitutes to freephone users

Market research, mostly interviews of number users conducted by SEO, found there were few substitute goods to freephone services. Potential substitute goods in theory include 0900 numbers, geographic numbers, telecommunications services over the internet and access via other telephone numbers but in practice there are significant constraints on these services being a suitable substitute for freephone calls.

One alternative would be to provide services via an 0800 freephone number solely for users calling from fixed networks, i.e. barring calls from mobile users.[240] However by doing this, service providers would be preventing a large and growing proportion of users from calling them, or at least, calling them for free. SEO notes that for many service providers, this would not be an effective substitute because it would be contrary to the 'image' that the organisation wishes to convey, citing the example of free mobile access to the Kindertelefoon (Dutch 'child line').

SEO found that premium rate (0900) numbers were a poor substitute for freephone numbers for three reasons.[241]

- Firstly, 0900 numbers are not free to callers, and may be especially expensive to mobile users. This defeats the appeal of these numbers for those service providers who consider free access to their services desirable or even necessary. As a result, there is likely to be a reduction in caller volumes; however, there are cases where number users hope this positive cost will limit "*frivolous and vexatious*"[242] telephone calls.
- Secondly, SEO assert that it is public perception in the Netherlands that 0900 numbers are generally expensive. Whilst a number provider may charge low rates, this whole range may be perceived as expensive by consumers.
- Thirdly, 0900 numbers are not available on all mobile contracts. In particular, some business contracts may bar these calls: this frustrates the aim of being accessible to the general public.

[240] SEO Amsterdam Economics (2011), *Buying power for the purchase of call origination to 0800 numbers*. Pages 16-17

[241] SEO Amsterdam Economics (2011), *Buying power for the purchase of call origination to 0800 numbers*. Page 17

[242] SEO Amsterdam Economics (2011), *Buying power for the purchase of call origination to 0800 numbers*. Page 18

SEO considered that a geographic number may be a poor substitute to freephone numbers for three reasons.[243]

- Firstly geographic calls are not free to the caller. In particular, charges for mobile callers may "*thwart the aim of being accessible at little or no cost*"[244].
- Secondly, a geographic number may not be the preferred solution for a business tying to establish or convey a national presence. It may, wrongly, give the impression that the number user is only offering a regional service.
- Thirdly, a geographic number "*permits fewer technical applications*", for example there may be restrictions on routing calls to customer services.[245]

Forms of telecommunications other than telephony, such as chat services over the internet, were not considered to the provide the same type of experience as freephone calls. SEO's interviews revealed that alternatives based on the internet are seen as "*supplementing telephone access rather than replacing it*". For example, e-mail was viewed as less direct than voice telephony, and websites frequently offer less specific information on customers' questions. Also, all these techniques were insufficiently established to provide a complete alternative to voice telephony. Additionally, to use these alternative services, the "caller" must have access to the internet and be sufficiently competent in using it. Depending on the organisation, this requirement may result in substantial sections of society finding it more difficult or impossible to contact the organisation if voice telephony were replaced by services over the Internet.

There are other number ranges available to service providers for specific purposes: the 014 number range for local authorities, the 088 number range for businesses and institutions that are not tied to specific regions and 18xy number for directory enquiries. SEO compared the advantages and disadvantages of these number series[246] and concluded that the effectiveness of these numbers as substitutes was limited: 014 numbers are only available to local

[243] SEO Amsterdam Economics (2011), *Buying power for the purchase of call origination to 0800 numbers*. Page 19

[244] SEO Amsterdam Economics (2011), *Buying power for the purchase of call origination to 0800 numbers*. Page 19

[245] SEO Amsterdam Economics (2011), *Buying power for the purchase of call origination to 0800 numbers*. Page 20

[246] SEO Amsterdam Economics (2011), *Buying power for the purchase of call origination to 0800 numbers*. See Table 3.2

authorities, 088 numbers cannot be used for customer service and 18xy numbers can only be used for obtaining address details.

The bargaining power of service providers is limited.

SEO found, from literature reviews and interviews with market players, that a number user (aka service provider) has "*little if any bargaining power*"[247] when dealing with originating operators. SEO listed the following negotiating strategies: refusing to pay, lodging a complaint with the regulator, choosing a different interconnection route, multi-market contact, and comparing the rates charged by the various networks and on that basis excluding certain networks when buying call origination.[248]

SEO quickly concluded that refusing to pay and lodging a complaint with the regulator were not effective strategies: disputes cost time and money, and damages business relationships[249]; lodging appeals is similarly difficult and time-consuming[250].

Whilst it may be worthwhile for platform providers and networks to establish a direct connection and cut out the transit provider (usually KPN), this bargaining power can only be exercised in relation to the transit provider. Choosing a different connection route does not create any bargaining power vis-à-vis the originating network, as call origination has to be bought from the originating network for each route.[251]

Service providers and networks may do business in a number of areas, not just 0800 access, for example purchasing mobile subscriptions for business use. One bargaining strategy would be for the organisation to negotiate the best overall package (including 0800 access). However, SEO concluded that, in practice, multi-market contact probably does not generate any bargaining power because the different services are purchased separately from the point of view of both the number user and the telecom provider.[252]

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[247] SEO Amsterdam Economics (2011), *Buying power for the purchase of call origination to 0800 numbers*. Page 26

[248] SEO Amsterdam Economics (2011), *Buying power for the purchase of call origination to 0800 numbers*. Page 24

[249] SEO Amsterdam Economics (2011), *Buying power for the purchase of call origination to 0800 numbers*. Page 24

[250] SEO Amsterdam Economics (2011), *Buying power for the purchase of call origination to 0800 numbers*. Page 24

[251] SEO Amsterdam Economics (2011), *Buying power for the purchase of call origination to 0800 numbers*. Page 24

[252] SEO Amsterdam Economics (2011), *Buying power for the purchase of call origination to 0800 numbers*. Page 24

The service provider could choose to arrange access only for the networks with the most favourable terms. In theory, the risk of being excluded gives mobile network operators an incentive to make a good offer: subscribers will be dissatisfied with the service and the MNO may lose revenue if the number is not accessible. The MNO's reputation may also be damaged.[253] However SEO find that excluding access entails an array of practical problems and that it may be contrary to the aim of being accessible to the general public. SEO conclude that it is "*unlikely that excluding access... can create any buying power*"[254].

Issues identified

The high cost of mobile origination to freephone numbers is an issue that seems to have been debated for some time. SEO cites figures from the Nederlandse Vereniging voor Bedrijfstelecommunicatie Grootverbruikers (Dutch Association of Major Business Telecommunications Users, the "BTG") which showed "*that number users were increasingly switching from freephone numbers to numbers which entail a call charge*".[255] They also cite figures from other sources that purportedly show the same trend. Through correspondence as part of this project, ACM describe how OPTA *"[for] some years, … had discussion[s] about the rates of … mobile call origination to 0800 numbers"* and *"had received some complaints"* about the *"too high [rates] compared to the rates charged for similar services in other parts of the market"*[256].

The SEO report commissioned by OPTA found that the high cost of mobile origination to freephone numbers was due to the lack of real substitutes. OPTA summarised the SEO report as follows: "*This study has revealed that parties that need 0800 numbers for fixed and mobile callers have no real alternatives. Number users thus have no effective buyer power. This situation leads to high tariffs.*"[257]

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[253] SEO Amsterdam Economics (2011), *Buying power for the purchase of call origination to 0800 numbers*. Page 26

[254] SEO Amsterdam Economics (2011), *Buying power for the purchase of call origination to 0800 numbers*. Page 26

[255] SEO Amsterdam Economics (2011), *Buying power for the purchase of call origination to 0800 numbers*. Background

[256] Response to ComReg's BEREC Questionnaire issued as part of this project

[257] 20 January 2012, OPTA, *Buying power for the purchase of call origination to 0800 numbers* (available from https://www.acm.nl/en/publications/publication/10313/Buying-power-for-the-purchase-of-call-origination-to-0800-numbers/)

Below we outline the remedies/intervention taken and subsequent legal challenge. For clarity, we match our description to the following timeline:

February 2013 OPTA ends extra charges for mobile calls to 088, 0900 and other non-geographic numbers.

April 2013 ACM formed from the merger of OPTA and Nma.

July 2013 February's policy change reducing extra charges comes into force.

October 2013 ACM finds KPN is in breach of the national tariff-related measure and orders KPN to adjust its tariffs. KPN lodges an appeal against that order at the Netherlands Court for Trade and Industry.

September 2015 Ruling of Court of Justice of the European Union

Remedies/intervention

Following the publication of the SEO report (ACM comments that the "*study result[s] were the main trigger for a change of the tariff transparency obligations*"[258]), OPTA introduced a policy change in February 2013[259]. This change amended the decree on interoperability (Besluit Interoperabiliteit; "the BI"). Article 5 of the BI obliged certain telecommunications providers[260], in respect of certain ranges of non-geographic numbers[261], to "*apply tariffs or other charges which are comparable to the tariffs or other charges levied by those providers for calls to geographic numbers, and that they may levy a different tariff or different charge only if that is necessary in order to cover the additional costs related to the calls to those non-geographic numbers*". This policy change effectively ended extra charges for calls to 088, 0900 and other non-geographic numbers. As a consequence, it became cheaper for companies and institutions to offer services via freephone numbers.

[258] Response to ComReg's BEREC Questionnaire issued as part of this project

[259] OPTA, Beleidsregels artikel 5 Besluit Interoperabiliteit 2013, 14 February 2013 https://www.acm.nl/nl/publicaties/publicatie/11164/Beleidsregels-artikel-5-Besluit-Interoperabiliteit-2013/

[260] Article 5(1) of the BI clarifies what telecommunication providers the policy change applies to: "providers of public telephone services or associated providers of public electronic communications networks which also control access to end-users…"

[261] Article 5(2) of the BI lists the following number ranges: 0800, 084, 085, 087, 088, 0900, 0906, 0909, 116, 14 or 18 that the policy change applies to.

Then on 18 October 2013, once this policy had come into force, the ACM found that KPM was charging higher tariffs for call transit services to non-geographic numbers than for the same services to geographic numbers and that this difference was not justified by additional costs.[262] KPN is the largest provider of call transit services in the Netherlands, representing approximately 20% of its traffic to those numbers.[263]

Following its findings of overcharging, ACM ordered KPN to adjust its tariffs on pain of a *per diem* penalty of EUR 25,000, up to a maximum of EUR 5 million.[264]

In addition to this case, we understand that conditions linking wholesale charges for NGN calls to those of a geographic equivalent have been applied in the Netherlands in line with Article 28 of the Universal Service Directive, and in Malta in line with power to specify conditions to a right of use of numbers including any requirements linked to the provision of that service.[265] In the Netherlands there are restrictions on both retail and wholesale prices for NGNs, stating that the charges can be no more than the equivalent price for geographic calls unless it can clearly be demonstrated that the costs are different. These conditions were imposed in line with Article 28 of the Universal Service Directive through an amendment to the decree on interoperability (Besluit Interoperabiliteit; "the BI"). Article 5 of the BI obliged certain telecommunications providers[266], in respect of certain ranges of non-geographic numbers[267], to "*apply tariffs or other charges which are comparable to the tariffs or other charges levied by those providers for calls to geographic numbers, and that they may levy a different tariff or different charge only if that is necessary in order to cover the additional costs related to the calls to those non-geographic numbers*". We understand that an explanatory

[262] Judgement in KPN BV v Autoriteit Consument en Markt (ACM), Case C-85/14, ECLI:EU:C:2015:610, paragraph 19

[263] Judgement in KPN BV v Autoriteit Consument en Markt (ACM), Case C-85/14, ECLI:EU:C:2015:610, paragraph 18

[264] Judgement in KPN BV v Autoriteit Consument en Markt (ACM), Case C-85/14, ECLI:EU:C:2015:610, paragraph 19

[265] See http://www.mca.org.mt/sites/default/files/pageattachments/201202%20Decision%20Freephone%202008_0.pdf

[266] Article 5(1) of the BI clarifies what telecommunication providers the policy change applies to: "providers of public telephone services or associated providers of public electronic communications networks which also control access to end-users..."

[267] Article 5(2) of the BI lists the following number ranges: 0800, 084, 085, 087, 088, 0900, 0906, 0909, 116, 14 or 18 that the policy change applies to.

note to Article 5[268] obliges providers to include calls to non-geographic numbers in any bundle they offer in line with the statement above.

Challenges

KPN lodged an appeal against ACM's decision ordering it to adjust its tariffs, before the College van Beroep voor het bedrijfsleven (Administrative Court for Trade and Industry, "the CBb").[269]

KPN argued that Article 5 of the BI does not comply with the new regulatory framework applicable to electronic communications services ("the NRF") and in particular, Article 28 of the Universal Service Directive. This allows NRAs to introduce price controls only in respect of operators that have significant market power, and only after the completion of a market analysis.[270]

The ACM justified its decision by arguing that Article 28 of the Universal Service Directive is the basis for the rule of the equivalence of prices for call transit services.[271] This requires "*relevant national authorities [to] take all necessary steps to ensure that end users are able to access and use services using non-geographic numbers within the [European Union]*"[272].

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[268] See page 22 of "Staatsblad van het Koninkrijk der Nederlanden – Jaargang 2012", with the following translation: *"If a call bundle is used with a fixed number of call minutes, as is often the case with mobile telephony, calls to the aforementioned non-geographical numbers can only be settled outside the call bundle when a caller has actually made his call minutes. If there is a subscription form that allows the caller to call unlimited, whether or not at certain times (eg at night and at weekends), as is the case with fixed telephony, calls to these numbers may only be charged separately. If the call occurs on a day or time that does not fall within the scope of the relevant subscription form. The call should therefore be treated equally as a call to a geographical number."* Original text available at: https://zoek.officielebekendmakingen.nl/stb-2012-236.pdf

[269] Judgement in KPN BV v Autoriteit Consument en Markt (ACM), Case C-85/14, ECLI:EU:C:2015:610, paragraph 20

[270] Judgement in KPN BV v Autoriteit Consument en Markt (ACM), Case C-85/14, ECLI:EU:C:2015:610, paragraph 21

[271] Judgement in KPN BV v Autoriteit Consument en Markt (ACM), Case C-85/14, ECLI:EU:C:2015:610, paragraph 22

[272] Directive 2009/136/EC of the European Parliament and of the Council of 25 November 2009 amending Directive 2002/22/EC on universal service and users' rights relating to electronic communications networks and services, Directive 2002/58/EC concerning the processing of personal data and the protection of privacy in the electronic communications sector and Regulation (EC) No 2006/2004 on cooperation between national authorities responsible for the enforcement of consumer protection laws, Article 28

With the case hinging on the question of the scope and extent of Article 28 of the Universal Service Directive, the College van Beroep voor het bedrijfsleven, being uncertain of the correct interpretation of that provision, stayed the proceedings and referred three questions[273] to the European Court of Justice, reproduced in full below:

1. Does Article 28 of the Universal Service Directive permit the imposition of tariff regulation, without a market analysis having indicated that an operator has significant market power in regard to the regulated service, although the cross-border selectability of non-geographic telephone numbers is entirely possible from a technical point of view and the only obstacle to access to those numbers lies in the fact that the tariffs charged mean that a call to a nongeographic number is more expensive than a call to a geographic number?

2. If Question 1 is answered in the affirmative, the following two questions arise:
   a. Does the power to regulate tariffs also apply in the case where the effect of higher tariffs on the call volume to non-geographic numbers is merely limited?
   b. To what extent do the national courts still have scope to assess whether a tariff-related measure required under Article 28 of the Universal Service Directive is not unreasonably onerous for the transit provider, given the objectives which it seeks to attain?
3. Does Article 28(1) of the Universal Service Directive leave open the possibility that the measures referred to in that provision may be taken by an authority other than the [NRA] which exercises the powers referred to in Article 13(1) of the Access Directive, with the result that the latter authority would merely have enforcement powers?'

The first question was interpreted as asking whether Article 28 of the Universal Service Directive provides a legal basis for the remedy, without any market analysis indicating that the operator has significant market power having been carried out and where the

[273] Judgement in KPN BV v Autoriteit Consument en Markt (ACM), Case C-85/14, ECLI:EU:C:2015:610, paragraph 28

obstacle to access to non-geographic numbers and their services is non-technical (tariff-related).[274]

The court interprets Article 28 of the Universal Service Directive as not precluding a tariff obligation without a market analysis having indicated that an operator has significant market power, provided that the tariff obligation is necessary to ensure that end-users have access to services using non-geographic numbers.[275]

The second question is in two parts. First it asks the court whether Article 28 of the Universal Service Directive must be interpreted as precluding the remedy, a tariff-related measure, when the effect of higher tariffs on the call volume to non-geographic numbers is merely limited.[276] Next, the CBb is unsure as to the scope that it has to determine whether a tariff-related measure required under Article 28 of the Universal Service Directive "*unreasonably onerous for the transit provider, given the objectives which it seeks to attain*".

The court finds that "*any obstacle, including an obstacle limited to access to services using non-geographic numbers, is at odds with the objectives pursued by the EU legislature, namely the completion of a single European market and … should therefore be regarded as prohibited*"[277]. Next, the court finds that the CBb should examine whether the measure is consistent with the objective of access to service using non-geographic numbers and the use of these services set out in Article 28 of the Universal Service Directive. If it finds that the objective is consistent with EU law, then its next step will be to assess whether the measure is "*suitable, necessary and proportionate*" [278].

Thirdly, the CBb queries whether the Article 28 of the Universal Service Directive allows measures to be taken by an authority other than the national regulatory authority referred to in Article 13(1) of the Universal Service Directive. The NRA would therefore merely have enforcement powers. This third question is relevant as the Government of the Netherlands had adopted the tariff-related

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[274] Opinion of Advocate General Bot in KPN BV v Autoriteit Consument en Markt (ACM), Case C-85/14, ECLI:EU:C:2015:245, paragraph 24

[275] Judgement in KPN BV v Autoriteit Consument en Markt (ACM), Case C-85/14, ECLI:EU:C:2015:610, paragraph 49

[276] Opinion of Advocate General Bot in KPN BV v Autoriteit Consument en Markt (ACM), Case C-85/14, ECLI:EU:C:2015:245, paragraph 81

[277] Opinion of Advocate General Bot in KPN BV v Autoriteit Consument en Markt (ACM), Case C-85/14, ECLI:EU:C:2015:245, paragraph 86

[278] Opinion of Advocate General Bot in KPN BV v Autoriteit Consument en Markt (ACM), Case C-85/14, ECLI:EU:C:2015:245, paragraph 89

national measure[279], which was then applied by the ACM, acting as NRA. However KPN asserted that only a NRA has the power to impose a tariff-related measure and that the Government of the Netherlands could not be regarded as a NRA.

The ECJ rejected this argument by KPN, noting that case-law does "*not rule out the possibility that, in certain circumstances, an authority other than the NRA, namely a legislative body or a ministerial authority, may intervene as NRA or alongside an NRA in accordance with the NRF*"[280]. Furthermore, Member States "*enjoy institutional autonomy as regards the organisation and the structuring of their NRAs*"[281]. However the court clarified that the authority must "*[satisfy] the conditions of competence, independence, impartiality and transparency required… and that the decisions which it takes can form the subject of an effective appeal to a body independent of the interested parties*"[282]. It is up to the referring court to determine whether these conditions are satisfied.

F.2 United Kingdom

In the UK non-geographic calls are those made to numbers beginning with 03, 05, 07, 08, 09, 116 and 118.

In 2013, Ofcom completed a review of NGNs in the UK, which led to changes to Freephone (0800, 116, 0500) and Revenue sharing numbers (084, 087, 09, 18) designed to simplify NGNs (Table 32

[279] Besluit van 30 mei 2012 tot wijziging van het Besluit interoperabiliteit, het Besluit randapparaten en radioapparaten 2007, het Besluit universele dienstverlening en eindgebruikersbelangen, het Besluit vergoedingen Telecommunicatiewet, het Besluit voorwaardelijke toegang en het Frequentiebesluit, ter implementatie van de herziene telecommunicatierichtlijnen (Besluit implementatie herziene telecommunicatierichtlijnen), translated as "Decree of May 30, 2012 amending the Decree on interoperability, the decision peripheral equipment and radio equipment in 2007, the Decree on universal service and retail interests, the Decree fees Telecommunications Act, the decision conditional access and the Frequency Decree, implementing the revised telecommunications directives (Decree implementing the revised telecommunications directives)", available at https://zoek.officielebekendmakingen.nl/dossier/32549/stb-2012-236?resultIndex=3&sorttype=1&sortorder=4

[280] Opinion of Advocate General Bot in KPN BV v Autoriteit Consument en Markt (ACM), Case C-85/14, ECLI:EU:C:2015:245, paragraph 114

[281] Judgement in KPN BV v Autoriteit Consument en Markt (ACM), Case C-85/14, ECLI:EU:C:2015:610, paragraph 53

[282] Judgement in KPN BV v Autoriteit Consument en Markt (ACM), Case C-85/14, ECLI:EU:C:2015:610, paragraph 58

below provides an overview of these numbers and the remedies introduced following Ofcom's review).

Table 32: Freephone and revenue sharing numbers in the UK

Freephone	Revenue sharing
0800, 116, 0500	084, 087 (business rate) 09 (premium rate) 118 (directory enquiries)
Remedy: 0800 and 116 free to all callers (including mobile) 0500 to be withdrawn in 2017*	Remedy: Unbundled tariff structure of access charge (paid communications provider) plus service charge (paid to service provider) Ofcom also imposed a cap on the rate of the service charge for these numbers (except 118).

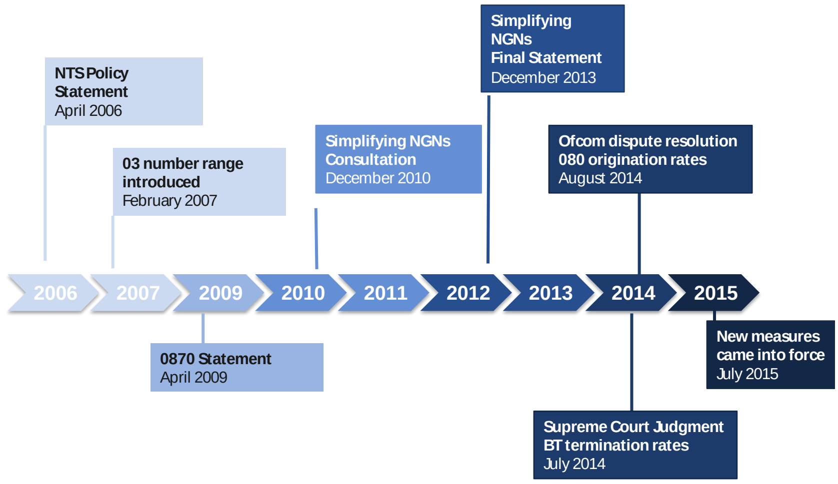
Source: http://stakeholders.ofcom.org.uk/telecoms/policy/non-geo-call-services/

In addition to making all calls to Freephone numbers free (i.e. setting a maximum retail price of zero) Ofcom set an Access Condition on all terminating communications providers of 080 and 116 numbers requiring them to purchase wholesale origination on "fair and reasonable terms". Alongside the Access Condition Ofcom published guidance on how it would assess whether origination charges for calls to 080 and 116 numbers are "fair and reasonable", if called to do so in a dispute. Ofcom subsequently determined a dispute between BT and each of Vodafone, Telefonica and Three relating to origination charges for 080 numbers in August 2014 in which it set the fair and reasonable level of mobile origination rates for 080 numbers.[283]

Whilst the main focus of this case study is Ofcom's work on 'simplifying NGNs' leading to the 2013 Decision, we also note that Ofcom has done much work in the area in the past as indicated in the timeline below:

[283] Ofcom, August 2014, 'Dispute between BT and each of Vodafone, Telefónica and Three relating to forward looking call origination charges for 080 numbers', Statement and Determination, available at: http://stakeholders.ofcom.org.uk/binaries/enforcement/competition-bulletins/open-cases/all-open-cases/cw_01126/Final_Determination_and_Statement.pdf

Figure 64: Timeline of Ofcom policy changes and disputes



For example, Ofcom had previously conducted a policy review of NGNs that it completed in April 2006 and published a policy statement.[284] In this statement Ofcom proposed that for calls to 087 numbers CPs would be required to provide a pre-announcement informing consumers of the cost if it was higher than the cost of a geographic call. However, this proposal was not taken forward due to concerns about disruption that this could cause to alarm services which use 0870 numbers.[285]

On the back of the general proposals made in its April 2006 policy statement Ofcom published a statement in May 2007 implementing changes to the general conditions to address concerns regarding consumer certainty and confidence. In particular:

- Ofcom introduced 03 numbers in 2007 as an alternative number range, which consumers could trust because they would not pay more than the price of a call to a geographic number. The retail price charged for calls to 03 numbers must not exceed that of calls to standard geographic numbers (i.e. those that begin 01 or 02) – the 03 range is the only NGN in the UK that is linked to geographic call prices. Calls to 03 numbers must be included in any call allowances or discounts offered to customers in the same way as geographic calls (i.e. if geographic calls are included in the bundle then 03 numbers must also be included).

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[284] Ofcom, April 2006, 'NTS: A Way Forward', available at: http://stakeholders.ofcom.org.uk/consultations/nts_forward/statement/

[285] see notes for editors http://media.ofcom.org.uk/news/2008/tightening-the-rules-on-08-telephone-numbers/

Communications providers are not allowed to share revenues they receive for 03 calls with end-users.[286]

- In response to concerns that 070 Personal Numbers were often confused with mobile numbers (which cost less to call) Ofcom imposed a requirement that callers to these numbers get a free announcement about call costs before the call begins (for any call costing over 20p per min/per call.[287] However, this requirement was withdrawn at the end of 2007 in response to complaints that the announcement was leading to delays to emergency type services.[288]

On 23 April 2009 Ofcom published a statement to implement changes to the regulation of calls to 0870 numbers.[289] Under the new requirements CPs were *"obliged to include a prominent statement in advertising/promotional material whether or not 0870 calls are included in inclusive packages and bundles"* and CPs were *"only be permitted to refer to 0870 calls as 'national rate' in their advertising and promotional material and retail bills where their 0870 and national geographic prices are the same as for geographic calls."*[290]

In addition to the various policy reviews conducted by Ofcom over the years, the incumbent fixed operator British Telecom ("BT") had also tried to address some of the issues with a market-based solution, which led to a dispute between BT and mobile operators regarding BT's termination charges for NGNs. The dispute was finally resolved in the Supreme Court in 2014.[291]

In the rest of this case study, we focus mainly on Ofcom's work on 'simplifying NGNs' leading to the 2013 Decision and also make a reference to the BT's attempt at a 'market-based' solution.

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[286] http://stakeholders.ofcom.org.uk/consultations/numbering03/statement/

[287] Ibid.

[288] http://stakeholders.ofcom.org.uk/consultations/numbering03/070precall/

[289] Ofcom, April 2009, 'Changes to 0870', Statement, available at: http://stakeholders.ofcom.org.uk/consultations/0870calls/statement/

[290] See paragraph 1.7, Ofcom, April 2009, 'Changes to 0870', Statement.

[291] Supreme Court, 9 July 2014, JUDGMENT British Telecommunications Plc (Appellant) v Telefónica O2 UK Ltd and Others (Respondents) available at: https://www.supremecourt.uk/decided-cases/docs/UKSC_2012_0204_Judgment.pdf

F.2.1 Ofcom's Review of NGNs – Simplifying NGNs

In 2010, Ofcom initiated a review of non-geographic calls services (NGCS) in response to concerns that consumers were confused about what NGNs meant and how much calls to these numbers cost ("Ofcom's Review of NGNs").[292] The review covered all NGN ranges in the UK, with the exception of the 07 ranges, which are used for mobile services.[293]

Ofcom's Review of NGNs lasted three years and the detailed analysis built on consumer and service provider research and discussions with industry, ultimately concluding that there was *"substantial consumer detriment"* arising from a number of interrelated market failures.[294]

Ofcom implemented a number of remedies as a result of its review:

- a requirement that all consumer calls to **Freephone numbers must be free to call** (previously callers calling from mobile incurred a cost for calling many Freephone numbers)
- the introduction of an **unbundled tariff structure** for revenue sharing number ranges (08, 09 and 118), comprising an access charge plus a service charge. There is also a cap on the service charge for calls to 08 and 09 numbers.

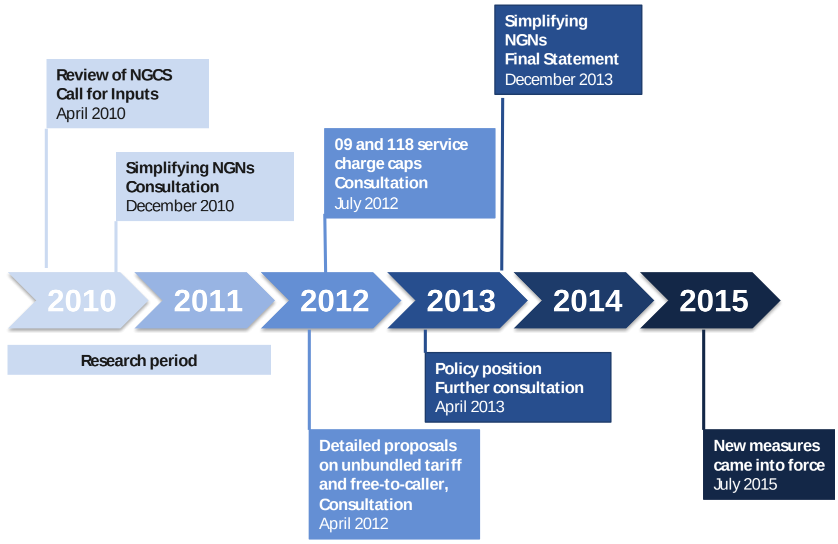
We discuss the evidence base for Ofcom's identification of consumer harm and provide further details of the remedies below. Figure 65 provides an overview of the procedure/timeline of Ofcom's review.

[292] Ofcom, April 2010, 'Review of non geographic calls services – call for inputs', http://stakeholders.ofcom.org.uk/binaries/consultations/ngnservices/summary/main.pdf

[293] See paragraph 2.6 Ofcom, December 2013, 'Simplifying non-geographic numbers – Final Statement on the unbundled tariff and making the 080 and 116 ranges free-to-caller'

[294] See paragraph 1.5-1.6 of Ofcom, December 2013, 'Simplifying non-geographic numbers – Final Statement on the unbundled tariff and making the 080 and 116 ranges free-to-caller'

Figure 65: Timeline of Ofcom's review of NGCS



Consumer research

In the course of the consultation period (2010-2012) Ofcom drew on the following consumer research reports and evidence:

- Consumer Transparency in Telephone Numbering research (January 2009)[295];
- Non-Geographic Call Services Review – Research document (October 2010)[296] ;
- Non-geographic telephone numbers – Omnibus Survey (November 2011)[297]

We discuss the objectives and results of these consumer research pieces in turn below.

[295] Available at: http://stakeholders.ofcom.org.uk/binaries/consultations/wmctr/annexes/transparency.pdf

[296] See: http://stakeholders.ofcom.org.uk/binaries/consultations/simplifying-non-geo-numbers/annexes/nts.pdf

[297] Available at: http://stakeholders.ofcom.org.uk/binaries/research/telecoms-research/omnibus-survey.pdf

Consumer Transparency in Telephone Numbering research (2009)

This work was originally commissioned in January 2009 as part of the development of Ofcom's numbering strategy (and although not specifically commissioned for the review of NGCS it is referred to by Ofcom as within the scope of its review).

In general the study found that lack of knowledge of the numbering system and limited awareness of the cost of calls did not cause many difficulties because the price of individual calls was becoming less relevant to many customers due to the increasing role of bundles.

However, the exception was for 08xx numbers, where the research found that consumers were anxious about the cost of these calls and were therefore working around 08xx numbers by calling geographic numbers, or calling from work etc. The qualitative research also found that when consumers received their bills they were often surprised to find that they actually cost less than they had anticipated. Ofcom concluded that there was some consumer detriment, not necessarily in terms of the cost of these calls because consumers were working around them and that they actually cost less than the perceived cost, but in the time and effort to work around these numbers.

Non-Geographic Call Services Review – Research document (2010)

As part of its review of NGCS Ofcom commissioned consumer research to gain a better understanding of consumers' awareness, perception and use of NGNs and assess whether NGCS had any impact on consumers' decision making and calling behaviour.

Overall the consumer survey evidence found that NGNs were having a negative impact on mobile-only users and in particular prepaid consumers who were making alternative arrangements to avoid calling from their mobile because of the perceived expense. On the other hand, for the vast majority of consumers with a fixed line only or both fixed and mobile, NGNs did not pay much attention to NGNs due to low reported usage and roughly consistent monthly bills. There was however an overwhelmingly negative attitude towards these numbers across all users and many users considered that the service provider was deliberately taking advantage of them, especially when they were made to hold on the line.

Non-geographic telephone numbers – Omnibus Survey (2011)

In 2011 Ofcom commissioned a consumer omnibus survey to supplement the evidence previously collated to assist with the evaluation of potential remedies. The focus of the survey was on price transparency, awareness and the impact of price uncertainty on demand.[298]

[298] Ofcom, November 2011, 'Non-geographic telephone numbers – Omnibus Survey', available at: http://stakeholders.ofcom.org.uk/binaries/research/telecoms-research/omnibus-survey.pdf

The survey found low awareness of the costs of specific calls to all number ranges (NGN, geographic and mobile). Of those consumers that did not know the specific cost per minute there was a general perception that calls were expensive. On average the estimates of call costs from mobile phones suggested that mobile users considered calls to 0845 and 0870 numbers to be more expensive than calls to mobile, geographic numbers and 0800 numbers (Freephone). Interestingly the majority of consumers reacted to price uncertainty by making the call but trying to keep the call short to minimise the cost.

Service Provider research

Ofcom also conducted research on the use of geographic numbers by service providers. This included two research reports:

- The use of non-geographic numbers by service providers (August 2010)[299];
- Non-geographic numbers – research among service providers – research document (December 2011)[300]

We discuss the objectives and results of these research pieces in turn below.

The use of NGNs by SPs, Analysys Mason

In this report by Analysys Mason, the researchers carried out a series of in-depth interviews with service providers ("SPs") of NGCS in the UK market,[301] and conducted a short survey of 124 additional information providers ("IPs"). The aim of these activities was to better understand:

- *"the criteria used by SPs when choosing to use a specific, non-geographic number range*
- *how SPs negotiate with communications providers for services*

[299] Analysys Mason, August 2010, 'The use of non-geographic numbers by service providers – Final Report for Ofcom', available at: http://stakeholders.ofcom.org.uk/binaries/consultations/simplifying-non-geo-numbers/annexes/use-of-nongeo.pdf

[300] http://stakeholders.ofcom.org.uk/binaries/research/telecoms-research/Non-geographic-numbers.pdf

[301] They interviewed 20 service providers ("SPs") made up of 10 resellers and 10 information providers ("IPs"). Analysys Mason define resellers as those parties who "*…sell access to individual non-geographic numbers to information providers and generally negotiate with TCPs for services.*" Information Providers are defined as "*…the organisations that a caller speaks to when calling a specific non-geographic number…*"

- *what improvements could be made to the way the non-geographic call market works that would benefit SPs."*[302]

The interview and survey found that IPs generally selected their NGN range based on market perception, convenience or image, largely disregarding any potential income generation. In fact, revenue sharing arrangements meant that for most number ranges IPs were making out payments to TCPs. This was not however considered to be problematic as the main aim of NGNs was to increase the volume of calls rather than receive direct revenue from them.[303]

Most IPs stated that they were unable to influence the retail price of calls to their number, *"although some services such as The Number using the 118 number range had a degree of influence, although generally less for mobile originated calls."*[304]

IPs considered that the main problem in the market was the lack of price transparency and understanding of the different number ranges, which was exacerbated by high retail prices charged by some operator – MNOs in particular. IPs believed that this reduced call volumes for IPs and therefore long-term revenues.

The results from the interviews with resellers yielded very similar results.

The research indicated a mixture of revenue sharing agreements between both resellers and TCPs, and between resellers and IPs. The arrangements varied greatly across number ranges and pass-through of revenues from TCPs to resellers was sometimes as high as 90-95% of TCP revenues.

NGNs research among SPs, Ofcom

In 2011, Ofcom conducted 623 telephone interviews among SPs using 080 and 0845 numbers to better understand the value users of these numbers place on the features and to test a number of its proposals for intervening in the market.[305] For example, SPs using the 0845 number range were presented with two options for intervention in relation this range and asked which option they would prefer:

[302] Analysys Mason, August 2010, 'The use of non-geographic numbers by service providers – Final Report for Ofcom', p7

[303] There was some exceptions to this rule, for example one IP said that it chose a particular number range to cover some of the cost of running the service.

[304] Analysys Mason, August 2010, 'The use of non-geographic numbers by service providers – Final Report for Ofcom', p 12.

[305] "304 interviews conducted among companies with 080 number/s and 319 interviews conducted among companies with 0845 number/s." Ofcom, December 2011, 'Non-geographic numbers – research among service providers' Research Document, p 1.

> *"Option 1…the cost to you of operating an 0845 number will increase by 1.5 pence-per-minute, and the cost to callers of calling your 0845 number(s) will be the same as calls to a normal landline number.*
>
> *Option 2…neither the cost to your organisation of operating your 0845 number nor the price paid by callers will change, but when your number is mentioned, for example in advertising, it will state that the call charge is split, with 2 pence-per-minute going to you and the rest going to the phone company."*[306]

Interestingly the majority (52%) of SPs preferred Option 1, whilst only 31% preferred the second option (the rest said they did not know).[307] Over half of those that preferred Option 1 said they would no longer use their 0845 number if Option 2 was implemented.[308]

Ofcom also explored SPs' willingness to pay so that calls from mobiles would be free and relative preferences for making 080 free to mobile callers (at a cost to SP) compared to a non-zero cap on the price of 080 mobile calls (7ppm) at no cost to the SP.[309] Ofcom found that once the price increase faced by SPs reached between 1ppm and 1.5ppm the number of SPs preferring the capped option outweighed those that wanted 080 calls to be free.[310]

Flow of funds study

As part of Ofcom's review of NGCS, Analysys Mason was commissioned to construct a flow of funds model for the individual NGN number ranges i.e. to determine the level of revenue and volumes flowing across the value chain.[311]

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[306] Ofcom, December 2011, 'Non-geographic numbers – research among service providers' Research Document, p 18.

[307] See Figure 22 of Ofcom, December 2011, 'Non-geographic numbers – research among service providers' Research Document.

[308] See Figure 23 of Ofcom, December 2011, 'Non-geographic numbers – research among service providers' Research Document.

[309] See Section 3.4 of Ofcom, December 2011, 'Non-geographic numbers – research among service providers' Research Document.

[310] Ofcom, December 2011, 'Non-geographic numbers – research among service providers' Research Document, p 2.

[311] Analysys Mason, November 2010, 'The flow of funds in the market for non-geographic calls', Final report for Ofcom.

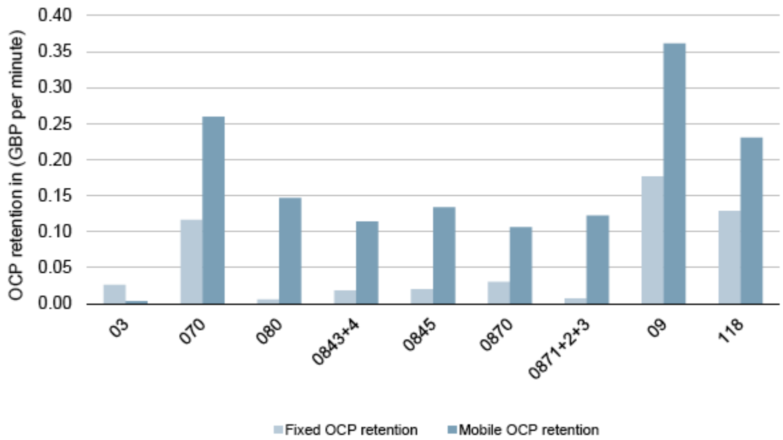
The study found a complex value chain for NGNs with a number of players in the market involved in the process of the call: Caller; OCP; Transit CP; TCP; Resellers and IPs (Resellers and IPs were grouped into the Service Provider category). The complexity of the supply chain was also echoed in the transfer of revenues between the various parties, as revenue flows across the entire value chain and in either direction. Furthermore, revenue flows were dependent on the specific NGN range.

For most calls to NGNs (except calls from fixed to 080 freephone numbers) Analysys Mason found the following flow of revenues: caller pays the OCP retail charges; the OCP retains some of this retail revenue[312], passes on some of this revenue to other CPs and can sometimes also receive revenues from TCPs and/or SPs.

OCP revenue retention – fixed vs mobile

Analysys Mason found significant differences in OCP revenue retention between fixed and mobile operators for all NGN number ranges, but this was particularly exaggerated for the 080 range (see Figure 66 below). This is because mobile callers were paying a retail charge for calls to the 080 range whilst these calls were free from fixed lines. As a consequence, fixed OCP revenue for calls to the 080 range were coming almost entirely from the SPs, whereas mobile OCPs were able to "*receive the small SP payment in addition to receiving large sums of revenue directly from consumers.*"[313]

Figure 66: OCP revenue retention – fixed versus mobile by NGN range



Source: Figure 5.31' Per-minute revenue retained by fixed and mobile OCPs for each number range' of Analysys Mason, November 2010, 'The flow of funds in the market for non-geographic calls', Final report for Ofcom,

[312] The revenue retained by the OCP is known as OCP revenue retention.

[313] Analysys Mason, November 2010, 'The flow of funds in the market for non-geographic calls', Final report for Ofcom, p 53.

OCP revenue retention – NGNs versus other number ranges

In order to contextualise these retention rates, Analysys Mason compared them to estimates of OCP revenue retention on calls to geographic and mobile numbers. Analysys Mason's findings implied that *"fixed OCP retention on most non-geographic number ranges is above the levels for UK geographic calls, but below the level of calls to mobiles (other than for premium rate or directory enquiries numbers)."*[314] In respect of mobile OCP retention, Analysys Mason estimated that retention for calls to fixed lines and mobile numbers was between 5 and 10ppm on average i.e. significantly less than the mobile OCP retention for calls to most NGN ranges (as shown in Figure 66 above).

Revenue retention by SPs

Unsurprisingly Analysys Mason found that the share of total retail revenues retained by SPs varied substantially by number range:

"For the 0871/2/3 number range, SP retention is 47% of total revenues. This range appears much more attractive to SPs wishing to generate revenue from calls than, for example, the 0845 and 0870 number ranges where retention is only around 4% and 12% respectively. As expected, SP retention is high for the premium-rate 090 number range and for 118 directory enquiries."[315]

Demand for NGNs and bundles

Analysys Mason found that demand for NGNs was declining as volumes of calls to NGNs had fallen.[316] This result was consistent with evidence provided by BT on the experience of its retail customers, which also indicated shortening call durations to NGNs.[317]

An important observation is that whilst, in general, originating call volumes do not vary significantly across the different NGN ranges they did vary significantly for those calls originated from mobile. Very few calls (5% of the total originated) were made from mobile to 080 whereas over 50% of 03 calls were originated from a mobile. 03 numbers are typically included within mobile bundles. Therefore Analysys Mason concluded that *"consumers adapt their calling*

[314] Analysys Mason, November 2010, 'The flow of funds in the market for non-geographic calls', Final report for Ofcom, p 21.

[315] Analysys Mason, November 2010, 'The flow of funds in the market for non-geographic calls', Final report for Ofcom, p 20.

[316] Analysys Mason, November 2010, 'The flow of funds in the market for non-geographic calls', Final report for Ofcom, pp, 25 and 32.

[317] See paragraph 4.40 of Ofcom, December 2010, 'Simplifying Non-Geographic Numbers – Improving consumer confidence in 03, 08, 09, 118 and other non-geographic numbers'

patterns to non-geographic numbers from fixed and mobile lines based on the relative pricing."[318]

Retail prices mobile vs fixed

There was also evidence that mobile-originated NGNs were significantly more expensive than fixed-originated because mobile operators achieved 35% of total retail revenue from 11% of the total volume of NGNs.[319]

Perceptions of prices

With the data underlying the flow of funds study Ofcom was able to compare actual prices with perceived prices expressed in the consumer research. Ofcom found that consumers perceived prices to be significantly higher than they actually were.[320]

Issues identified

After three years of detailed analysis, which included the research described above, international comparisons and discussions with industry, Ofcom concluded in its Final Statement in 2013 that there was "*substantial consumer detriment arising from a number of interrelated market failures*".[321]

Ofcom identified the following 'market failures':

- **lack of consumer price awareness**: customers often overestimated the price of calls to certain number ranges (in particular 084 and 087 ranges), and there was general confusion about prices across the ranges;
- **vertical externalities**: SPs have little control over the price paid by callers such that retail prices may not reflect SP preferences;
- **horizontal externalities**: OCPs and SPs do not take into account the impact of their behaviour on consumer

[318] Analysys Mason, November 2010, 'The flow of funds in the market for non-geographic calls', Final report for Ofcom, p 36.

[319] See paragraph, A2.92 of Ofcom, December 2010, 'Simplifying Non-Geographic Numbers – Improving consumer confidence in 03, 08, 09, 118 and other non-geographic numbers'

[320] See table A2.21, Ofcom, December 2010, 'Simplifying Non-Geographic Numbers – Improving consumer confidence in 03, 08, 09, 118 and other non-geographic numbers'

[321] See paragraph 1.5 of Ofcom, December 2013, 'Simplifying non-geographic numbers – Final Statement on the unbundled tariff and making the 080 and 116 ranges free-to-caller'

perceptions of calls made to these number from mobile and fixed and on call prices to adjacent number ranges.[322]

As a result of the identified market failures, Ofcom considered that this led to a number of outcomes that could harm consumers:

- *"as a result of uncertainty about price, consumers limit the number or duration of calls they make on these ranges in circumstances where they would benefit from making more and/or longer calls;*
- *the relative prices of calls to these number ranges do not reflect consumer preferences;*
- *SPs on these ranges lack an incentive to invest in service availability and innovation; and*
- *consumers may be unable to access or be deterred from accessing socially important services on the 084 range (especially 0845), a particular concern in the case of vulnerable consumers."*[323]

Ofcom thus considered intervention was warranted to address these market failures. The remedies imposed by Ofcom are discussed in detail below.

Remedies, implementation and evaluation

To remedy the consumer detriment identified Ofcom decided to reform the market, which included *"simplification of the system to protect consumers from that harm."* [324] Ofcom's main forms of intervention were to ensure that 080 and 116 numbers were **free-to-caller** regardless of whether they called from landline or mobile and to impose an **unbundled tariff structure on revenue sharing numbers (08 and 09)**.

<u>080 and 116 ranges free-to-caller</u>

[322] See paragraph 3.6 of Ofcom, December 2013, 'Simplifying non-geographic numbers – Final Statement on the unbundled tariff and making the 080 and 116 ranges free-to-caller' and Section 4 of Ofcom, April 2013, 'Simplifying non-geographic numbers – Policy position on the introduction of the unbundled tariff and changes to 080 and 116 ranges'

[323] See paragraph 3.7 of Ofcom, December 2013, 'Simplifying non-geographic numbers – Final Statement on the unbundled tariff and making the 080 and 116 ranges free-to-caller'

[324] See paragraphs 1.5-1.6 of Ofcom, December 2013, 'Simplifying non-geographic numbers – Final Statement on the unbundled tariff and making the 080 and 116 ranges free-to-caller'.

Calls free to both fixed and mobile callers

Previously calls to Freephone numbers tended to be free for landline callers but callers calling from mobile incurred a cost for calling many Freephone numbers. The remedy would ensure that calls to all Freephone numbers would be free to all callers i.e. regardless of whether they called from fixed or mobile i.e. effectively imposing a zero retail charge in calls to 080 and 116 ranges.

Access condition

Ofcom recognised that imposing a zero retail charge might prompt changes in the wholesale arrangements and that there was a risk that imbalances in negotiation powers might give rise to *"interconnection delays or failures, the risk of an extended period of uncertainty, origination payments that would not necessarily be in the interests of consumers"*.[325]

Therefore to minimise these risks Ofcom imposed an access condition on TCPs which requires the following for 080/116 numbers:

- "to purchase wholesale origination services for all zero-rated calls to 080 or 116 numbers (other than calls from a public payphone) from any requesting OCP;
- to do so on fair and reasonable terms and conditions (including charges); and
- by 26 January 2014, to notify any OCP with whom it has an existing interconnection agreement of its proposed revision to the charges for wholesale origination."[326]

Together with this access requirement Ofcom published guidance on how it would be likely to assess what fair and reasonable wholesale charge for calls to 080 and 116 numbers are in the case of a dispute ('080/116 Dispute Guidance')."[327]

[325] See paragraph 4.119 of Ofcom, December 2013, 'Simplifying non-geographic numbers – Final Statement on the unbundled tariff and making the 080 and 116 ranges free-to-caller'.

[326] See paragraph 4.120 of Ofcom, December 2013, 'Simplifying non-geographic numbers – Final Statement on the unbundled tariff and making the 080 and 116 ranges free-to-caller'.

[327] Ibid. The Guidance is in Annex 1 of Ofcom, December 2013, 080 and 116 number ranges – Statement on dispute resolution guidance', Statement, available at: http://stakeholders.ofcom.org.uk/binaries/consultations/080-116-ranges/statement/Final_080-116_guidance.pdf

080/116 Dispute Guidance – Fair and reasonable origination charges

The Guidance explains that Ofcom does not consider it appropriate to determine the level of fair and reasonable charges in advance of being called upon to resolve a dispute. Instead Ofcom provides a list of principles it will draw on to assess whether origination charges are fair and reasonable:[328]

- **Principle 1: OCPs should be able to recover their efficient costs of originating calls**
- **Principle 2: charges for origination should be "beneficial to consumers"**, taking into account the following:
    1. Indirect effect: impact of the proposed origination charge on service provider ('SP') costs, and on callers through resulting relevant decisions by SPs such as exiting (or not joining) a free-to-caller number range with an impact on service availability, and cost mitigation measures;
    2. Tariff package effect: impact of the proposed origination charge on OCPs' retail prices for other services; and
    3. Competition effect: impact of the proposed origination charge on competition, whether beneficial or detrimental.
- **Principle 3: the origination payment should be practical to implement.**

Upper bound for origination charges should be LRIC plus

Ofcom considers that the application of principle 1 results in a range of efficient charges for origination charges lying anywhere between the pure LRIC and LRIC plus costs.[329] Ofcom does however propose excluding customer acquisition and retention ("A&R") costs from the LRIC plus calculation because it considers that for the most part SPs are unlikely to benefit from expenditure related to these activities. A&R costs are related marketing and advertising, handset costs, discounts/incentives and sales.

Base case scenario ranges of origination charges

Despite stating that it did not consider it appropriate to determine the level of fair and reasonable charges in advance of a dispute Ofcom does provide *"some early clarity over the range of charges"* it would *"be likely to consider fair and reasonable on the basis of*

[328] Note Ofcom used the six principles of pricing and cost recovery it has used in other decisions to formulate the three principles – these three principles were developed in the context of Ofcom's 2010 Dispute Determination in relation to calls to 080 numbers to assess whether BT's termination rates for 080 calls were fair and reasonable. See paragraph 2.11 and Annex 1 of Ofcom, December 2013, 080 and 116 number ranges – Statement on dispute resolution guidance', Statement.

[329] See paragraph A1.30 of Ofcom, December 2013, 080 and 116 number ranges – Statement on dispute resolution guidance', Statement.

available evidence."[330] Ofcom refers to these ranges for origination charges as the "base case scenario range". For 080 numbers Ofcom derived the following base case ranges of origination charges:

*"**0.4 - 0.5ppm** for fixed originated calls and **1.5 - 2.4ppm** for mobile originated calls. However, we note that we would only consider a mobile origination charge to be fair and reasonable if it resulted in an average service provider (SP) outpayment that did not exceed 1.5ppm (taking into account the fixed origination charge and the likely proportion of calls that are originated from fixed and mobile lines)."*[331]

For 116 numbers Ofcom derived the following base case ranges of origination charges:

*"fixed and mobile origination charges either both maintained at existing levels (approximately **0.5ppm** for both fixed and mobile calls) or set at our estimates of pure LRIC (**0.035 – 0.059ppm** in the case of fixed origination charges and **0.78-0.88ppm** in the case of mobile). "*[332]

These base case scenario ranges were intended to form the basis for commercial negotiations on origination charges.[333] Ofcom stated that it would consider charges outside these ranges to be efficient if there was new evidence relevant to the way in which it applied the three principles to derive the base case.[334]

Dispute between BT and MNOs

Ofcom subsequently determined a dispute between BT and each of Vodafone, Telefonica and Three relating to origination charges for 080 numbers in August 2014. [335] As part of its dispute resolution powers Ofcom set the level at which it considered mobile and fixed origination rates for calls to 080 to be fair and reasonable. Ofcom agreed that BT's proposed origination rate for calls from fixed lines of 0.4ppm was fair and reasonable, however it disagreed with BT's

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[330] See paragraph 2.34 of Ofcom, December 2013, 080 and 116 number ranges – Statement on dispute resolution guidance', Statement.

[331] See paragraph 3.3 of Ofcom, December 2013, 080 and 116 number ranges – Statement on dispute resolution guidance', Statement.

[332] See paragraph 3.3 of Ofcom, December 2013, 080 and 116 number ranges – Statement on dispute resolution guidance', Statement.

[333] See paragraph 3.4 of Ofcom, December 2013, 080 and 116 number ranges – Statement on dispute resolution guidance', Statement.

[334] See paragraphs 2.40 and 3.5 of Ofcom, December 2013, 080 and 116 number ranges – Statement on dispute resolution guidance', Statement.

[335] Ofcom, August 2014, 'Dispute between BT and each of Vodafone, Telefónica and Three relating to forward looking call origination charges for 080 numbers', Statement and Determination, available at: http://stakeholders.ofcom.org.uk/binaries/enforcement/competition-bulletins/open-cases/all-open-cases/cw_01126/Final_Determination_and_Statement.pdf

proposal of a mobile origination rate of 1.0ppm. Ofcom instead determined the fair and reasonable level of mobile origination charges to be 2.0 ppm using the methodology set out in its guidance i.e. LRIC+ cost model excluding A&R costs.[336]

Unbundled tariff for 08 and 09 calls

The unbundled tariff structure for calls revenue sharing numbers (08, 09 and 118) is made up of an Access Charge ("AC") to be paid to the OCP plus the Service Charge ("SC") to be paid to the TCPs i.e. to contribute towards their costs, as well as any revenue-sharing arrangements with SPs. Ofcom also capped the SC rates for 08 and 09 calls and imposed a number of rules with respect to the structure of the SC:

- The service charge for a given number cannot vary by OCP
- The service charge cannot vary by time of day/week
- Cap of 5.833 pence for the 084 range, applying to whichever charging structure is selected;
- cap of 10.833 pence for the 087 range, applying to whichever charging structure is selected; and
- Cap of £5 per call (fixed fee) and £3 per minute for the 09 range.[337]

Ofcom decided not to impose a cap on calls to the 118 number range.[338] Ofcom did not impose a cap on the AC, but it stated that it would continue to monitor consumer understanding of the AC following implementation of the remedies and review its position in light of its findings.

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[336] Note Ofcom's estimate of the mobile origination costs in its determination derived from the cost model that supported its 2011 mobile call termination charge control. In 2015 it updated its estimate using the same methodology but with the latest mobile call termination model data. Given that the new estimate (2.026ppm) was greater than the previous estimate Ofcom determined that BT pay the lower 2ppm for mobile Origination Services for calls to 080 numbers. See http://stakeholders.ofcom.org.uk/binaries/enforcement/competition-bulletins/open-cases/all-open-cases/cw_01126/Revised_LRIC_calculation.pdf

[337] Ofcom, December 2013, 'Simplifying non-geographic numbers – Final Statement on the unbundled tariff and making the 080 and 116 ranges free-to-caller' pp25-26.

[338] After initially proposing to cap the SC for both 09 and 118 number ranges in July 2012, Ofcom subsequently concluded that a "a cap on the level of the Service Charge for the 118 range is not appropriate, given the limited evidence of existing consumer protection concerns on this range and our view that the unbundled tariff is likely to offer a solution to our pricing transparency concerns on the range. We would, nevertheless, keep this issue under review and revisit this position should evidence of consumer protection concerns arise in the future."

Note that Ofcom took this approach instead of simply setting maximum retail prices for calls to each number range. Describing why it chose not to set maximum caps, Ofcom states: "*…it would be a relatively interventionist approach which increased the risk of regulatory failure, relative to other approaches that achieve the same objective. We also considered that the regulatory burden associated with this approach would also be substantial, as it would not address the issues at the wholesale level, which would be likely to lead to ongoing disputes and significant costs and uncertainty for stakeholders.*"[339]

Business and international calls are exempted from the unbundled tariff remedy

The unbundled tariff remedy only applies to calls from consumer/residential landlines and mobile phones. Calls originating outside of the UK, from payphone and calls made by business callers are exempted from the unbundled tariff remedy.[340]

Legal instruments required to implement remedies

In order to implement its remedies Ofcom made a number of modifications to the following legal instruments:

- the existing General Conditions 12, 14, 17, 23 and 24
- the Numbering Plan; and
- the Premium Rate Services ('PRS') Condition.[341]

Separately Ofcom set an access condition on communications providers that terminate calls to 080 and 116 numbers, and a new condition that required companies other than phone companies i.e. service providers to promote their charges when advertising an unbundled tariff number (Ofcom refers to these as "non-providers").[342]

[339] See paragraph 3.11 of Ofcom, December 2013, 'Simplifying non-geographic numbers – Final Statement on the unbundled tariff and making the 080 and 116 ranges free-to-caller'

[340] See paragraphs 1.28 and 3.49 of Ofcom, December 2013, 'Simplifying non-geographic numbers – Final Statement on the unbundled tariff and making the 080 and 116 ranges free-to-caller'

[341] See paragraphs 2.3 and 3.71 of Ofcom, December 2013, 'Simplifying non-geographic numbers – Final Statement on the unbundled tariff and making the 080 and 116 ranges free-to-caller'

[342] See Annex 12 'Notification of telephone numbering condition binding non-providers under section 48(1) of the Act', Ofcom, December 2013, 'Simplifying non-geographic numbers – Final Statement on the unbundled tariff and making the 080 and 116 ranges free-to-caller'

Ofcom's powers to make General Conditions

To make these modifications Ofcom relied on a wide range of powers. Ofcom's powers in relation to the regulation of NGNs derive largely from the Communications Act 2003 ("the Act"), which implements the EU common regulatory framework for electronic communications in the UK.

Sections 57 and 58 of the Act give Ofcom powers to make general conditions in relation to numbers.[343] These include:

- *"impose tariff principles and maximum prices for the purpose of protecting consumers in relation to the provision of an ECS by means of telephone numbers adopted or available for use (section 58(1)(aa));*
- *regulate the use by a CP, for the purpose of providing an ECN or ECS, of telephone numbers not allocated to that CP (section 58(1)(b)); and*
- *impose requirements on a CP in connection with the adoption by him of telephone numbers (section 58(1)(d))."*[344]

In particular, Ofcom relied on the provisions set out in section 58(1)(aa) of the Act to impose tariff principles and maximum prices required for implementation of the unbundled tariff and maximum price cap remedies described above. Section 58(1)(aa) *"derives from a legislative amendment that was introduced for the specific purpose of consumer protection."*[345]

Ofcom is of the view that its powers to set general conditions is *"legally and conceptual distinct"* from its powers to impose SMP conditions which may only be *"exercised in relation to CPs that have SMP and in circumstances where wholesale regulation has proved ineffective."*[346] Ofcom explained that the exercise of its power set out in section 58(1)(aa) is subject to several safeguards, including the requirement for proportionality and targeted intervention where it is required (sections 3(3) and 47(2) of the Act). Ofcom's approach to these safeguards has been to consider the proportionality of the

[343] See paragraph 3.15 of Ofcom, April 2013, 'Simplifying non-geographic numbers – Policy position on the introduction of the unbundled tariff and changes to 080 and 116 ranges'

[344] See paragraph 3.15 of Ofcom, April 2013, 'Simplifying non-geographic numbers – Policy position on the introduction of the unbundled tariff and changes to 080 and 116 ranges'

[345] See paragraph 6.13 and 6.8 of Ofcom, April 2013, 'Simplifying non-geographic numbers – Policy position on the introduction of the unbundled tariff and changes to 080 and 116 ranges'

[346] See paragraph 6.11 of Ofcom, April 2013, 'Simplifying non-geographic numbers – Policy position on the introduction of the unbundled tariff and changes to 080 and 116 ranges'

remedies in light of the evidence of consumer harm it collected. For example Ofcom chose not to impose *"a price cap on the AC element of the retail price for calls to unbundled tariff numbers nor on the SC for calls to the 118 number range"* as it considered these to be *"disproportionate in light of the evidence of harm."*[347]

Ofcom also considered that it was fulfilling its general duty in relation to its number functions, as set out in section 63 of the Act, by securing the best use of telephone numbers and encouraging efficiency and innovations.[348] Also that it was consistent with its principal duty under section 3 of the Act, and the Community requirements set out in section 4 of the Act.[349]

Ofcom's powers to impose conditions on non-providers

Section 59 of the Act gives Ofcom powers to make conditions applying to persons other than CPs ("non-providers") in relation to the allocation, transfer of allocations and the use of telephone numbers by non-providers.[350] Ofcom relied on this power to impose the new condition on service providers[351] requiring them to include the Service Charge in "any advertising and promotion of the Unbundled Tariff Number" and to ensure that it is displayed in a "prominent position".[352]

Ofcom's powers to impose the access condition

Ofcom relied on powers arising from a number of sections within the Act to impose the access condition described above:

[347] See paragraph 6.13 of Ofcom, April 2013, 'Simplifying non-geographic numbers – Policy position on the introduction of the unbundled tariff and changes to 080 and 116 ranges'

[348] Paragraph 5.12 of Ofcom, December 2013, 'Simplifying non-geographic numbers – Final Statement on the unbundled tariff and making the 080 and 116 ranges free-to-caller'

[349] Paragraph 5.13 of Ofcom, December 2013, 'Simplifying non-geographic numbers – Final Statement on the unbundled tariff and making the 080 and 116 ranges free-to-caller'

[350] See paragraph 3.16 of Ofcom, April 2013, 'Simplifying non-geographic numbers – Policy position on the introduction of the unbundled tariff and changes to 080 and 116 ranges'

[351] Service providers fall within the category of non-provider because they are companies other than CPs.

[352] See Annex 12 'Notification of telephone numbering condition binding non-providers under section 48(1) of the Act', Ofcom, December 2013, 'Simplifying non-geographic numbers – Final Statement on the unbundled tariff and making the 080 and 116 ranges free-to-caller'

> *"Ofcom has a power to impose requirements by way of a general condition under section 57 of the Act to secure that end-users are able to access telephone numbers (see above). Ofcom also has specific powers under section 73(2) of the Act to impose access-related conditions for the purpose of securing: efficiency; sustainable competition; efficient investment and innovation; and the greatest possible benefit for end-users. By virtue of section 74 of the Act, such conditions may impose obligations on a person controlling network access in order to secure end-to-end connectivity."*[353]

Access condition notified to BEREC

Before it could implement any access related conditions on CPs Ofcom was required to notify its draft decisions to the European Commission ("EC"), the Body of European Regulators for Electronic Communications ("BEREC") and other national regulatory authorities ('NRAs'). Upon completion of its consultation, Ofcom notified its intended access condition (for 080/116) and sent an explanatory draft Statement to the EC, BEREC and other NRAs.[354]

In the EC's decision letter to Ofcom it reiterated that Article 5 of the Access Directive should be used with caution and that regulation should only be imposed where it is needed and is proportionate to the market failure identified. In light of the specific market dynamics and consumer protection concerns identified in connection with the use of 080 and 116 services in the UK the EC did not object to the access condition. The EC did however ask Ofcom to monitor the renegotiation by the CPs of wholesale origination charges and to withdraw the symmetrical access condition as soon as most CPs agreed on new wholesale origination charges. Ofcom committed to adopting the first request. However in relation to the second request Ofcom was concerned that removing the access condition as soon as most CPs had agreed on charged would cause uncertainty and risk undermining the condition. Although it did state that it would consider whether it is appropriate to remove the access condition once wholesale market conditions have stabilised.[355]

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[353] See paragraph 3.18 of Ofcom, April 2013, 'Simplifying non-geographic numbers – Policy position on the introduction of the unbundled tariff and changes to 080 and 116 ranges'

[354] See paragraphs 4.111 and 4.112 of Ofcom, December 2013, 'Simplifying non-geographic numbers – Final Statement on the unbundled tariff and making the 080 and 116 ranges free-to-caller'

[355] See paragraphs 4.113-4.118 of Ofcom, December 2013, 'Simplifying non-geographic numbers – Final Statement on the unbundled tariff and making the 080 and 116 ranges free-to-caller'

Evaluation of the remedies

Ofcom has committed to review and evaluate the efficacy and impact of the remedies if there is evidence of concerns. In April 2013 Ofcom set out a list of key factors it would be monitoring as well as number of areas Ofcom considered would warrant specific attention as part of a future review. Ofcom committed to monitor the following:

- *"AC levels and the direction of change in such charges;*
- *demand volume for non-geographic numbers;*
- *evidence of innovation in services provided over non-geographic numbers;*
- *average call charges in specific ranges;*
- *clarity of pricing information about calls to non-geographic numbers; and*
- *any evidence of continuing consumer harm or unintended consequences arising from the changes."*[356]

Ofcom also stated the following as potential areas it would be likely to focus on as part of any future review:

- *"whether a cap on the AC is warranted;*
- *the maximum SC caps, in particular whether such a cap is warranted for the 118 range;*
- *the role of PPP in regulating the 0871/2/3 range;*
- *the effectiveness of the price publication requirements for the AC and SC; and*
- *SC price point availability."*[357]

In its December 2013 final statement Ofcom added the following specific areas that it considered would also be likely to warrant specific attention as part of the review:

- *"the approach to inclusion of the AC in call bundles"*[358]

[356] Paragraph 5.55 Ofcom, April 2013, 'Simplifying non-geographic numbers – Policy position on the introduction of the unbundled tariff and changes to 080 and 116 ranges'

[357] Paragraph 5.56 Ofcom, April 2013, 'Simplifying non-geographic numbers – Policy position on the introduction of the unbundled tariff and changes to 080 and 116 ranges'

[358] See paragraph 6.43 and Section 3 of Ofcom, December 2013, 'Simplifying non-geographic numbers – Final Statement on the unbundled tariff and making the 080 and 116 ranges free-to-caller'

- *"the wholesale origination charges for free to call 080 and 116 numbers where a transit provider is involved in the routing of the call"*[359]; and
- *"monitoring of agreements over wholesale origination charges and the stability of the wholesale market for 080 and 116 in the light of comments from the EC"*[360]

The remedies described are relatively recent and we are not aware that Ofcom has conducted any reviews of these.

F.2.2 Commercial/market-based solutions and case precedent

Prior to Ofcom's detailed review, British Telecom ("BT") had also tried to address some of the issues with a market-based solution, which led to a dispute between BT and MNOs.

In 2009 BT introduced 'ladder pricing' termination charges for non-geographic calls with the prefix 08.[361] BT's ladder pricing termination charges meant that the termination charge paid by an originating MNO depended on the retail tariff it set for calls to 08x numbers – the higher the originating MNO's retail tariff for calls to 08x numbers the higher the variable charge for termination to be paid to BT. BT introduced ladder pricing in order to incentivise mobile operators to lower their retail prices for non-geographic numbers. However, following the introduction of ladder pricing, MNOs raised a dispute to Ofcom.

In 2010 Ofcom considered disputes in relation to BT's tiered termination charges for non-geographic numbers with the prefix 08

[359] See paragraph 6.43 and Section 4 of Ofcom, December 2013, 'Simplifying non-geographic numbers – Final Statement on the unbundled tariff and making the 080 and 116 ranges free-to-caller'

[360] See paragraph 6.43 and Section 4 of Ofcom, December 2013, 'Simplifying non-geographic numbers – Final Statement on the unbundled tariff and making the 080 and 116 ranges free-to-caller'

[361] BT introduced ladder pricing for termination charges firstly in relation to calls to 080 numbers – it notified the industry of these new charges on 3 June 2009 via Network Charge Change Notice 956. Subsequently it also adopted ladder pricing for termination charges for calls to 0845 and 0870 numbers – it notified the industry of these new charges on 2 October 2009 via NCCN 985 and NCCN 986, and the charges took effect from 1 November 2009.

("Ofcom's 08x Determinations"),[362] and concluded in favour of MNOs. Ofcom considered that BT's termination charges were not fair and reasonable and that it should revert back to the terms on which they were trading before BT introduced the changes.

Ofcom objected to ladder pricing for termination charges primarily on grounds relating to consumer and competition effects. Ofcom considered that whilst the termination charges were more likely to lead to price decreases for 08x calls rather than price increases the magnitude of the effect and therefore the consumer benefits were uncertain. Furthermore, it considered that there would be a "negative mobile tariff package effect" which meant that there was a risk of an overall adverse effect on consumers.[363] In terms of competitive effects Ofcom considered there was a low risk of competitive distortions between terminating call operators and no signification distortion to competition between MNOs' wholesale sales to MVNOs. However, it had concerns regarding originating call operators' choice of transit provider and about competition between MNOs and MVNOs in retail services ("relating to disincentives to pricing innovations and potential for the range of retail packages to be reduced, although the nature of these effects depends on the method to derive the MNOs' average retail price").[364]

BT appealed Ofcom's decision to block ladder pricing for 08x calls to the Competition and Appeal Tribunal (CAT), which ruled in favour of BT and overturned Ofcom's 08x Determinations. The CAT allowed BT's appeal as it found that BT was prima facie entitled to change its charges because it was within its contractual rights to introduce such innovative pricing structures, with such innovation itself being a dimension of competition. The CAT agreed with Ofcom that the welfare effect was uncertain, but considered that this was not the correct test, as pricing innovation should only be prevented where there is a clear demonstration of disadvantage to customers.[365]

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[362] Ofcom, 5 February 2010, 'Determination to resolve a dispute between BT and each of T-Mobile, Vodafone, O2 and Orange about BT's termination charges for 080 calls' and Ofcom, 10 August 2010, 'Determination to resolve a dispute between BT and each of Vodafone, T-Mobile, H3G, O2 and Orange and Everything Everywhere about BT's termination charges for 0845 and 0870 calls'

[363] §1.24 Ofcom, 10 August 2010, 'Determination to resolve a dispute between BT and each of Vodafone, T-Mobile, H3G, O2 and Orange and Everything Everywhere about BT's termination charges for 0845 and 0870 calls'

[364] §1.25 ibid.

[365] See summary provided by the Supreme Court at §24-27, Supreme Court, 9 July 2014, JUDGMENT British Telecommunications Plc (Appellant) v Telefónica O2 UK Ltd and Others (Respondents) available at: https://www.supremecourt.uk/decided-cases/docs/UKSC_2012_0204_Judgment.pdf

The CAT's decision was subsequently appealed to the Court of Appeal (CoA) which found that the CAT was wrong to consider that BT has a prima facie right to make such a change to its pricing.[366] Secondly, it held that the CAT had placed too much weight on the possibility that constraining the form of BT's wholesale charges could limit competition. Thirdly the CAT was wrong to consider that BT not having significant market power in any affected market meant that it was not subject to ex ante price regulation on competition grounds. The CoA attached considerable weight to the nature of function that Ofcom is performing when it resolves disputes, concluding in this respect that *"dispute resolution is a form of regulation in its own right, to be applied in accordance with its own terms"*.[367]

However, in 2014 the Supreme Court struck down the CoA's judgment, allowing BT's appeal and re-instating the original CAT finding in favour of allowing ladder pricing.[368] It considered that there was no justification for the CoA to *"set aside the careful analysis of the CAT on a matter lying very much within its expertise".*[369]

F.3 Portugal

In Portugal, there are currently 5 ranges within the scope of Non-geographical numbers (excluding numbers for mobile service). Since 2004, there have been several public consultations and interventions of the relevant regulatory bodies like ANACOM and the Competition Authority, namely to deal with consumer protection and competition issues in relation to non-geographic numbers. The current case study illustrates those cases that were considered as most relevant for ComReg and describes the different types of remedies that have been applied at retail and wholesale level (namely, imposition of caps in the retail prices, obligation to lower wholesale price call origination, and new rules on end user access to numbers).

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[366] See summary provided by the Supreme Court at §28-30 ibid.

[367] §30 ibid.

[368] Supreme Court, 9 July 2014, JUDGMENT British Telecommunications Plc (Appellant) v Telefónica O2 UK Ltd and Others (Respondents) available at: https://www.supremecourt.uk/decided-cases/docs/UKSC_2012_0204_Judgment.pdf

[369] §51 ibid.

Availability of NGNs in Portugal

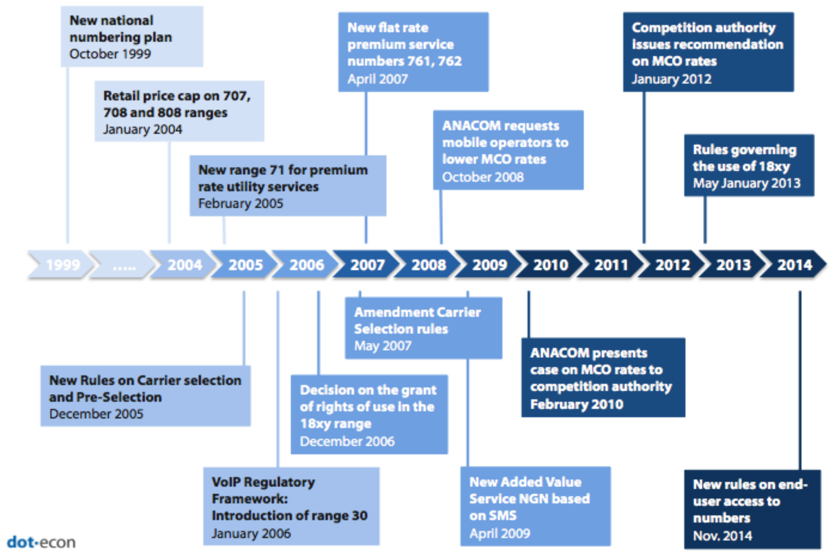
Currently, Portugal uses five different numbering ranges (1, 30, 6, 7 and 8) for Non-geographic numbers:[370]

- Number range 1 (short numbers) - reserved for the so-called 'short numbers' in Portugal and includes numbers such emergency numbers, directory enquiries, customer support and information services
- Numbering range 30 - assigned to nomadic VoIP services. The range was opened in 2006 following a public consultation procedure and the setting of a Regulatory Framework for VoIP.
- Number range 6 - used for Premium Rated services (classified in Portugal as audio-text and value added services based on SMS).
- Numbering range '7' - reserved for two types of services: Universal access services (707 and 708) and Flat rate premium services (760, 761, 762, 765).
- Numbering range '8' - reserved for four different services: Freephone, shared cost/revenue call, virtual calling cards and personal number services.

During the last twelve years there have been different public consultations and interventions from the regulatory authorities, ANACOM and Competition Authority, as shown in Figure 67. We consider those cases considered as relevant to ComReg within the scope of the current project.

[370] Answer from ANACOM to ComReg's questionnaire, Jan 2016.

Figure 67 – Timeline of the most relevant interventions on Non-geographic numbers in Portugal since the creation of the new national numbering plan.



Retail price cap on the 707, 708 and 809 numbers

Consultations and research

In 2003 ANACOM initiated a public consultation procedure[371] on the national numbering plan where it examined the possibility of setting a retail price cap on three ranges of Non-geographic numbers: 707 and 708 (universal access service) and 809[372] (shared cost/revenue services).

The process was initiated due to the complaints received by the NRA, from end-users and telephone services providers, on the prices applied to these three ranges and the unclear usage conditions.

Issues identified

The main issues identified in the complaints related to:

- the misuse of the universal access service ranges, 707 and 708, and the shared cost/revenue range 809, for audio-text services[373], resulting in higher bills for end users; and

[371] ANACOM, 2003, 'National Numbering Plan', public consultation lauched by ANACOM, http://www.anacom.pt/streaming/pnn.consulta.pdf?contentId=105496&field=ATTACHED_FILE

[372] The national numbering plan already established a retail price cap related to the universal service tariff, for the other shared cost/revenue numbering range (808).

[373] Audio-text services should be provided with the number range 6.

- the use of the 707 range by firms for enquiry or customer services, forcing their clients to pay a high price call considering the nature of the information.

ANACOM considered the use of these three ranges for audio-text services as a lack of transparency issue that was confusing for end-users and that was breaching the national legislation. Additionally ANACOM highlighted that the lack of transparency was also responsible for market distortions, caused by discrimination between audio-text services providers (range 6) and support services providers, and therefore remedies should be imposed to avoid a scenario where end-users would not be using the 809, 707 and 708 numbers fearing they would be charged for an audio-text service[374].

Remedies

In the 2003 public consultation[371], ANACOM proposed to increase transparency by establishing price caps for these three ranges, emphasizing the following advantages for both, end-users and telephone service providers:

- the indication of the price to pay for a call to a certain numbering range is valuable information to the end-user;
- a clear pricing benefits the network providers by reducing the number of end-user complaints in terms of bills, bad debt and/or difficult collections[375].

In order to increase price transparency, ANACOM proposed[376] three different price caps for the three number ranges, independent of the network of origin.

- 809 range: the proposal was a cap equal to the price of a national call as defined by the universal service, considering the other cost/revenue share 808 number range was already linked to the universal service tariff;
- 707 and 708 ranges: the price cap should take into consideration the cost of call origination plus the cost of

[374] ANACON, 2003, Section B of 'National Numbering Plan', public consultation lauched by ANACOM, (Portuguese version) http://www.anacom.pt/streaming/pnn.consulta.pdf?contentId=105496&field=ATTACHED_FILE

[375] In many cases, the call price determination was outside the scope of the telefone service providers, who were only responsible for handing over the income collected to the service provider holding the number.

[376] ANACOM, 28 November 2003, 'Draft proposal on the definition of retail price caps for the 707, 708 and 809 ranges', http://www.anacom.pt/streaming/proj_28.11.03_2.pdf?contentId=142969&field=ATTACHED_FILE

billing and collection, and in order to have price diversity, prices for these two ranges should be different:

- 707: price cap of €0,15[377] per minute, based on the cost of fixed call origination, considering the big majority of the calls to these numbers would be from fixed network;
- 708: price cap of €0,25 per minute, based on any type of call origination.

Most of the parties participating in the different phases of the public consultation processes, namely telecommunications service providers and consumer protection associations, agreed with the proposal of establishing a price cap. However, there was no consensus on the values. Service providers argued that the proposed values were not enough to cover the costs involved, namely those related to the mobile call origination. Contrary, consumer protection associations indicated that the values for the 707 and 708 ranges were too high.

Having reviewed responses to the initial consultation, ANACOM published the final decision in January 2004[378] with a retail price cap for these three ranges of Non-geographic numbers.

Taking into consideration the: i) answers and data provided by stakeholders during the 2003 public consultation process, ii) distribution of the calls to the 707 and 708 ranges with respect to the origin (fixed or mobile), and iii) the significant difference between the fixed and mobile originating price tariffs, ANACOM decided to move away from the draft proposal and set different price caps dependent on the call origin (therefore, no distinction was made between the 707 and 708 ranges). The price cap for the 809 number range was set as in the draft proposal.

The retail price caps were specified as follows:

For calls to 707 and 708 numbers:

- Fixed call originated: €0,10 per minute (plus VAT) charged per second as from the first minute.
- Mobile call originated: €0,25 per minute (plus VAT) charged per second as from the first minute.

[377] No cost analysis has been provided by ANACOM as part of the public consultation process.

[378] ANACOM, 16 January 2004, 'Final decision on the definition of maximum retail price cap for the 707, 708 and 809 number ranges', http://www.anacom.pt/render.jsp?contentId=420676#.VvGBfFLsfdk

For calls to 809 numbers:

- Price of a national call after an initial credit of 10 seconds, as established by the universal service tariff, charged per second as from the first minute.

It was established that ANACOM should monitor the market evolution conditions to assess the need of further intervention. The price caps have not been changed since 2004 and there were no further interventions by ANACOM.[379]

Mobile wholesale rates for 'call origination to special services and non-geographic numbers'

Consultations and research

Following a significant number of complaints, namely from fixed service providers, on the wholesale rates for mobile call origination, in 2008 ANACOM published its view on the issue urging the three mobile operators to lower the tariffs[380].

The request from ANACOM focused on:

- the reduction of wholesale rates for the origination services to similar levels as the ones applied to voice termination; and
- the decrease of the charges applied to collection and billing on behalf of third parties.

ANACOM indicated that if no significant reductions were applied to the call origination rates, the matter would either be dealt "*within the assessment of the relevant market (whether or not associated to the former market 15 of Commission Recommendation 2003/311/CE of the Commission, of 11 February, on relevant product and services markets within the electronic communications sector susceptible for ex ante regulation, which in the meantime was replaced by Recommendation 2007/879/CE*) *and/or submitted to the opinion of the Portuguese Competition Authority*" [381](PCA).

[379] Clarification provided by ANACOM to ComReg, March 2016.

[380] In 2008 the wholesale price for call origination service in the mobile network was 18.7 cents (as established by ANACOM in 2002, to be charged per second as from the fist second), more than twice the price of call termination in mobile networks.

[381] ANACOM, 28 October 2008, 'View on call origination in national mobile networks', http://www.anacom.pt/streaming/anacom_view682008.pdf?contentId=708064&field=ATTACHED_FILE

Although the mobile operators reduced the rates for origination as well as the charges applied for collection and billing, ANACOM was of the opinion that there was still a significant and not justified difference between the origination and termination rates in mobile networks.

Considering the mobile call originating market was no longer subject to ex-ante regulation and ANACOM felt there was no support to make a notification to the EC[382], in February 2010 the case was finally presented to the PCA.

Issues Identified

The PCA duly opened an investigation based on information requested to ANACOM, the operators and electronic communication service providers. The investigation[383] covered the retail market of telephone services to special services and non-geographic numbers as well as the related wholesale markets.

In terms of market definition, at the retail level, the PCA concluded that the retail market definition included the voice calls to these services and numbers, independently of the type of originating network, with a national scope.

At the wholesale level, the PCA identified three markets, one per mobile network (TMN[384], Vodafone, Optimus[385]), including any type of call to special services and non-geographic numbers and excluding the access and call origination related to the provision of services in the retail market to MVNOs:

- Call origination market for special services and non-geographic numbers for TMN subscribers
- Call origination market for special services and non-geographic numbers for Vodafone subscribers,
- Call origination market for special services and non-geographic numbers for Optimus subscribers,

all with a geographical scope equal to the coverage area of each network.

Considering the adopted market definition, each mobile operator was considered to hold a monopolistic position in the offering of 'call

382 Answer from ANACOM to question 6 of the ComReg questionnaire, Jan 2016.

383 The studied carried out by the competition authority is not avaialble, however the Recomendation Number 1/2012 (available in Portuguese only) highlights the findings and conclusions hereby reflected. http://ec.europa.eu/competition/ecn/brief/02_2012/pt_mobile.pdf

384 Currently known as MEO.

385 Currently called NOS after the merger with ZON – CATV operator.

origination to special services and non-geographic numbers' services to their subscribers.

Findings of the investigation

With regards to the evolution of call origination rates to special services and Non-geographical numbers:

- the PCA observed that rates had been decreasing in the last years of the investigation after ANACOM's initial intervention;
- however TMN and Optimus still charged rates higher than the ones recommended by ANACOM in 2008, while in 2010 Vodafone reduced the rates to lower levels;
- **the PCA therefore concluded that there was still margin for operators to reduce the mobile call origination rates**.

From price-cost analysis, the PCA found that Vodafone and TMN had margins higher than 100% (Optimus did not provide information related to costs).[386]

The PCA also considered rates and revenue of similar services against which wholesale rates could be compared:

- 'Call origination to special services and Non-geographical numbers', 'access service and call origination service for MVNOs', and 'mobile call termination services' were considered similar services for the comparison;
- Rates for the three mobile operators were compared to these rates and found to be significantly different. The PCA concluded there was no justification for such a difference:
  - Revenues generated by the 'access and call origination for MVNOs' service was between 30% to 80% higher than those for 'Call origination to special services and Non-geographical numbers' (TMN and Vodafone);
  - More than 70% difference between the rates for 'Call origination to special services and Non-geographical numbers' and 'mobile call termination' services[387] (applicable to the 3 operators);
  - More than 100% difference in unitary revenues, between 'Mobile origination call' and 'Mobile termination call'

[386] The PCA cited two cases that were evaluated by the European Comission, United Brands (1975) and Deustche Post (2001), where the margins of 15% and 20%, served as arguments.

[387] The PCA indicated a tendency to higher differences considering that MTR would be decreasing in the coming years due to ANACOM's intervention of 18 May 2011.

services (applicable to the three operators, for 2009 values);

The PCA also conducted a profit analysis and comparison between TMN, Vodafone[388] (monopolistic power in the relevant market) and a competitive firm:

- More than 100% difference between the economic margin and the respective costs (2009 figures)
- The margins observed for the 'call origination to special services and Non-geographical numbers' service was significantly higher than the ones for the 'access and call origination for MVNOs' and 'mobile call termination' services.
- The PCA concluded that TMN and Vodafone had high economic margins that indicated the existence of 'supranormal' rents.

The PCA concluded that the high rates applied to 'call origination to special services and Non-geographical numbers' have **a negative impact in the competitive landscape**. Service providers that want to use special services and/or non-geographical numbers to offer retail voice services are negatively affected by the high rates, as well as consumers that might either be deprived of these services, or they need to pay higher prices to use them.

Remedies

The PCA recommended the three operators to reduce the rates to the level of 'call origination to special services and Non-geographical numbers' services within a period of six months. It also indicated that the costs involved in the provision of the services should be considered when defining the new rates. No indication on the cost methodology to be used was provided.

However, according to the information provided by ANACOM[389], although operators have reduced the rates after the Recommendation issued by the PCA, it considers that the wholesale rates for mobile call origination are still high. This suggests that the remedy has not been overly successful and there may need to be further intervention in future.

[388] As mentioned earlier, Optimus provided no data to the PCA on costs.

[389] Answer 5 provided by ANACOM to the ComReg questionnaire, January 2016.

New rules on end-user access to numbers (2014)

Although the Premium rate numbers are out of the scope of the current project, it might be of interest to mention the developments in the Portuguese market taking into consideration that the remedies applied to the Premium rate numbers affect all non-geographic numbers.

Consultation and research

ANACOM indicated that [390] in 2014 there was a regulatory intervention due to the large number of complaints received during that year on the conditions of use imposed to the 760 numbering range by three mobile operators to its pre-paid subscribers.

One of the operators imposed a minimum balance of €5[391] in the subscribers' pre-paid accounts to allow calls to the 760 numbers while the other two required their subscribers to make payments to a separate pre-paid account. Additionally, one of these two operators only accepted payments to the separate account at their physical stores/agencies.

Issues identified

ANACOM considered that:

- the operators were discriminating pre-paid users against post-paid ones and fixed telephone users;
- the practice was affecting the operators owning the premium numbers, having a negative impact on the competitive landscape; and
- the operators were infringing the Electronic Communications Law and therefore the regulatory intervention was justified.

Remedies

As a result of the consultation procedure, ANACOM approved a new rule on the barring of services and the end-user access to the numbers of the national numbering plan[392].

"*companies which offer electronic communications networks and services may only restrict access where restrictions do not disproportionately impact the interests of end-users or other companies, without prejudice to the principle of freedom and respect*

[390] ANACOM answer to ComReg questionnaire, Jan. 2016.

[391] This amount would allow the subscriber to make 6 calls (€0,6 per call plus 23% VAT), leaving a residual balance of € 0,77.

[392] Rules governing end-user access to numbering of the National Numbering Plan, 3 Nov. 2014, ANACOM, http://www.anacom.pt/render.jsp?contentId=1338863#.VuFVJlyLTHp.

for the wishes of users when requesting application of restrictive measures."[393]

ANACOM indicated[390] that operators have already removed the pre-paid subscribers restrictions to the 760 numbering range.

On-going investigation

According to the information provided by ANACOM an evaluation of the fixed origination service for Non-geographic numbers is on-going, because of possible competitive distortions [394].

ANACOM indicated that the operator identified with SMP in the fixed origination market, has argued that they are obliged to practice a cost-oriented fixed wholesale origination price, while the other operators are charging considerably higher prices. [395]

F.4 France

The following types of non-geographic number are available in France:

- Non geographic numbers (09 numbers): 34 million numbers allocated to operators;
- Special Rate Services numbers (08 numbers): 11.9 million numbers allocated to operators;
- Short Codes (3BPQ, 10YT, 118XYZ numbers): 409 short codes allocated to operators;
- Emergency call numbers (112, 15, 17, 18, ...): 12 numbers; and
- Harmonized numbers for harmonized services of social value (116XYZ numbers): 2 numbers

The regulator ARCEP has intervened in the market for value added services (VAS). VAS are a sub-set of 'special rate services' and relate to specific types of non-geographic numbers including certain short numbers and 10-digit numbers beginning with 08 (excluding 087).

[393] ANACOM answer to ComReg questionnaire, Jan. 2016.

[394] Answer 6 provided by ANACOM to ComReg's questionnaire, January 2016.

[395] It has also been indicated by ANACOM that there is currently no decision disclosed and the way to proceed is still under analysis.

ARCEP first launched a public consultation regarding VAS in 2006 and has since published further consultations over the last decade. Consultations have been supplemented by sponsored research by the General Council of Information Technology (CGTI)[396] and have led to a range of remedies being imposed in the VAS market.

In this mini-case study, we give a brief overview of the timeline of the work carried out by ARCEP and discuss its findings and interventions.

The consultation process

Initial consultations focused on access obligations for the different operators involved in VAS[397]. However, following consultation responses, further consultations (listed below) and the 2008 CGTI research concerning consumer dissatisfaction, ARCEP has concentrated its efforts on interventions aimed at improving transparency and confidence for consumers.[398]

Table 33: Timeline

Consultation	Year
Broad public consultation into VAS	November 2006 – January 2007
Consultation on draft decision to improve access obligations for operators involved in the provision of VAS	March – April 2007
Consultation on draft review of the wholesale call origination market	June – July 2007
Decision imposed on France Telecom regarding the wholesale call origination market	September 2007
Publication of General Council of Information Technology report on VAS	**October 2008**

[396] Conseil général des technologies de l'information, 'Les services à valeur ajoutée: tarification de détail de déontologie', October 2008, available at: http://www.arcep.fr/uploads/tx_gspublication/Rap-CGTIsurSVA.pdf

[397] ARCEP, 'Projet de décision portant sur les obligations imposées aux opérateurs qui contrôlent l'accès à l'utilisateur final pour l'acheminement des communications à destination des services à valeur ajoutée', March 2007, available at: http://www.arcep.fr/uploads/tx_gspublication/consult-sva-projdec-2007-0213.pdf

[398] ARCEP, 'La réforme tarifaire des numerous 08 entre en vigueur à compter du 1er October 2015', 5 February 2016, available at: http://www.arcep.fr/?id=10047

Public services promise to charge calls to their main number as the price of a local call and the federation of telecoms make commitments calls to 'free' numbers and numbers charged at the price of a call made by mobile phones are changed with the same structure as calls from fixed landlines[399]	May 2009
Consultation on decision to make 'free' numbers and numbers costing the price of a call distinct in the numbering plan with clear pricing	July – September 2009
Decision on origination rates following a dispute between *SFR* and *France Telecom*	December 2010
Consultation on changing the numbering plan (largely concerning VAS numbers)	July – October 2011
SVA+, an association dedicated to regulating VAS and providing a directory of VAS numbers is set up	February 2012
Consultation on draft decision on changes to the numbering plan	April – June 2012
Decision on reorganisation of numbering plan to simplify pricing and prevent abusive practices	July 2012
Following July 2012 Decision, ARCEP publishes a guide for operators and VAS providers	June 2013
Consultation on draft recommendation on the VAS market	November 2013 – January 2014
Recommendation on wholesale interconnection of calls to VAS numbers	March 2014

[399] Eric Woerth, Minister of the budget, public accounts and public service and Luc Chatel, Secretary to the Minister of Economy, Industry and Employment, Press release: 'Eric Woerth et Luc Chatel se félicitent des réponses apportées par les opérateurs de téléphonie mobile pour inclure dans les forfaits les appels aux numéros verts et azur', 26 May 2009, available at: http://www.arcep.fr/fileadmin/reprise/dossiers/sva/comnq-sva-minefe-260509.pdf

Consultation on new short numbers	June – July 2014
Dispute settlement between Orange and Free Mobile, concerning call origination rates and an operator of a VAS and Free Mobile, concerning interconnection rates	July 2014
Decision on rates for calling VAS numbers from overseas	September 2014
Decision made on new short numbers	October 2014
SVA+ introduce new tariff signage	October 2014
Dispute settlement between Orange and Colt concerning interconnection rates[400]	December 2014
Decision on the tariff structure for call origination[401]	February 2016

Background

Responses to the 2006-2007 consultation on the VAS market raised concerns about how the market was working for consumers. These issues were investigated and assessed in research by the General Council of Information Technology (CGTI). A 2008 CGTI report identified consumer frustration arising from VAS, in particular due to lack of transparency, mobile surcharges and instances where the consumer felt like they had no choice but to call the number.

Specifically, the 2006-2007 consultation, responses, and the 2008 CGTI report found a lack of transparency an important factor behind consumer dissatisfaction and in discouraging consumers from using VAS numbers. The CGTI report found that the dissatisfaction around transparency arose, as:

- callers faced a lack of information, a lack of transparency and difficult to understand pricing;

[400] ARCEP, Décision n° 2014-1547-RDPI de l'Autorité de régulation des communications électroniques et des postes en date du 18 décembre 2014 se prononçant sur une demande de règlement de différend opposant la société Colt et la société Orange

[401] ARCEP, Décision n° 2016-0208 de l'Autorité de régulation des communications électroniques et des postes en date du 16 février 2016 portant sur l'encadrement tarifaire de la vente en gros de l'accès au service téléphonique et du départ d'appel associé, pour les années 2016 et 2017

- VAS calls were almost exclusively billed outside of telephone bundles provided by phone operators;[402]
- where information on the cost of calling was available, pricing breakdowns were complex;
- consumers would prefer prior information about billing in written form and also at the beginning of a call;
- there were issues around complex surcharges for mobile calls to VAS numbers. Combined with the lack of transparency this led to discouraging consumers from using 'free' numbers as consumers questioned whether the number was in fact free for mobile.

The CGTI report highlighted that where consumers felt obliged to call VAS numbers this was a source of consumer discontent. This was largely the case where VAS numbers were used for a main number, or the sole number, of a business. This was particularly disconcerting where VAS numbers were not available internationally or only at a prohibitive cost. The CGTI report also pointed out that there is dissatisfaction not only by consumers, but also from VAS service providers, and that there was a conflict between their demands and the demands for greater tariff simplicity by consumers.

Intervention and remedies

Since 2007, ARCEP has introduced a range of remedies in the market for non-geographic numbers.

One of the main changes made by ARCEP to make pricing accessible and transparent to consumers was to introduce remedies to considerably simplify fee schedules for VAS numbers.[403] VAS numbers are now categorised into three types of numbers to distinguish between numbers where:

- the call is completely free;

402 This was also noted in a 2009 ARCEP study, where ARCEP found consumers believed the cost of a VAS call was much higher than it was ARCEP, 'Améliorer les offres faites aux consommateurs de services de communications électroniques et postaux', February 2011, available at: http://www.arcep.fr/uploads/tx_gspublication/propositions-consommateurs-180211.pdf

403 ARCEP, 'As part of two dispute settlement decisions, ARCEP specifies the conditions for implementing reforms to value added services, starting on 1 October 2015', 22 December 2014, http://www.arcep.fr/index.php?id=8571&L=1&tx_gsactualite_pi1%5Buid%5D=1720&tx_gsactualite_pi1%5BbackID%5D=26&cHash=fe0647675e4c45a4ff69c5343865f6a8

- the consumer pays the price of the call but the service is free; and
- the consumer must pay both for the price of the call and for the service.[404]

These categories correspond to Freephone, NGN calls charged per minute, and premium rate calls. These have assigned segments in the numbering plan to make a number easily identifiable and must also be **colour coded** in all promotional material. The main presentational change applied to the graphic presentation of NGN numbers. ARCEP noted that: "*…Transparency will be further improved thanks to the new pricing display graphics being introduced with the reform, which associate a different colour with each of the three types of number: green for freephone numbers, grey for "normal" rate numbers, and purple for premium rate numbers.*"[405] [406]

The tariff structure for the three sets of numbers is broken into two components, in a pricing model named "C+S":

- "C" is the phone call component, aligned with the price of a call to fixed line as determined by the consumer's phone operator; and
- "S" is the price of the service delivered by the provider. For numbers with a service price element, the service price must

[404] ARCEP, 'Price reforms for value-added telephone services: providing consumers with greater clarity', 30 September 2015, available at: http://www.arcep.fr/index.php?id=8571&no_cache=1&L=1&tx_gsactualite_pi1%5Buid%5D=1776&tx_gsactualite_pi1%5Bannee%5D=0&tx_gsactualite_pi1%5Btheme%5D=0&tx_gsactualite_pi1%5Bmotscle%5D=&tx_gsactualite_pi1%5BbackID%5D=2122&cHash=94d4f7dcb2bb8e1261f5a1205041e53a

[405] ARCEP, 'Price reforms for value-added telephone services: providing consumers with greater clarity', 30 September 2015, available at: http://www.arcep.fr/index.php?id=8571&no_cache=1&L=1&tx_gsactualite_pi1%5Buid%5D=1776&tx_gsactualite_pi1%5Bannee%5D=0&tx_gsactualite_pi1%5Btheme%5D=0&tx_gsactualite_pi1%5Bmotscle%5D=&tx_gsactualite_pi1%5BbackID%5D=2122&cHash=94d4f7dcb2bb8e1261f5a1205041e53a

[406] "Directorate-General for Competition, Consumer Affairs and Fraud Repression, DGCCRF, will work to ensure the quality, accuracy and fairness of the pricing information made available to consumers when the changes introduced by the reform come into effect, notably in sales and marketing documents….DGCCRF and ARCEP invite operators and service providers to contribute to the actions being taken by public authorities to better regulate this sector, by performing the work needed to create a supervisory body to establish and enforce a code of professional conduct."

be announced before the start of the charged call and can be looked up in an online directory of VAS numbers.[407]

The explicit distinction aims to simplify the system for billing and to help consumers understand where charges arise. The remedies were introduced symmetrically to mobile and fixed line calls and at the same time, reforms also ensured that numbers free for fixed lines were also free for mobiles.[408]

Table: The pricing regime for 08 numbers in France

Number starting with	Price of call (C)	Price of service (S)
0800-0805	0	0
0806-0809	Price of a call to a fixed number	0
081, 082, 089	Price of a call to a fixed number	Price of the service

Note that:

- Calls to Freephone to be free from fixed and mobile, and not to be deducted from the caller's flat rate plan; and
- Calls to other NGNs to be charged at the 'normal' rate, defined as the same as a call to a geo number. It was stated that such calls were to be included in unlimited calling plans.

ARCEP's intervention, which changed tariff structures, and presentational elements, was designed to help users better understand the differences between different types of call. These measures have only been in force since October 2015 and, at the time of writing, there is little information available on the extent to which these changes have been successful.

[407] Note that, ARCEP also banned the use of numbers that charge for service for all after-sales services accessible by telephone, including technical assistance, customer care and helpdesks.

[408] ARCEP, 'ARCEP sets 1 October 2015 for the entry into force of value-added services pricing reforms, to give operators and service providers time to conclude all of the technical and commercial negotiations required for the introduction of this major reform', 12 June 2014, available at: http://www.arcep.fr/index.php?id=8571&no_cache=1&tx_gsactualite_pi1%5Buid%5D=1669&cHash=40ad48ebbd24d5c5a52adf0330a56759&L=1

Wholesale markets

In parallel with its consultations on VAS, ARCEP was reviewing the wholesale call origination market, and proposed to remove calls to VAS from this market. ARCEP's reasoning was that call origination to VAS had 'structural specificities' such as the value chain around which VAS services are structured and supplied, and that therefore calls to VAS did not fall within the same product market as other voice calls. ARCEP's view was that each originating operator holds a monopoly on the supply of call origination to VAS numbers for their end users.

Following this analysis, ARCEP proposed to exclude the origination of calls to VAS numbers from the wholesale call origination market, and consequently to withdraw SMP regulation, which applied to Orange. ARCEP proposed to continue to impose a symmetrical regime on all originating operators[409]. The basis for this was Article 5 of the Access Directive. ARCEP's proposals were notified to the EC under the Article 7 procedure. The EC response agreed with ARCEP that it seemed that calls to VAS did not fall within the same product market as other call origination services. However, the EC indicated that Article 5 of the Access Directive must be used 'with caution'. The EC noted that market shares of alternative operators had been increasing, especially for VAS provided over VoB, and so it may be appropriate for ARCEP to withdraw SMP regulation. However, the EC queried whether symmetrical regulation was still appropriate and asked ARCEP to carry out an 'in-depth investigation' of the provision of VAS and of call origination services to VAS in order to justify on-going regulation[410].

While ARCEP does not appear to have gone through the Article 7 procedure in defining and notifying a separate market, comments from the EC on its review of the wholesale call origination market in France have requested that ARCEP does conduct a review in line with Article 7 procedures[411]. At the time of writing, there is no

[409] ARCEP has had a system of symmetrical regulation in place since 2007, such that all originating operators have obligations on access, billing and cost recovery, with Orange (the SMP operator) subject to the equivalent but with stricter access and pricing obligations (price caps).

[410] Commission Decision concerning Case FR/2014/1644: Call origination on the public telephone network provided at a fixed location, Brussels, 18.9.2014 C(2014) 6809 final

[411] Commission Decision concerning Case FR/2014/1644: Call origination on the public telephone network provided at a fixed location, Brussels, 18.9.2014 C(2014) 6809 final

further information on such a review, and the EC comments on the 2014 proposals remain unaddressed in later communication.[412]

F.5 Switzerland

In its response to the ComReg/BEREC questionnaire, BAKOM noted that it had received some complaints from customers in relation to calls to some NGNs in Switzerland. BAKOM responded to these complains by imposing a simple transparency requirement on calls to NGNs, specifically a type of NGN known as 'Corporate Networks'.

Overview

In Switzerland, there are three main types of non-geographic number available:

- Freephone (0800);
- Shared Cost Services (084x); and
- Corporate Networks (+4158).

Calls to **0800** numbers are free to call from both landline and mobile, whilst **Shared cost services** have a uniform retail charge regardless of where in Switzerland the call is made from. The maximum charge for calls to these numbers is CHF 0.075 per minute (+VAT). This is equivalent to the maximum charge of a national call to the fixed network.[413]

Operators may assign '**Corporate Networks**' numbers to their business customers with a footprint in two or more geographic locations (that is, with two or more national destination codes (NDCs). Such numbers are always assigned as DDI-ranges (Direct Dial In) to businesses. Depending on the business' needs, such numbers may be terminated to end-user equipment of the fixed or mobile network service or even to foreign network termination points. The business' employees may move within the footprint of the company without a need to change the number even when moving from the coverage of one geographic NDC to a place covered by another geographic NDC.

Complaints

BAKOM had received complaints from customers about lack of awareness of costs of calling these non-geographic numbers, as they

[412] For example, the EC reminds ARCEP of its request in Case FR/2016/1834: Access to the public telephone network at a fixed location for residential and non-residential customers and call origination on the public telephone network provided at a fixed location in France – details of remedies Brussels, 5.2.2016 C(2016) 816 final

[413] https://www.bakom.admin.ch/bakom/en/homepage/telecommunication/practical-info/0900-0901-0906-numbers/other-numbers--free-of-charge-or-not.html

are not all included in subscriptions that include a "flat rate" for national calls (offered by most providers).[414] However, not all calls are included in such packaged and, for example, calls to short numbers or numbers of shared cost services are usually not included in such packages and are charged on a per call basis.

BAKOM does not appear to have conducted any further research involving consumers and/or businesses regarding the use of NGNs, but, following the complaints, it did impose a requirement for pre-recorded announcements to be played before calls in an attempt to increase transparency.

Intervention

Specifically, from the 1 July 2015, BAKOM introduced a rule obliging service providers to play a tariff announcements ahead of calls to 'Corporate Networks' in all instances where the tariff is not the same as for calls to geographic numbers.

Impact

Whilst perhaps imposed in a bid to increase transparency BAKOM has reported that since introducing this requirement it has found that calls to these numbers are typically now included in 'flat rate' subscriptions. This demonstrates how some simple transparency measures may lead to changes in pricing behaviour of operators.

F.6 Croatia

Non-geographic number ranges in Croatia are as follows:[415]

- National numbers in a mobile electronic communications network (NDC) - 9xxx
- National numbers for "value added services" and "special tariff services" (otherwise known as the premium rate services (PRS)) include:
    1. General services – 60
    2. Humanitarian services – 609
    3. Televoting services – 61
    4. Adult Services – 64

[414] "flat rate" is a marketing terms for including in the monthly subscription fees unlimited calls to fixed and/or mobile network services (mostly accompanied by fair use limitations). An example of such packages is available at www.swisscom.ch/en/residential/packages/offers.html

[415] Croatian Regulatory Authority for Network Industries, Numbering Plan. Available at: https://www.hakom.hr/UserDocsImages/2015/propisi_pravilnici_zakoni/Plan_numeriranja_2015_eng.pdf

5. Games of Fortune Services – 65
6. Services for Children – 69

- National numbers for Universal Access Number services – 72
- National numbers for Freephone Services - 800, 801
- National numbers for Internet Access Services – 76, 77
- National numbers for Personal Number Services 74, 75 (personal number services refer to services where a user connects his or her terminal equipment to any network termination point and initiates/receives calls/messages by using the same number)
- National numbers for M2M services – 89xy

Like other NRAs, HAKOM stated that it had received numerous complaints from users about the cost of calls to these numbers and it believes that consumers have been mislead to call 'Value added services' (VAS).

Following these complaints and its findings, HAKOM introduced a number of rules on the behaviour of operators providing 'special tariff services' through new rules on their behaviour. The rules are specified in the '*Ordinance on the manner and conditions for provision of electronic communications networks and services'.* This document has been subject to a number of amendments since its introduction in 2011.[416]

The latest amendments to the '*Ordinance on the manner and conditions for the provision of electronic communications networks and services'* introducing these new behavioural rules (OG No. 24/15) was published on 4 March 2015 and entered into force on 1 May 2015 (expect for Article 8 (4) – on the "subscription contract" - which came into force later, on 4 September 2015).

The behavioural rules appear to focus mainly on addressing transparency issues. On review, these behavioural rules appear to be rather comprehensive, including (but not limited to) a requirement to:[417]

[416] See OG No. 154/11, 149/13, 82/14 and 24/15.

[417] Specifically section VI. (pg 32)of on Special Tariff services to the 'Ordinance on the manner and conditions for the provision of electronic communications networks and services' (unofficial consolidated text).

In Croatia, both value added services and special tariff services relate to the premium rate services (PRS). For special tariff services numbering ranges 72, 74, 75, 76, 77, 800 and 801 can be used, which are:

National numbers for Universal Access Number services - 72

National numbers for Freephone Services - 800, 801

National numbers for Internet Access Services - 76, 77

(footnote continued)

- provide clear and unambiguous information about the terms of service and price and mode billing services;
- ensure promotional activities service with clear and transparent information on operator services with special tariff that provides the service, price and method of payment services;
- ensure that promotional activities of operators of services with special tariff in any way not to be misleading or in any way mislead potential users;
- provide special protection to children.

For example, there are specific Articles that provide instructions specifying:

- rules of behaviour for providers of special tariff services:
- rules for promotion/advertising of special tariff services;
- rules for the announcement of the price of the call, start of billing and billing for the service

Extracts of these rules are outlined in the table below:

Article 43 – rules of behaviour for providers of special tariff services:	*"An operator of special tariff services must ensure the protection of users of these services in the following manner:* *1. ensure clear and unequivocal information about conditions for the provision of the service, the price and manner of payment;* *2. ensure promotional activities for services with clear and transparent information about a provider of special tariff services who provides the service, about the price and the manner of payment;* *3. ensure that promotional activities of a special tariff operator are in no way misleading or confusing for potential users;* *4. ensure special protection of children."*

National numbers for Personal Number Services - 74, 75

Article 47 – Rules for promotion/advertising of services:	Including: • *"the service must be described in detail and it must contain the price and manner of billing for the service presented in a clear and intelligible manner"* • *"all promotional activities must clearly indicate whether the use of special tariff services is billed per call, per duration of conversation or per quantity of traffic"* • any visual advertising must also include a contact telephone number *"which must not be from the category of special tariff numbers"*, in addition to information about price and manner of billing services all *"written in the same manner (font, size, colour, shape, direction etc.) on the same colour surface"* • radio advertising should read out the price and manner of billing *"slowly, clearly and audibly"*. • television advertising must again provide information about price *"in the visually and audibly same manner as information about the number of the service and it must be repeated together with the number to be called."*
Article 48 – the announcement of the price of the call, start of billing and billing for the service:	• *"Providers of special tariff services must ensure that price and start of billing are announced at the beginning of each call before the beginning of the provision of service"* • Callers should then have an opportunity to end the call before the start of billing and *"the expiry of the time before the start of billing must be marked by a tone signal so that the end user may timely interrupt the use of the service."* • There are also provisions to make the customer aware once a call has reached a certain length of time or a certain cost (whichever comes first). For example*:* 1. *"A provider of special tariff services must interrupt every call to a number for special tariffs services exceeding HRK 150,000 or when the duration of the call reaches 30 minutes, depending on which is earlier:* 2. *"Services intended for children are interrupted when the spending exceeds the amount of HRK 50.00"*

Since being brought into force, HAKOM reports fewer customer complaints. HAKOM have commented that after every change of the mentioned ordinance, the number of complaints decreases, because the amendments to the ordinance are always adopted to address specific end user complaints:

> *"For example in the case of complaints for special tariff services, during the period 2009-2011 HAKOM adopted detail rules for providing these services, the result of which was significant decrease of complaints. In 2012 there were less than 5% in the total number of complaints."*[418]

We understand from HAKOM that, to date, there have been no legal challenges on any decisions made regarding NGNs.

F.7 Poland

A recent Polish case that passed through the European Court of Justice presents some case precedent for the interpretation of the legal process through which the national regulatory authority can intervene in the setting of payments between telecommunications providers.

This case involves interpretation of powers and responsibilities of regulators with regard to access and interconnection. Specifically the interpretation of Articles 6, 7(3) and 20 of the Framework Directive (Directive 2002/21/EC) and Article 28 of the Universal Service Directive (USD) (Directive 2002/22/EC)[419] which relate to dispute resolution between undertakings any actions by the NRA that could affect trade between member states or impact on the development of the internal market.

The parties involved were: the president of UKE and Telefonia Dialog on the one hand and T-Mobile Polska on the other. As we explain below, the case was related to a decision made by the President of UKE.

[418] HAKOM response to BEREC survey.

[419] This case deals with the interpretation of Articles 6, 7(3) and 20 of the Framework Directive (Directive 2002/21/EC) and Article 28 of the Universal Service Directive (USD). The parties involved are: the president of UKE and Telefonica Dialog on one hand and T-Mobile Polska on the other concerning a decision made by the President of UKE. The Judgement of the European Court was published in April 2015 http://curia.europa.eu/juris/document/document_print.jsf?doclang=EN&text=&pageIndex=0&part=1&mode=req&docid=163718&occ=first&dir=&cid=304480

Background to the case

The UKE was forced to intervene in a dispute between Telefonia Dialog and T-Mobile Polska following a break down in open negotiations. The parties had been negotiating an amendment to an agreement between them that stipulates "*the rules governing cooperation and payments in respect of the access for users of T-Mobile Polska's network to 'intelligent network' services provided via Telefonia Dialog's network ('the cooperation agreement').*"

In 2006, Telefonia Dialog wanted to negotiate an amendment to this agreement, but given the undertakings could not agree, Telefonia Dialog asked the President of UKE to set a time-limit for closing negotiations and this was duly set for the 20 October 2006 by the UKE President.

The negotiations did not close within this time limit and therefore the dispute was referred to the President of UKE for resolution. In a decision published on 19 December 2008, the Polish regulator UKE imposed an obligation on Telefonia Dialog to provide call termination services (including to non-geographical numbers) on its network to users of T-Mobile Polska's network and on T-Mobile Polska the obligations to ensure that those users had access to the information services provided on Telefonia Dialog's network. The decision also established the remunerations payable in return for those services, including definition of the retention charges.

This decision was subsequently challenged by **T-Mobile Polska** before a Regional Court (the Sąd Okręgowy w Warszawie), which on 21 March 2011 annulled the original decision "*on the ground that the President of the UKE had not complied with the consolidation procedure laid down in Article 18 of the Law of 16 July 2004[*[420]*]*"[421]

The President of UKE and **Telefonia Dialog** then appealed this judgement before the Court of Appeal (Sąd Apelacyjny w Warszawie). These appeals were dismissed on 1 February 2012, and a further appeal was lodged by the President of UKE and **Telefonia Dialog** before the Supreme Court (Sąd Najwyższy) on a point of law. The Supreme Court took on the case, stating that the initial dispute (referred to as the main proceedings) relates to "*whether the*

[420] Article 18 of the Law of 16 July 2004 is worded as follows: "*If the decisions referred to in Article 15 may affect trade between the Member States, at the same time as he initiates the consultation procedure, the President of the UKE shall initiate a consolidation procedure and shall send the … Commission and the [NRAs] of the other Member States the draft decisions, together with the reasoning on which they are based.*"

[421] Paragraph 21 of Judgment of The Court (Third Chamber), 16 April 2015. Available at: http://curia.europa.eu/juris/document/document_print.jsf?doclang=EN&text=&pageIndex=0&part=1&mode=req&docid=163718&occ=first&dir=&cid=304480

President of the UKE should have followed the procedure laid down in Article 7(3)[[422]] *of the Framework Directive before taking a decision which altered the cooperation agreement"*[423]

The Polish Supreme Court first looked at whether NRAs are required to notify the Commission and other Member States if measures imposed by the NRA following a dispute resolution process are likely to affect trade. The answer was yes. Given that the issues originally considered in the main proceedings relate to ensuring adequate access and interconnection and interoperability of services (Article 5(1) of the Access Directive) and such measures are expressly referred to in Article 7(3) of the Framework Directive given that such measure may affect trade between Member States, the Article 7(3) process should have been followed if the obligations imposed by the NRA could affect trade between Member States.

The Supreme Court then considered whether every measure adopted by an NRA to ensure that end-users have access to non-geographic numbers (in accordance with Article 28 of the Universal Service Directive) affects trade between Member States. In this regards the President of the UKE maintains that the decision at issue in the main proceedings does not have any significant effect on trade between Member States. The Polish Government takes the view that that decision does not 'necessarily' have an effect on trade between those States. However, Telefonia Dialog, T-Mobile Polska and the Commission submit that that decision may have such an effect.

In the absence of a formal definition of the notion of "affecting trade between Member States" for the purpose of Article 7 of the Framework Directive, reference was made to the definition given for the purposes of Article 101 TFEU and 102 TFEU and case law relying on that definition. The Supreme Court also refers to recital 38 in the preamble of the Framework Directive, which states: "*that measures that could affect trade between Member States comprise measures that have a significant impact on operators or users in other Member States, that is to say, inter alia, measures which affect prices for users in other Member States, measures which affect the ability of an undertaking established in another Member State to provide an electronic communications service, in particular measures which affect the ability to offer services on a transnational basis, and, lastly,*

[422] Article 7 of the Framework Directive, headed "Consolidating the internal market for electronic communications". Article 7(3) requires that any measure taken by the NRA that "would affect trade between Member States" should be notified to the Commission and NRAs in other Member States.

[423] Paragraph 23 of Judgment of The Court (Third Chamber), 16 April 2015

measures which affect market structure or access, leading to repercussions for undertakings in other Member States."

In relation to a measure that seeks to ensure that end-users have access to NGNs, the Supreme Court points out that, in principle, such a measure, by its very nature, has a cross-border effect within the EU.

Turning to the specifics of the main proceedings, the Supreme Court interpret the decision as one that "*on the one hand, enables, inter alia, an end-user from another Member State who is in Poland and makes use of roaming arrangements on a Polish operator's network to access non-geographic numbers and, on the other, establishes the charges for the services in question and the detailed rules for amending those charges.*" It then considers that, as a result, the decision of the UKE is capable of affecting trade between Member States *"...inasmuch as it has, on account of the roaming arrangements, a transnational dimension and may have an impact on the prices paid by end-users from other Member States".* However, it is for the referring court to determine whether the issue in the main proceedings is capable of having an influence, direct or indirect, actual or potential, on trade between Member States in anything other than an "insignificant manner"

However, the case ended up going to the European Court of Justice because the Polish Supreme court had to ask for clarification on some points dealing with the application and scope of Article 7, 6 and 20 of the Framework Directive. The Supreme Court wanted to know:

1) whether Article 7(3) of the Framework Directive is to be interpreted as meaning that every measure adopted by an NRA in order to ensure that end-users have access to non-geographic numbers (in accordance with Article 28 of the Universal Service Directive[424]) affects trade between Member States (where that measure may ensure that end-users from other Member States are able to access non-geographic numbers within the territory of that Member State)?

[424] Article 28 of the Universal Service Directive, headed 'Non-geographic numbers', states that: *"Member States shall ensure that end-users from other Member States are able to access non-geographic numbers within their territory where technically and economically feasible, except where a called subscriber has chosen for commercial reasons to limit access by calling parties located in specific geographical areas."*

2) whether Article 7(3) in conjunction with Article 6[425] and Article 20[426] of the Framework Directive should be interpreted as meaning that, in resolving disputes between undertakings (concerning the fulfilment by one of those undertakings of the obligation arising from Article 28 of the Universal Service Directive), an NRA cannot conduct consolidation proceedings even where the measure affects trade between Member States and national law requires the NRA to conduct consolidation proceedings in every case where a measure may affect that trade?

3) If the answer to Question 2 is in the affirmative, must Article 7(3) in conjunction with Articles 6 and 20 of the Framework Directive, read in conjunction with Article 288 TFEU and Article 4(3) TEU, be interpreted as meaning that a national court is obliged to refrain from applying provisions of national law which require the NRA to conduct consolidation proceedings in every case where a measure taken by that authority may affect trade between Member States?

In summary, the ECOJ provided the following answers in April 2015[427]:

- Having determined that Article 6 of the Framework Directive is not relevant to the question at hand,[428] it concluded:

[425] Article 6 of the Framework Directive, headed 'Consultation and transparency mechanism', provides for the establishment of national consultation procedures between the national regulatory authorities ('the NRAs') and interested parties where the NRAs intend to take measures in accordance with that directive or the Specific Directives which have a significant impact on the relevant market.

[426] Article 20 of the Framework Directive, headed 'Dispute resolution between undertakings', states: "*1. In the event of a dispute arising in connection with obligations arising under this Directive or the Specific Directives between undertakings providing electronic communications networks or services in a Member State, the [NRA] concerned shall, at the request of either party, and without prejudice to the provisions of paragraph 2, issue a binding decision to resolve the dispute in the shortest possible time frame and in any case within four months except in exceptional circumstances …*"

[427] Judgement of The Court (Third Chamber), 16 April 2015. Available at: http://curia.europa.eu/juris/document/document_print.jsf?doclang=EN&text=&pageIndex=0&part=1&mode=req&docid=163718&occ=first&dir=&cid=304480

[428] "It must be pointed out at the outset that Article 6 of the Framework Directive is not relevant in answering that question. That article establishes the conditions and detailed rules for the implementation of a procedure which is separate from that set out in Article 7(3) of that directive and involves giving interested parties, where NRAs intend to take measures which have a significant impact on the relevant market, the opportunity to comment on the draft measure within a reasonable period."

"Articles 7(3) and 20 of Directive 2002/21/EC of the [Framework Directive] must be interpreted as meaning that a [NRA] is required to implement the procedure laid down in the former of those provisions if, in resolving a dispute between undertakings providing electronic communications networks or services in a Member State, it intends to impose obligations designed to ensure access to non-geographic numbers in accordance with Article 28 of [the Universal Service Directive] and those obligations may affect trade between Member States.

- Article 7(3) of [the Framework Directive] must be interpreted as meaning that a measure adopted by a [NRA] in order to ensure that end-users have access to non-geographic numbers in accordance with Article 28 of [the Universal Service Directive] affects trade between Member States, within the meaning of that provision, if it may have, other than in an insignificant manner, an influence, direct or indirect, actual or potential, on that trade, this being a matter for the referring court to determine."[429]

[429] Judgement of The Court (Third Chamber), 16 April 2015. Available at: http://curia.europa.eu/juris/document/document_print.jsf?doclang=EN&text=&pageIndex=0&part=1&mode=req&docid=163718&occ=first&dir=&cid=304480