

International Experience in Non- Geographic Numbers.

A Report for Ofcom

13 December 2011

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1 Introduction and Structure

Ofcom published a consultation document on changes to the regulation of non-geographic numbers in December 2010. The consultation highlighted Ofcom's preliminary view that the current UK regime of non-geographic numbers was not serving consumers' best interests, and set out a number of options of how this could be rectified.

The consultation proposed potential changes to the regulation of non-geographic numbers with the aim of making these numbers and their charges work better for consumers and service providers. Broadly speaking, the potential changes considered include (but are not limited to):

- The introduction of universally-free-to-caller freephone numbers;
- Improving the quality of price information available to consumers, such as pre-call announcements;
- 'Unbundling' call charges between telephone operator charges ('access' charges) and service provider charges ('service' charges); or
- As an alternative to unbundling, the introduction of maximum prices set by number range.

This report reviews international experience of non-geographic number regimes drawing on specific examples from a sample of countries. The examples, which have been discussed with and agreed by Ofcom, have been selected to aid understanding of the potential implications of Ofcom's proposals in the UK.

1.1 Structure of this report

This report begins by providing an outline of the countries which have been selected for review, in Section 2. The remainder of the report is structured in two main sections, considering international freephone regulation in Section 3, and revenue-sharing and premium rate number regulation in Section 4.

In Section 3, the report reviews international freephone regimes and considers:

- Call charges and origination payments for freephone calls;
- The regulation of freephone charges;
- Calling blocking by service providers or OCPs;
- Consumer awareness of freephone services; and
- Satisfaction among service providers.

In Section 4, the report reviews international revenue-sharing number regimes (including premium rate numbers) and considers:

- Differences between premium rate and other revenue-sharing numbers;
- Charges for services;
- Consumer awareness; and
- Satisfaction among service providers.

1.2 Overview of Methodology

Countries were selected for review based on initial discussions with both Ofcom and telecommunications experts in local Deloitte offices in various international locations, as well as desk-based research. The review then employed a combination of desk-based research, questionnaires and interviews in order to obtain information on the non-geographic number regimes in the countries in scope.

While completing this report the following sources were consulted:

- Telecommunications experts in the international Deloitte network;
- Contacts within regulators;
- Consultation documents issued by regulators; and
- Reports commissioned by regulators.

1.3 Definitions

A number of specific terms are used within the report and are defined as shown in Table 1.

Table 1: Key definitions

Term	Definition
Telephone operator (or telecommunications operator)	<p>The telephone operator is the telecommunications service provider for the caller or the dialled party.</p> <p>The telephone operator of the caller is also referred to as the originating communications provider (OCP) because the call originates within this telephone operator’s network.</p> <p>The telephone operator of the dialled party is also referred to as the terminating communications provider (TCP) because the call terminates within this telephone operator’s network.</p> <p>Where relevant to the understanding of a point, a telephone operator will be referred to as either an OCP or a TCP in the report.</p> <p>Fixed telephone operators (or fixed OCPs) operate in fixed networks. Mobile telephone operators (or mobile OCPs) operate in mobile networks.</p>
Origination charge	<p>This is the charge paid by the service provider to the OCP to cover the cost of call origination.</p>

Term	Definition
Retail call charges	Call charges paid by callers to access services provided by non-geographic numbers.
Service provider	The party offering services over the telephone. This is the party that is being dialled. Ofcom's consultation document refers to this group as service providers.
Universally-free	A call is free for the caller irrespective of whether a call originates from a fixed line or mobile.
Revenue-sharing model	A model in which call charges paid by the caller are shared with the service provider, as well as the telephone operator.
Unbundling	This refers to the presence of two distinct and separate call charges to access a service provided by a non-geographic number: the access charge set by and paid to the OCP and the service charge set by and paid to the TCP and service provider.

2 Overview of Countries

This section provides a brief outline of the non-geographic number regimes in six countries which formed the majority of this review, being France, Germany, the Netherlands, Norway, Spain and the United States¹. This section does not set out to examine in detail all aspects of regulation, but rather highlights some points of interest for each country. Full details of the points discussed here can be found in Sections 3 and 4.

In performing this review, information was not widely available from national regulators. In certain countries, the regulation of non-geographic numbers did not appear to be an area of significant focus for the regulatory authorities. Regulators were therefore asked to highlight the most important issues and the scope of research was tailored to these areas for each country.

Furthermore, few relevant examples of changes to the regime or regulation of non-geographic numbers were identified. Consequently, comment from regulators on the impacts of changes was minimal.

The limited availability of information reduces the scope to draw conclusions from the international experience of non-geographic numbers. This highlights the potential difficulties that Ofcom will face if looking to rely on precedence or other findings.

2.1 France

Freephone	Revenue-sharing
<p>08088, 0800, 0805</p> <ul style="list-style-type: none"> Partially free: 08088 is free from mobiles but other calls are not All freephone numbers are available for use by any service 	<p>08X other than 080</p> <ul style="list-style-type: none"> The greater the value of X, the higher the cost of the call Consumer and business dissatisfaction with the system Current consultation on potential changes



France’s system of non-geographic numbers is largely based on the 08 number range; the digit following the 08 prefix indicates the retail price of the call. 080, for example, is freephone, while 089 numbers are charged at premium rates. Only one freephone prefix, 08088, is universally free; the other freephone numbers, 0800 and 0805, may incur charges for mobile callers². This indicates some flexibility for service providers who can choose whether they are willing to absorb additional costs from mobile callers. In practice, 0800 and 0805 numbers may not be chargeable

¹ In addition to these main studies, case studies from New Zealand and Portugal have also been considered and documented in this paper. As these countries were not reviewed in detail, they are not included in this overview.

² Models of call origination for 0800 and 0805 numbers is presented in Section 3.1.2.

for consumers if they are included in a caller's mobile package plan. However, freephone is not free for all French mobile users.

ARCEP's (the French regulator) consumer website highlights that freephone numbers are used by a variety of services without specifying greater detail³. 08088 numbers are intended for services which should be free from both fixed lines and mobiles, including certain social services⁴; however, there appear to be no specific regulations over its use.

Currently, the regime of 08 numbers is managed by a set of retail price caps. However, in practice, mobile telephone operators are able to charge additional fees, over and above the price cap, in order to recover the additional cost of mobile call origin. This is discussed in Section 3.1.2. This has contributed to both the complexity of the current pricing regime and confusion among consumers.

A consultation document has recently been published by ARCEP seeking views on potential changes to the regulation of the 08 number range⁵. The scope of the review includes both freephone and revenue-sharing numbers, as well as short codes. The corresponding press release⁶ highlights that the non-geographic number regime "continues to be a source of dissatisfaction among consumers and businesses due to the lack of clarity and transparency on prices".

ARCEP is consulting on the unbundling of call charges between an access and service component in order to increase price transparency. This is in line with Ofcom's proposals for revenue-sharing numbers. However, the regulator is also proposing that the access charge should be harmonised across all fixed and mobile networks and should be aligned with a recognisable cost to the consumer, such as the price of a geographic call.

³ ARCEP [1], <http://www.telecom-infoconso.fr/je-m-informe-sur/numerotation/les-numeros-08.html>

⁴ ARCEP [2], <http://www.telecom-infoconso.fr/je-m-informe-sur/numerotation/je-cherche-la-liste-des-numeros-surtaxes-et-leurs-tarifs.html>

⁵ ARCEP [3], "Evolution du plan de numérotation relative aux numéros courts et aux numéros longs commençant par 08". This document is available online at: http://www.arcep.fr/uploads/tx_gspublication/consult-plan-num-sva-290711.pdf

⁶ ARCEP [4], "Changes in the numbering plan". This document is available online at: [http://www.arcep.fr/index.php?id=8571&L=1&tx_gsactualite_pi1\[uid\]=1424&tx_gsactualite_pi1\[backID\]=1&cHash=8de513d0a6](http://www.arcep.fr/index.php?id=8571&L=1&tx_gsactualite_pi1[uid]=1424&tx_gsactualite_pi1[backID]=1&cHash=8de513d0a6)

2.2 Germany

Freephone	Revenue-sharing
<p>0800</p> <ul style="list-style-type: none"> Universally free Significant flexibility to block incoming calls to freephone numbers 	<p>0180, 0900</p> <ul style="list-style-type: none"> Premium rate numbers suffer from a negative reputation No maximum prices set by regulator, but legal obligations to be met at higher charges



Freephone numbers are universally free across Germany. Service providers have significant flexibility to block incoming calls to freephone numbers. In practice, however, calls originating from mobiles are not commonly blocked because this may cut off a significant and growing population. In 2011, there were over 188,800 freephone numbers registered; approximately 3,000 new freephone numbers are registered each year. However, a review of telephone numbers for public authorities found many examples of charge-bearing (mainly geographic) numbers being advertised.

Germany makes a clear distinction between premium rate and other revenue-sharing numbers (called 'service numbers'). Due to past exploitation of consumers' lack of understanding of premium rate number charges, these numbers now have a particularly negative reputation.

While in theory premium rate call charges in Germany have no maximum price, the legal obligations which must be satisfied if prices exceed €3 per minute are complex. Therefore, in practice, telephone operators only offer premium rate numbers up to a maximum retail price of €3 per minute.

2.3 The Netherlands

Freephone	Revenue-sharing
<p>0800</p> <ul style="list-style-type: none"> Universally free Examples of both public and private enterprises using freephone Costs becoming higher as mobile users increasing 	<p>088, 090X</p> <ul style="list-style-type: none"> High retail charges for non-geographic numbers OPTA is considering regulation of these charges.



The Netherlands has a universally-free freephone regime. The majority of freephone numbers are registered with telephone operators. Some are allocated directly to service providers and this includes examples of both private companies (such as ABN AMRO Bank NV and Microsoft BV) and public organisations (such as the Tax Office and Rotterdam Local Authority)⁷.

As discussed in more detail in Section 3.2.3, freephone services are becoming increasingly more expensive for service providers given that mobile origination rates are high (set excessively above cost), and there is a growing number of mobile users. Despite this, the freephone market has not contracted, and so it appears that Dutch service providers place a high value on being able to offer a freephone service for their potential audience and are willing to tolerate the increasing costs.

High retail prices to non-geographic numbers are an issue. The regulator recognises this and is considering proposals to introduce regulation of retail prices for non-geographic calls.

2.4 Norway

Freephone	Revenue-sharing
<p>800</p> <ul style="list-style-type: none"> Chargeable from mobiles Typically used for customer service functions in both public and private organisations 	<p>820, 829</p> <ul style="list-style-type: none"> Minimal regulation of retail prices Regulator aims to stimulate competition through increasing consumer awareness of call charges



Norway does not have a universally-free freephone regime. Fixed-line calls to freephone numbers are free, but mobile callers – who share the cost of freephone with service providers – face significant variations in prices to these numbers. In some instances, it may be cheaper to call a

⁷ SEO [1], “Kopersmacht bij afname gespreksopbouw naar 0800-nummers”. This document is available online at <http://www.opta.nl/nl/actueel/alle-publicaties/publicatie/?id=3461>, and is documented in greater detail in Section 3.2.2

non-freephone number from a mobile. There are low caller volumes to freephone numbers, although it is unclear whether this is because consumers actively choose not to dial these numbers or whether the services provided over freephone are of little importance to callers. This is discussed in Section 3.2.1.

The Norwegian market is characterised by minimal regulatory intervention; instead, consumers are encouraged by the regulator to seek out price information for all types of call (geographic and non-geographic).

2.5 Spain

Freephone	Revenue-sharing
<p>900</p> <ul style="list-style-type: none"> Universally free Mainly used by public authorities; businesses tend to use charge-bearing numbers 	<p>08XA</p> <ul style="list-style-type: none"> The greater the value of A, the higher the cost of the call



Freephone numbers are universally free. As discussed in Section 3.5.1, the freephone market is relatively small; public authorities are the main providers of freephone services, and most businesses opt for a revenue-sharing number. Service providers in Spain do not appear to value freephone in the same way that is observed in other countries, such as the Netherlands.

Spain’s regime of revenue-sharing numbers employs various methods in order to increase price transparency. The telephone numbering system itself gives an indication of the charge (see summary table for Spain above). In particular, bill disclosures separate out access and service charges, even though they may not be advertised as such. This is discussed in Section 4.3.

2.6 United States

Freephone	Revenue-sharing
<p>800, 888, 877, 866, 855</p> <ul style="list-style-type: none"> Partially free: Mobile callers may incur charges if out of bundle Significant growth in freephone driven by businesses with a national consumer base 	<p>900</p> <ul style="list-style-type: none"> Were controversial in the past but now subject to stringent price information rules



Regulation of pricing for non-geographic numbers in the United States is unique due to the way in which the telecommunications market has evolved in that country. A key difference is the way in which local calls are free, and have been since the appearance of telecommunications operators.

This history has led to an expectation from consumers that calls would be free⁸, and has further influenced the treatment of mobiles, which are operated under a receiving party pays (RPP) system. RPP means that consumers do not need to know whether they are calling a fixed line or a mobile, since they will pay the same tariff in any case; it is the receiving party which must pay the higher cost of terminating on a mobile network. There is no set numbering for fixed lines and mobiles, and numbers can be migrated between the two. Therefore, it is not possible to identify the origin of an incoming call.

There has been a significant increase in the number of freephone numbers over the last 20 years; new freephone prefixes have been introduced over this period to satisfy demand. This is largely because, as referred to above, consumers have an expectation that calls are free. As businesses increasingly have a national customer base, and given that only local calls are free, freephone services have been implemented in order to offer all consumers the free telephone access they have come to expect.

'Pay-per-call' (premium) numbers were historically controversial. There are now strict rules over pricing disclosures and these are discussed in Section 4.3.1.

⁸ Based on interview with an expert within the Federal Communications Commission (the US communications regulator).

2.7 Overview of areas of importance

Table 2: Summary of key features of the countries reviewed

Country	Areas of note
France	Dissatisfaction with current regulation of non-geographic numbers among consumers and service providers. Regulator consulting on changes to system.
Germany	Minimal discussion around freephone in the country. Premium rate numbers have a negative reputation.
The Netherlands	High mobile origination rates, but no evidence of contraction in the freephone market. Evidence that service providers place a high value on freephone.
Norway	Freephone is not universally free. Mobile users face high variations in prices for all non-geographic calls.
Spain	Experience suggests that freephone is not considered a valuable business tool. Access and service charges are disclosed separately on bills.
United States	Significant growth in freephone; new number ranges introduced.

3 Regulation of Freephone Calls

This section concentrates on the regulation of freephone calls, including the way in which these are funded and consumer satisfaction with the market.

All countries examined have had freephone number ranges for a significant period. In some countries, such as the US, the increasing demand for freephone numbers has led to additional number ranges being introduced over time.

In the UK, the traditional freephone number range has been 0800; however, this has been supplemented with the 0500 range (introduced with the competition from Mercury which is now closed to new applications) and 0808 numbers following increasing demand. Freephone numbers are not universally free: consumers do not pay retail call charges from a BT line, but may incur charges when calling from a mobile, or other fixed-line telephone operators. Where communications operators charge they must introduce a pre-call announcement informing callers that they will be charged for the call.

As mentioned in Section 2, comprehensive information from national regulators was, in many cases, not available. In particular, it was not possible to obtain call volumes to freephone numbers in the different regimes, and the split of these calls between fixed line and mobile origination⁹. Given this lack of data, this paper instead considers how regulation differs (and the rationale for this) rather than concentrating on the outcomes.

3.1 Prices for freephone calls

Ofcom's focus within its consultation paper has been on the possibility of regulating freephone calls to be free to all callers, no matter their point of origin. Ofcom is therefore primarily interested in understanding how freephone works in other countries and whether experience in these countries can help inform its decision-making processes.

All countries in scope of this review, except Norway, have some market in which freephone calls are universally free. The following table summarises the freephone regimes in the countries reviewed.

⁹ Such data, if it existed, would be maintained by telephone operators and no examples of regulators collecting this data were identified through discussions with them.

Table 3: Summary of freephone regimes

	Originating on fixed line	Originating on mobile
France	Free	Partially free
Germany	Free	Free
The Netherlands	Free	Free
Norway	Free	Chargeable
Spain	Free	Free
United States	Free	Partially free

Source: Information based on discussions with both Deloitte telecommunications experts and regulators.

France and the United States are described as 'partially free' for mobile users.

- In **France**, it is free to call 08088 numbers from both fixed lines and mobiles. Other 080 numbers, which are free from fixed lines, may be chargeable for mobile callers. This model is considered in further detail in Section 3.1.2.
- In the **United States**, mobile users are allocated a set of minutes in their call plans. Freephone numbers consume these minutes, but do not incur any other telephone charges. If these minutes are fully used, calls to freephone numbers will be charged, in the same way as calls to geographic numbers will be charged. Given this, it can be argued that freephone numbers are not free from mobiles, but instead are treated in the same way as geographic numbers.

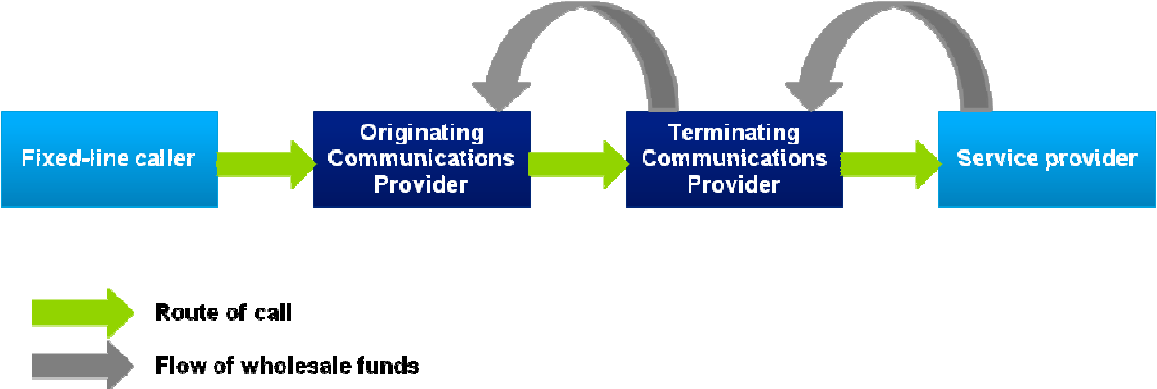
3.1.1 Calls originating from fixed lines

In all of the countries reviewed, it is free to call a freephone number from a fixed line.

A simplified model of the participants in the freephone market for fixed-line origination is illustrated in Figure 1¹⁰. The caller is not charged for dialling the freephone number; however, transmitting the call does carry a material cost, and therefore the originating communications provider (OCP) wishes to recover this. The OCP charges a fee for fixed-line origination of the call and this is paid by the service provider via its terminating communications provider (TCP). In reality, there may be greater complexity in both the number of players and movement of funds.

¹⁰ This simplified model is based on an example presented in ARCEP [3].

Figure 1: Simplified model of a fixed-line call to a freephone number



3.1.2 Calls originating from mobiles

Typically, network origination costs are higher for mobile telephone operators¹¹. Therefore, if payments are based on cost, it would be expected that calls from mobiles would reflect higher origination charges than fixed-line calls.

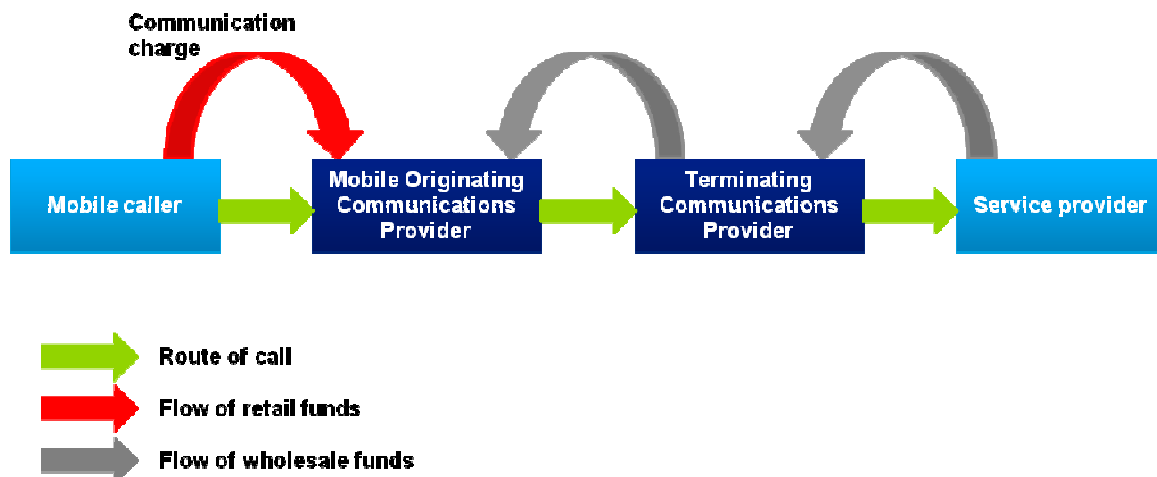
If calls originating from mobile phones incur no charge for the caller, the flow of funds follows that in Figure 1 above. If origination charges are based on cost, the service provider will incur a higher charge for mobile origination than would be charged were the caller using a fixed line.

In two of the countries sampled, mobile callers may share in the burden of the cost of freephone calls. In **France**, only 08088 numbers are universally free. 0800 and 0805 numbers are free from fixed lines, but may incur charges for mobiles. A simplified model of the 0800 and 0805 market for mobile call origination is illustrated in Figure 2¹². In common with the model of fixed-line origination presented in Section 3.1.1, there may be more participants and movements of funds.

¹¹ Deloitte’s experience of working on telecommunications costing models for various international telecommunications operators. This has also been recognised in ARCEP [3] and is used to justify the existence of a ‘communication’ charge as illustrated in Figure 2.

¹² This simplified model is based on an example presented in ARCEP [3].

Figure 2: Simplified model of a mobile call to a 0800 or 0805 number in France



It is standard practice in France for mobile OCPs to charge a retail ‘communication’ fee to the mobile caller in addition to the standard retail price for all calls¹³. This communication charge was historically introduced to offset the additional costs of mobile call origination. For all 080 numbers in France, the retail price is set to nil, and therefore the only payment due from mobile callers to 0800 and 0805 numbers is the communication charge.

In consequence, the origination charge paid by the service provider (via the TCP) for 0800 and 0805 is lower compared to the charge for the universally-free 08088 number. This is because at least some of the call origination charge is recovered directly from the caller through the communication charge¹⁴. This is summarised in Table 4.

Table 4: Summary of freephone charges for mobile users in France

	08088	0800 and 0805
Retail charge	0	0
Communication charge	0	> 0
Origination charge	X	< X

In **Norway**, where mobile users also incur charges, the flow of funds follows that in Figure 2 above. However, unlike in France where the retail price is set to nil, mobile OCPs are free to determine the retail prices that consumers pay for freephone numbers¹⁵. Mobile users must pay for using

¹³ This is documented in ARCEP [3].

¹⁴ Based on the literature available, it is unclear to what extent, if any, the communication charge is subject to regulation. What is clear is that ARCEP is considering applying regulatory measures to harmonise retail access charges for all 08 numbers and the communication charge will therefore be affected by this. This is discussed in Section 4.3.2.

¹⁵ Based on interview with a Deloitte telecommunications expert in Norway.

freephone services and this charge is dependent on the chosen mobile OCP. This is considered further in Section 3.4.

Provision of socially valuable services

Where mobile callers face charges for freephone, there may be instances where it is deemed in the interests of callers to have free access to certain, socially-valuable phone services, irrespective of the origin of the call¹⁶. This review found limited examples of this.

However, an example does exist in Norway where the Red Cross' freephone helpline number for children and young people is free for mobile callers. Telenor – Norway's main telecommunications operator – funds this service.

3.1.3 Profile of callers

Globally, the number of mobile users is growing: in 2010, mobile subscriptions reached 78 per 100 inhabitants and this has grown considerably over the preceding ten years. This is greater than the global number of fixed lines which was 17 per 100 inhabitants in 2010¹⁷.

Examples of the increasing use of mobile telephony can be found in each of the countries in scope of this review. For example, in the **Netherlands**, there are a growing number of mobile users and this population now exceeds the number of fixed lines. Furthermore, the number of fixed lines has actually fallen over the last decade¹⁸.

In addition, mobile penetration rates are above 100% in many of the regimes sampled. **Norway**, for example, has a penetration rate of 117%¹⁹.

It was not possible to obtain data on freephone call volumes originating from fixed lines and mobiles for the regimes selected. However, in a country where mobile use is growing, considerations around freephone may be increasingly influenced by mobile usage, which is becoming relatively more important than fixed-line access.

3.2 Regulation of freephone charges

This section considers the regulation of freephone charges which were presented in Section 3.1. At this point, it is important to distinguish between the retail charges faced by consumers and the wholesale charges paid by service providers.

¹⁶ It may also be deemed to be in the interests of the service provider not to have to bear any costs, especially if the service provider is a charity.

¹⁷ International Telecommunications Union [1], "World Telecommunication/ICT Indicators Database". This document is available online at: <http://www.itu.int/ITU-D/ict/statistics/>

¹⁸ SEO [1]. This study is documented in greater detail in Section 3.2.3.

¹⁹ Telenor [1], "Business descriptions". This document is available online at: <http://www.telenor.com/en/investor-relations/company-facts/business-description/telenor-norway>

3.2.1 Regulation of retail charges to consumers

In universally free-to-caller regimes, consumers are not charged for dialling freephone numbers: the regulated retail price is effectively nil. The rest of this section therefore focuses on regimes where callers may be charged for using freephone.

In this review, no examples were identified of freephone retail charges being regulated where consumers face a positive charge for dialling a freephone service.

In **Norway**, where mobile callers incur retail call charges for using freephone numbers, mobile telephone operators are unregulated and have significant flexibility in the determination of the retail prices (both the per call and per minute charge) that consumers pay for using freephone²⁰.

Consequently, consumers face positive retail call rates and major variations in freephone charges depending on their mobile OCP; prices can vary between 0 NOK and 2 NOK per minute (excluding the per call charge)²¹. At the higher end of this range, in some cases it may be cheaper to call a non-freephone number from a mobile than a freephone number.

In an article in 2010, the Head of Information at Telenor (Norway's main telecommunications operator) explained that the cost of mobile origination to a freephone number is cheaper than to a standard fixed-line number. However, this is not reflected in pricing: retail charges tend to be higher for mobile calls to freephone services²². It is because of this that the Head of Information suggests that the regime needs to be reconsidered, especially in light of the growing number of mobile users.

A counter view is presented in the same article by the CEO of Tele2 (a major mobile telephone operator in Norway). Call volume per user to freephone numbers is very low and freephone charges account for a small proportion of an average customer's total bill. The CEO's view is that Tele2 should focus on offering the most competitive retail prices for numbers which are important to customers.

It is because call volumes are low that a Deloitte telecommunications expert in Norway suggested in an interview that little attention is paid to freephone charges by both consumers and the regulator. This is discussed further in Section 3.4.

To reiterate, no examples were identified in the regimes sampled of retail charges being regulated where consumers face a positive price for using freephone. The next section considers the regulation of wholesale freephone costs; specifically, wholesale costs refer to the price charged by an OCP for call origination. The review is split between fixed-line and mobile call origination.

²⁰ Based on interview with a Deloitte telecommunications expert in Norway.

²¹ Sampled 4 February 2010 by VG Nett [1], "Ikke gratis å ringe gratisnummer ". This article can be found online at: <http://www.vg.no/dinepenger/artikkel.php?artid=597850>.

²² VG Nett [1]

3.2.2 Calls originating from fixed lines

As highlighted in Section 3.1.1, OCPs charge service providers for fixed-line origination of freephone numbers.

Regulation of fixed-line origination tends to exist in markets where there is an incumbent, fixed-line telecommunications operator which retains market power. In **Spain** for example, Telefónica is subject to specific regulations which require its call origination charges to be set in line with ordinary fixed-line call termination charges²³. France Telecom²⁴, KPN²⁵ in the Netherlands and Telenor²⁶ in Norway are also subject to cost-oriented regulations.

The regulations tend to only apply to the incumbent. In Spain, other fixed-line operators tend to align their call origination charges to Telefónica's rates²⁷. A similar pattern is evident in the Netherlands²⁸. It is unclear why this trend is observed, but it may be because other fixed-line operators are using regulation as a signal for their own prices, or that prices are being set at the minimum possible level meaning that operators are unable to undercut them.

Based on discussions with regulators in the countries reviewed, fixed-line origination charges attracted little comment. The next section considers regulation of the wholesale costs of mobile origination.

3.2.3 Calls originating from mobiles

In contrast to fixed-line origination, this review did not find examples of the regulation of mobile origination rates. However, a recent study in the Netherlands provides some useful insights in to the characteristics of mobile origination in this country and the potential implications for regulation. A second example from New Zealand is then discussed indicating why in this instance mobile origination charges for freephone numbers was not implemented.

Experience in the Netherlands

A study by SEO Economisch Onderzoek (SEO) was commissioned by OPTA in 2011 on call origination for freephone numbers²⁹. As noted in Section 3.2.2, the fixed-line incumbent KPN is regulated, but other telephone operators are not; this latter group includes all mobile telephone operators.

²³ Based on an interview with a third party telecommunications expert in Spain.

²⁴ This is documented in ARCEP [3].

²⁵ SEO [1]

²⁶ Telenor [1]

²⁷ See footnote 23.

²⁸ SEO [1]

²⁹ SEO [1]

SEO's study notes that mobile call origination rates average €0.25 per minute. This is significantly above mobile termination rates (currently regulated at €0.07 per minute³⁰), which should (in theory) be comparable in cost terms³¹. In addition, the study found that mobile origination rates tend to be higher than the average retail price for a mobile call³². This may suggest that mobile origination charges are priced significantly above cost.

The 2011 SEO study concludes that OCPs, both fixed and mobile, effectively have a monopoly in the market for call origination. This is because:

- 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 (this is discussed further in Section 3.5.1); and
- The bargaining power of service providers is limited.

The SEO study suggests that high mobile call origination rates are consistent with the conclusion regarding monopoly power³³.

In discussions with a telecommunications expert at OPTA, it emerged that a proposal is being considered to regulate wholesale prices for freephone so that they do not exceed retail charges for mobile calls made to standard geographic calls.

Experience in New Zealand

In 2004, New Zealand's Commerce Commission decided not to investigate whether mobile origination charges for freephone services should be subject to regulation³⁴. This request was prompted by industry participants. In this regime, mobile callers could incur charges for dialling freephone numbers and service providers were able to block incoming calls from mobiles.

Similar to the Netherlands, the Commerce Commission recognised that mobile OCPs have market power in the supply of mobile origination. Despite this, the decision was made based on the following points.

³⁰ SEO [1] highlights that mobile termination for freephone numbers is not regulated, but other numbers are regulated with a maximum termination charge set at €0.07 per minute.

³¹ Similarly, in Spain, mobile origination and termination rates used to be around €0.20 per minute in 1998. Since then, termination rates have fallen to approximately €0.04 per minute as a result of regulation; mobile origination charges however have not fallen at the same rate and remain significantly higher. This is based on an interview with a telecommunications expert in Spain.

³² The average retail price takes in to account all types of call. The methodology for calculating this is documented within the body of SEO [1].

³³ Note that the conclusion over monopoly power applies equally to both fixed and mobile OCPs; in the case of the Netherlands, however, the main fixed-line incumbent KPN is regulated.

³⁴ Commerce Commission [1], "2004 Mobile origination". This document can be found online at <http://www.comcom.govt.nz/2004-mobile-origination/>

First, despite the market power of mobile operators, the retail charge for consumers of using freephone services was deemed competitive. Note that this contrasts to the situation in Norway described in Section 3.2.1 where consumers are faced with different prices for freephone.

Secondly, service providers were able to block mobile-originated calls which provides an incentive for mobile OCPs to take this in to account when pricing mobile call origination. Even if mobile calls were blocked, consumers could substitute to fixed lines.

Finally, the proportion of mobile-originated calls to freephone was small (but growing) and therefore did not justify the costs of regulation. This last point reinforces the point made in Section 3.1.3 that mobile usage will increasingly become relevant to considerations around freephone where mobile use is growing.

3.2.4 Summary

Where freephone is universally free-to-caller, the regulated retail price is effectively set to zero. However, this review did not find examples of retail prices being regulated where consumers incur positive charges for using a freephone service.

The section then discussed the regulation of wholesale call origination charges. Fixed-line origination does not appear to be a cause of concern for regulators in the freephone regimes selected for review.

Mobile origination costs tend to be more expensive than fixed-line origination costs. This review has highlighted that, in certain regimes, there is recognition that mobile OCPs may have an element of market power. In the Netherlands, this may explain why mobile origination charges appear to be set above mobile termination charges. The SEO report concludes that the existence of market power is consistent with the pricing that is observed in the market. OPTA is currently considering the regulation of freephone wholesale charges to bring them in line with the retail charges for mobile calls made to standard geographic calls.

The experience in New Zealand highlights that a regulator may not consider intervention necessary to set mobile origination rates. The decision to regulate will be dependent on the prevailing market conditions. In New Zealand, it appears that consumers are protected by the level of competition in the retail market and service providers are able to block mobile-originated calls. However, there may be instances where service providers are resistant to blocking and this is discussed further in the next section.

Research conducted for this report did not identify any situation where freephone calls are funded through higher tariffs for other non-freephone services.

3.3 Call blocking

This section reviews examples of call blocking by service providers (which equates to the blocking of the termination of a call) and by OCPs (which equates to the blocking of the origination of a call).

3.3.1 Blocking by service providers: termination

Due to the higher costs imposed on service providers, blocking freephone calls made from mobiles is a potential issue in universally-free freephone regimes. For example, service providers may request that mobile calls are blocked to avoid paying higher origination costs, or because they dispute the origination rates charged.

Regimes where blocking is not possible

In some regimes, blocking may not be possible. For example, in Spain, telephone operators and service providers are prevented from blocking numbers by the legal obligation that every number should be open across every network³⁵.

In the United States, the regulator introduced number portability between fixed lines and mobiles in 2003. Since then to the first quarter of 2010, 4,100,000 numbers have been ported from fixed lines to mobiles, and 200,000 have been ported the other way³⁶. While this represents a fraction of total numbers ported (most porting is between two fixed or two mobile telephone operators) it is not possible for a service provider's telephone operator to identify whether an incoming call originates from a fixed line or mobile. Mobile calls cannot therefore be easily blocked.

Based on an interview with a telecommunications expert at the regulator, it is unclear if blocking of mobile calls would exist in the United States if number porting had not been introduced. It is also unclear whether blocking of mobile calls occurred prior to 2003.

Regimes where blocking occurs

In Germany, service providers are able to block calls to their freephone numbers depending on the type of network they originate from (fixed or mobile), as well as on the time of call and geography (only if originating from a fixed line). For example, a service provider is able to block weekend, fixed-line calls from Berlin, should there be a need to do so.

There are two main reasons for blocking. First, mobile calls may be blocked given the higher origination costs. Secondly, businesses operating within limited geographical boundaries may block calls originating from outside this area³⁷.

Although blocking of mobile calls is possible, it is not common given that an increasing number of callers are exclusively mobile users³⁸. Therefore, blocking this group restricts the number of potential callers for service providers. Furthermore, the view of a telecommunications expert at the regulator is that blocking is not an issue: given that service providers are paying for the freephone

³⁵ There is one exception relating to 118 numbers but this is not relevant here.

³⁶ FCC [1], "Telephone numbering resource utilization report". This document is available online at: <http://www.fcc.gov/document/fcc-releases-telephone-numbering-resource-utilization-report-3>

³⁷ The example provided by a telecommunications expert at the regulator is that of a plumber working in Frankfurt who does not want customers calling from Berlin.

³⁸ Based on interview of a telecommunications expert at the regulator in Germany.

service, it appears reasonable that they are able to block such calls according to their circumstances.

In the Netherlands, there are also instances of service providers blocking calls originating from mobiles. However, there is evidence to suggest that service providers tend to place a high value on being able to provide a free contact service between themselves and their potential audience (this is reviewed in Section 3.5.1). Therefore, there may be a disincentive to blocking mobile callers, especially if this population represents a significant proportion of potential callers.

3.3.2 Blocking by mobile operators: origination

As well as service providers blocking calls originating from mobile numbers, it is possible that calls may be blocked by mobile operators. This would be advantageous for the mobile operator if, for example, the call was being used to bypass some of its services, as demonstrated by international calling cards with freephone numbers.

For example, Zaptel – a phone card company based in the United States – advises that mobile users should check with their mobile operator to see whether services may be blocked when using a phone card³⁹. Limited examples of mobile calls being blocked in this way were identified. Instead, mobile users of such services may face significantly higher charges than fixed-line users.

3.4 Consumer awareness

This section considers consumer awareness of freephone charges. The research carried out for this paper identified no studies on this specific issue. Therefore, the review focussed on the views of telecommunications professionals based in the national regulators or within the international Deloitte network.

From the interviews performed, the following table summarises the high-level responses from the experts based in those countries.

³⁹ Zaptel [1], “FAQ”. This is available on line at: http://www.zaptel.com/calling-card/faq_global.html#1

Table 5: Consumer awareness of freephone charges

Country	Freephone regime	Consumer awareness
France	Partially free	No view provided.
Germany	Free	Callers are generally aware that freephone is free ⁴⁰ .
The Netherlands	Free	Callers are generally aware that freephone is free ⁴¹ .
Norway	Chargeable	There is some confusion with the current regime ⁴² .
Spain	Free	Callers are generally aware that freephone is free ⁴³ .
United States	Partially free	Callers are generally aware that freephone is free ⁴⁴ .

Based on the views collected, it appears that for the sample of regimes selected, the perception among telecommunications professionals is that consumers tend to be aware that freephone numbers are free to call from all originating points in universally free-to-caller regimes.

This review has identified examples where heterogeneous charging for calls has been used to explain consumer confusion over call charges, such as in Norway which is discussed below within this section. In another example, ARCEP highlights differentiation in retail call charges as a potential barrier to consumer understanding of the charging of non-geographic numbers in France and is currently consulting on this⁴⁵.

In the case of universally-free freephone, there is no differentiation in retail charges and this therefore contributes to a potentially very simple pricing message to consumers. This may explain why there may be a tendency for such regimes in the sample selected to correlate with high consumer understanding of the system.

Experience in the United States

It is worth noting that there are distinct ranges for freephone, but some are quite new and similar in prefix to charge-bearing numbers. Lower consumer awareness when new prefixes were

⁴⁰ Based on interview with Deloitte telecommunications expert in Germany.

⁴¹ Based on interview with Deloitte telecommunications expert in the Netherlands.

⁴² Based on interview with Deloitte telecommunications expert in the Norway. The experience in Norway is discussed in more detail below.

⁴³ Based on interview with a third party telecommunications expert in Spain.

⁴⁴ Based on interview with a telecommunications expert at the national regulator. It was not possible to determine a view on the fact that freephone is only free if a mobile caller is within the call package bundle as described at the beginning of Section 3.1.

⁴⁵ This consultation and the effect of heterogeneous pricing on consumer confusion are discussed in Section 4.3.2.

introduced resulted in some instances of fraud⁴⁶. Despite this, as noted in the table above, consumers do generally understand the freephone regime.

Experience in Norway⁴⁷

As Table 5 documents, Norway was the only regime where the telecommunications expert perceived that consumers had low understanding of the freephone regime and charges. Norwegian mobile callers incur charges for using freephone numbers. As discussed in Section 3.2.1, mobile operators are free to set the retail prices that consumers pay for freephone numbers: there is no regulation of these charges.

Mobile users face major variations in freephone prices depending on their mobile OCP. Furthermore, these charges are often changing. The result is that consumer awareness of mobile charges for freephone is limited⁴⁸, and it is likely that only a frequent user of the service will have some concept of the price. Pre-call announcements do exist which explain that call charges will vary depending on a caller's mobile operator.

Freephone numbers tend to account for an insignificant volume of calls from mobiles. In an article in 2010, the CEO of Tele2 – a major mobile telephone operator in Norway – explained that freephone numbers accounted for 0.15% of call volume for the average Tele2 customer (who are mobile users) and therefore did not have a significant impact on total billing charges⁴⁹. The CEO suggests that this is because freephone services are not important to consumers.

It is, however, unclear whether low caller volumes to freephone services are a result of dissatisfaction with the regime or whether, as the CEO suggests, that freephone is not important to consumers. It may be that high mobile charges for freephone and general lack of understanding of prices may be the reason for these low caller volumes in the first instance.

This is difficult to ascertain because there does not appear to be active lobbying by consumers against such charges. However, the regime has been open to some criticism. Given the rising trend in Norway for calls to originate from mobiles, there is increasing awareness among consumers of the high costs of calling freephone numbers, with some stories of consumer dissatisfaction beginning to appear in the media⁵⁰.

⁴⁶ See footnote 44.

⁴⁷ This information on Norway was obtained through discussions with a Deloitte telecommunications expert in Norway supplemented with information directly from the regulator.

⁴⁸ Consumer awareness of the pricing of non-geographic numbers in general is considered limited in Norway.

⁴⁹ VG Nett [1]

⁵⁰ An example of a 2010 article appearing in the media is:
<http://www.vg.no/dinepenger/artikkel.php?artid=597850>

3.5 Satisfaction among service providers

In countries with universally-free regimes, this review identified a tendency for consumers to be generally aware of the freephone regime. No instances of consumers expressing dissatisfaction were found in these countries. However, research based on these regimes has identified that there may be dissatisfaction from service providers, who may face high origination charges, low uptake of services, or blocks on origination.

3.5.1 Service providers operating in universally free-to-caller regimes

This section considers the experience of service providers in regimes where freephone is universally free for callers. The review begins with the Netherlands, which highlights that service providers may place a high value on being able to offer a freephone service to their target audience. This is used to explain why service providers do not appear to be migrating to revenue-sharing numbers, despite the fact freephone costs are getting more expensive with the growth in the proportion of mobile callers.

In contrast to this, an example from Spain is discussed demonstrating that not all service providers appear to regard freephone services with the same value. This section concludes by exploring why service providers may be incentivised to maintain a freephone service in a universally-free regime.

Experience in the Netherlands⁵¹

In the Netherlands, which has a universally-free freephone regime, the 2011 SEO study on call origination for freephone numbers notes that there was a downward trend in applications for new freephone numbers between 2007 and 2010. As discussed in Section 3.2.3, the study also highlights that mobile freephone origination charges are significantly above cost (averaging €0.25 per minute). These high rates, coupled with an increasing proportion of mobile users, are thought to explain the fall in applications for new freephone numbers, since the average cost to the service provider for a call will be increasing.

Despite this, the study finds limited evidence to support a conclusion that service providers are migrating from freephone to the 0900 (revenue-sharing) alternative⁵². The number of active freephone and 0900 numbers have in fact remained stable in recent years; despite falling applications, the freephone market does not appear to have contracted⁵³.

One explanation for this in the 2011 SEO report focuses on the high value service providers place on being able to provide a free contact service between themselves and their potential audience. Furthermore, the study suggests that freephone services are unique because they have no close substitutes. While alternative free forms of communication do exist, such as over the Internet, they

⁵¹ The information in this section about the Netherlands is based on SEO [1].

⁵² 0900 numbers include general and specialised information services and do not include more expensive entertainment-based services.

⁵³ This implies that the number of service providers abandoning freephone services is also decreasing in line with the fall in new applications. SEO [1] did not provide a view why applications are falling.

are not considered to provide the same type of experience; nor are they necessarily very well established.

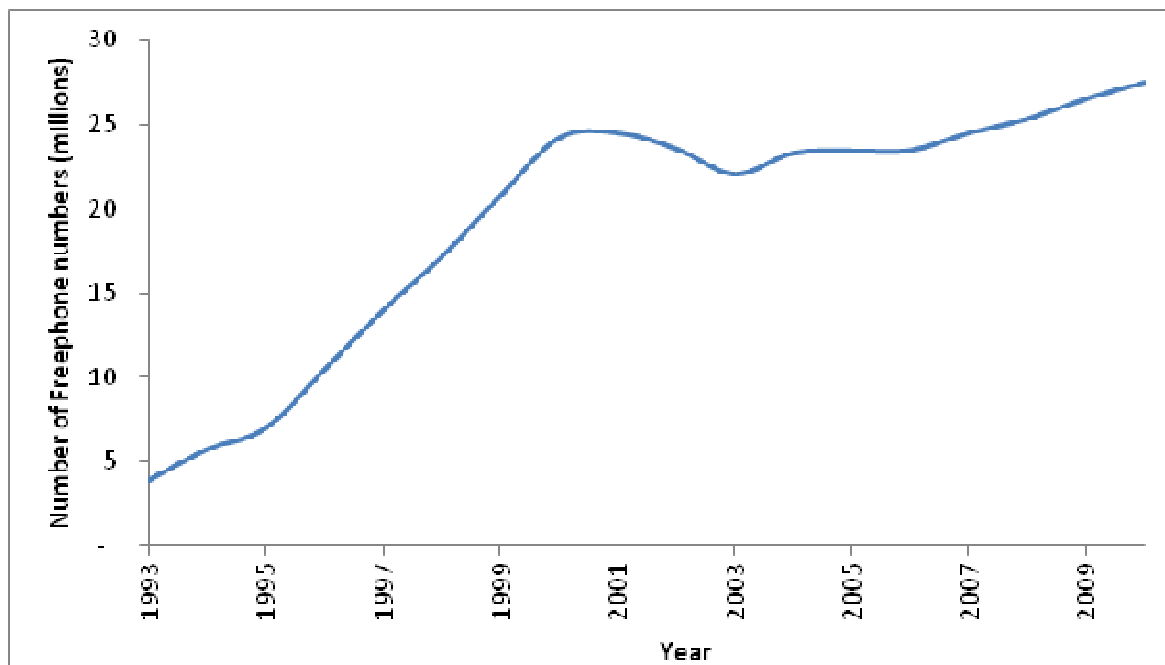
The alternative of moving to a revenue-sharing number⁵⁴ implies a positive charge for all (not just mobile) callers. This defeats the appeal of these numbers for those service providers who consider a free access call service desirable, or even necessary. As a result, there is likely to be a reduction in caller volume. This may be made worse by public perception in the Netherlands that revenue-sharing numbers (such as the 0900 range) are generally expensive.

The experience in the Netherlands suggests that freephone's perception as valuable and unique creates a level of resistance for service providers to moving towards revenue-sharing numbers. This is despite the fact that freephone is becoming increasingly more expensive because of the growing number of mobile users and mobile call origination rates are considerably above cost. The stability of the freephone market should not, however, be taken as proof that service providers are satisfied with the regime as it stands.

Experience in the United States

In the United States, which also has a universally-free freephone regime, service providers also appear to place a high value on offering a freephone service. There has been a rapid expansion in the number of freephone numbers rising from 3,900,000 in 1993 to 27,500,000 in 2010. New freephone prefixes have been introduced over this period to satisfy the increasing demand.

Figure 3: Number of freephone numbers assigned in the United States⁵⁵



⁵⁴ A service provider may also consider migrating to a geographic number, but this may not be the preferred solution for a business trying to establish or convey a national presence.

⁵⁵ FCC [1]

The use of freephone numbers is perceived to be an important tool enabling businesses to reach consumers at the national level. In discussions with a telecommunications expert at the regulator, it was highlighted that, in line with the growth of the internet, the customer base for an American company is now more likely to be national rather than local. Local numbers are free in the United States; in order to offer a free call service to customers across the country using a single number, businesses now need to provide a national freephone service.

Experience in Spain⁵⁶

Unlike in the Netherlands and the United States, freephone is not necessarily considered to be a valued tool in **Spain**, especially among private companies. Therefore, this provides a valuable counterpoint example to the previous discussion.

Freephone services are predominantly offered by public authorities and therefore account for a relatively small share of total telephone numbers. Instead, most Spanish companies choose the 902 non-geographic number.

The 902 number, according to Spain's Numbering Plan, is supposed to be a non-revenue sharing number for which the caller bears the full burden of payment. However, the regulator highlighted in discussions that service providers often receive a share of the income generated by these calls in the manner of a cash-back payment; this is a consequence of competition between telephone operators for service providers' business. Therefore, in many instances, this has effectively become a revenue-sharing number.

As stated above, businesses are displaying a preference for non-geographic numbers other than freephone. This preference may be to some extent explained by the relatively high mobile origination rates in Spain (see Section 3.2.3) and the inability for service providers to block mobile callers (see Section 3.3.1). However, this explanation appears less likely given that Spanish companies typically choose a 902 number over the 901 alternative.

A 901 number is paid for by the caller (via retail call charges) and the service provider (via origination charges): call charges are cheaper for the caller than dialling 902. Considering this, it would seem that if businesses truly valued a freephone service, but considered the high mobile origination rates excessive, more businesses would select the 901 number in order to limit charges for their callers. However, this does not appear to be happening in Spain.

Furthermore, companies in Spain often have alternative, geographic numbers with lower retail call charges which can be used instead of their 902 numbers; however, these numbers are not very well publicised by companies and this has become a source of consumer dissatisfaction.

It therefore seems that, in contrast to the Netherlands and the United States, companies in Spain tend to value the revenue stream from telephone calls over being able to provide free call access to their potential audience. It is because of this that it appears unclear whether any reduction in Spain's high mobile origination rates would lead to an increase in freephone services.

⁵⁶ Based on an interview with a third-party telecommunications expert in Spain.

Summary

The incentives for service providers to continue a freephone service are summarised in Figure 4. The countries on which these conclusions are based are included in the figure.

On the basis of the information collected, it is believed that service providers will be incentivised to move towards revenue-sharing alternatives if there are: high freephone costs (likely to be a result of high mobile origination rates); a growing number of mobile callers; and a tendency for service providers to value revenue from calls above benefits from customer satisfaction.

Figure 4: Incentives to remain with a freephone service



3.5.2 Service providers operating in a non-universally-free freephone regime

In regimes where mobile callers are charged for freephone numbers, service providers will be unable to provide a free point of access to all potential callers; this is increasingly important as the number of households who do not subscribe to a fixed-line service is growing⁵⁷. There is evidence that some service providers may consider universally-free call access highly desirable and therefore may be dissatisfied with mobile charges on freephone numbers.

The 2011 SEO study in the Netherlands briefly considers the effect of introducing mobile call charges for freephone. Given that service providers value the ability to offer free freephone services, mobile call charging would seem unpopular with this group, especially given there is a growing number of mobile users.

To illustrate this point, NAV (the Norwegian Labour and Welfare Organisation⁵⁸) wanted to provide the most affordable option for members of the public to call the agency. This was in response to criticism that the current 815 number (a non-geographic, non-revenue-sharing number) was generating high call charges for consumers.

NAV decided to opt for a standard, low-cost number instead of a freephone number. As explained in Section 3.1.2, Norwegian mobile users face positive call charges which depend on the chosen mobile OCP. In NAV's view, a non-freephone number therefore represented the most affordable option given that an increasing number of its callers have mobile phones⁵⁹.

NAV's experience illustrates how an organisation whose preference may be to offer free access for its callers has found the freephone service to be an inappropriate solution. Instead of offering a freephone service (which is free from fixed lines but may incur high charges for mobile users), NAV has opted for an alternative which charges all callers a low price.

While this example may not be typical of the overall situation in Norway, it demonstrates how the set-up of the current regime, in the interests of finding the most affordable solution for all callers, may actually result in no one having free call access. This may be especially problematic for low-income households, who are perhaps more likely to make calls to public bodies such as NAV.

3.6 Conclusions

When a call to a freephone number is made, a call origination cost is incurred by the OCP, which the OCP will wish to recover. The level of the call origination charge will be dependent on the origin of the call (fixed or mobile) and the levels of competition and regulatory intervention. In general, fixed-line origination charges attracted minimal comment from the telecommunications experts interviewed at the national regulators. Commentary below therefore focuses on mobile origination charges.

⁵⁷ This was highlighted and discussed in Section 163.1.3.

⁵⁸ NAV is the government-run agency which handles unemployment and social security benefits.

⁵⁹ NRK [1], "Nå blir det billigere å ringe Nav", available online at <http://www.nrk.no/nyheter/norge/1.7658959>

There is recognition among regulators that the costs of mobile origination are higher than the costs of fixed-line origination. For example, ARCEP's consultation document uses this to justify the existence of the communication fee which is charged by mobile operators. This is also consistent with Deloitte's experience of working on telecommunications costing models for large operators.

As discussed in Section 3.2.3 there has also been recognition by regulators in the Netherlands and New Zealand that mobile operators may have market power. In fact, this is consistent with the trend observed in the Netherlands that mobile origination charges are higher than mobile termination charges suggesting that, in this regime, they may be set above cost.

Regulators may intervene to set origination charges. However, examples identified in this review were limited to fixed-line origination where an incumbent telecommunications operator with market power exists (such as in France and Spain). No examples of mobile origination rates being regulated were identified as part of this review.

Evidence presented in Section 3.1.3 suggests that mobile users are growing and outnumber fixed-line users who, in certain countries, are actually falling in number. This implies that mobile origination will become increasingly important to considerations around freephone.

Universally-free freephone regimes

In universally-free freephone regimes, where callers are not charged for using freephone services, service providers fund freephone calls and therefore pay call origination charges (this is illustrated in the model in Section 3.1.1).

If mobile origination charges are higher than fixed-line origination charges and the number of mobile users is growing, charges for freephone services will become increasingly more expensive for service providers. Furthermore, if mobile operators are able to exercise market power and set charges above cost, this will place additional upward pressure on freephone charges. Increasing or high freephone charges may have a number of implications.

Blocking calls may not always be possible (as described in Spain and the United States in Section 3.3.1). However, where the system allows, increasing freephone charges may incentivise service providers to block mobile calls. Despite this, this review did not identify instances where blocking appears to be common. In Germany (Section 3.1.1) service providers are able to block calls by origin, time and fixed-line location, but this potentially isolates a service provider from a growing and significant subset of the population.

High freephone costs may also lead to a fall in the number of freephone services and a movement towards revenue-sharing numbers. In the Netherlands, where mobile origination charges appear to be high, a downtrend in applications for freephone has been observed in recent years but there does not appear to have been a migration to revenue-sharing numbers. The 2011 SEO study (Section 3.5.1) suggests that service providers appear to place high value on being able to provide free call access for their potential audience. For this group, freephone provides a unique and valuable tool for engaging with members of the public. This also appears to apply in the United States, where the significant growth in freephone services is explained by the importance businesses place on being able to provide free call access to national customers.

In regimes where service providers appear to value freephone services, there may still be discontent with high mobile origination charges, if they exist. For example, the request to investigate mobile origination charges in New Zealand⁶⁰ came from industry participants.

However, in Spain (Section 3.5.1) – where freephone services are typically used by public bodies, not private companies – evidence suggests that service providers may place higher value on the potential revenue stream from calls, and lower value on providing freephone access to callers. In this regime, service providers appear to be selecting the 902 number, which in practice has revenue-sharing characteristics, for business purposes.

Finally, based on interviews with telecommunications experts in the regimes reviewed (Section 3.4), universally-free freephone regimes tended to be perceived as correlating with high consumer understanding of the regime.

Non-free freephone regimes

In these regimes, the burden of payment for mobile calls⁶¹ falls on both the caller and service provider. The conclusions in this section are restricted to Norway.

Section 3.2.1 highlighted that in Norway, mobile callers face positive, unregulated charges for dialling freephone services; the price of calling freephone varies between callers' OCPs and can be higher than dialling a non-freephone number. This may contribute to limited consumer awareness of freephone charges (Section 3.4).

There are low caller volumes in Norway to freephone numbers. However, it is unclear whether callers are not using these services because of the potentially high charges and lack of understanding, or whether – as the CEO of Tele2 suggests – that freephone numbers are not important to callers. The CEO's suggestion implies that freephone may not be well-established in Norway. Unfortunately, the regulator was unable to provide relevant data to explore this further.

However, the example of NAV (Section 3.5.2) demonstrates how in a regime like Norway, service providers wanting to provide low-cost access for callers may choose not to offer a freephone service because of the potential charges for mobile callers. This suggests that certain service providers may object to mobile charges on freephone numbers if they consider universally-free call access highly desirable for the purposes of connecting with their target audience.

⁶⁰ In the case of New Zealand, however, this review has not collected any evidence to suggest that service providers place a high value on offering freephone services in this regime.

⁶¹ In all regimes reviewed, freephone calls are free from fixed lines.

4 Regulation of Revenue-Sharing and Premium Calls

Revenue-sharing numbers (including premium calls) are non-geographic numbers which incur charges for the caller. This income is shared between the telephone operator and the service provider.

Such numbers may be like any other number (such as the ten-digit number format in France). In many regimes, however, short codes have emerged, particularly for premium text messaging services for use from mobile phones. Short codes are discussed in more detail in Section 4.3.3.

In contrast to freephone calls, where the key question remains how and if to fund the call, other non-geographic calls face the questions of:

- Where the revenue generated by the call should go to;
- How much revenue there should be; and
- How the consumer should be informed of this charge.

4.1 Differences between premium rate and other revenue-sharing numbers

While different regulators may have specific definitions of a premium rate number (perhaps based on price and type of service), a generic definition is that it is a form of revenue-sharing, non-geographic number which incurs the most expensive call charges in a number regime. These numbers are aligned with those service providers who earn the highest revenues from call services. Typically, premium rate numbers are used for information and entertainment-based services.

For example, premium rate numbers in the United States are referred to as 'pay-per-call' services and are provided using a 900 number. A definition of a pay-per-call service is as follows and copied directly from the regulator's website⁶²:

[A] pay-per-call service, offered only using a 900 number, is any service:

- *Providing audio information or entertainment;*
- *Providing access to simultaneous voice conversation;*
- *Including the provision of a product, where charges are assessed on the basis of completion of the call; or*
- *For which the caller pays a per-call or per-time charge greater than the charge for the transmission of the call.*

⁶² FCC [2], "900 pay per call and other information service". This document is available online at: <http://www.fcc.gov/guides/900-pay-call-and-other-information-services>

Based on this review, it became apparent that premium rate numbers have become a particular source of consumer discontent compared to other revenue-sharing numbers in certain regimes. This has been driven by high call charges to these numbers and, in some cases, instances of fraud arising through the abuse of these numbers⁶³. Consequently, premium rate numbers may be subject to more stringent regulations, especially around pricing disclosures, compared with other revenue-sharing numbers.

In **Germany**, a clear distinction is made between premium rate numbers and other forms of revenue-sharing number: premium rate numbers begin with 0900; other revenue-sharing numbers (called 'service numbers') are given a 0810 prefix.

In **France**, however, the distinction between premium rate and other revenue-sharing numbers is given less clarity. The French system of non-geographic numbers is largely based on the 08 number range which gets progressively more expensive depending on the digits following 08. 080, for example, is free from fixed lines. 0899 numbers have higher retail call charges.

Although certain regimes do make a distinction for premium rate numbers, and calls to these numbers tend to be more controversial for consumers, similar concerns exist for all types of revenue-sharing number. Therefore, a distinction is not made between the two, unless this is necessary to the understanding of a particular point, such as the existence of stricter guidelines for premium rate numbers.

4.2 Charges for services

This section considers the wholesale and retail charges of non-geographic, revenue-sharing numbers. In the context of this section, wholesale charges refer to call origination charges which are paid to the OCP by the service provider (or retained by the OCP). Retail charges are paid by callers to the OCP to access non-geographic numbers. Prices and pricing structures of such numbers vary considerably between regimes; and even within regimes.

A model of the market for call origination for revenue-sharing numbers is presented in Section 4.2.1. Section 4.2.2 reviews the key participants in the market who may influence the charges.

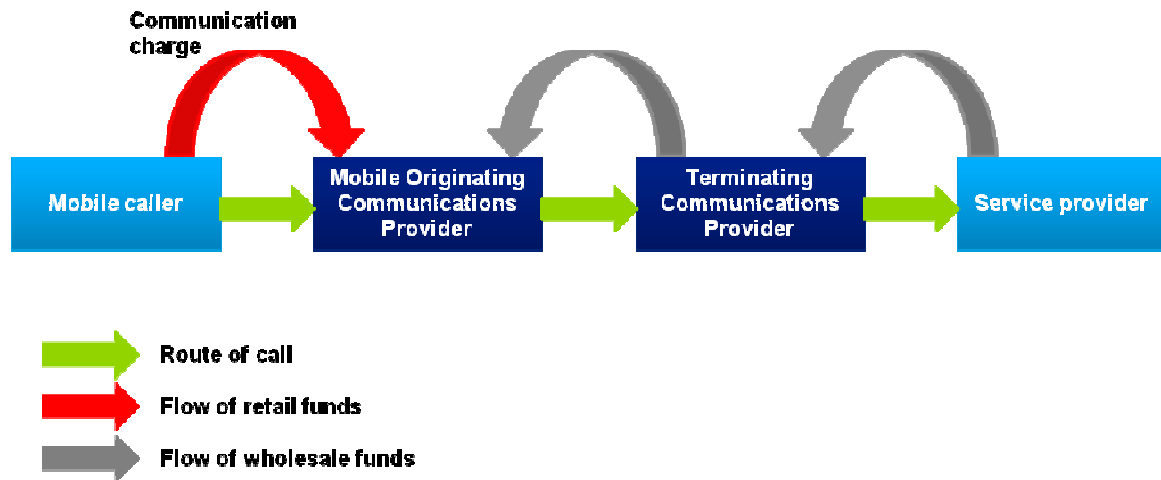
4.2.1 Call origination for revenue-sharing numbers

A simplified model of the market for call origination of revenue-sharing numbers is illustrated in Figure 5⁶⁴. In reality, there may be greater complexity in both the number of players and movement of funds.

⁶³ For example:

- United States: FCC [2]
- Germany: http://www.bundesnetzagentur.de/cdn_1912/SharedDocs/Pressemitteilungen/EN/2003/20030818NumberMisuse.html
- France: ARCEP [1]

⁶⁴ This simplified model is based on an example presented in ARCEP [1].

Figure 5: Simplified model of call origination for revenue-sharing numbers

The following description is based on the French regime, but it captures the broad outcomes common across the countries reviewed. The OCP charges a retail price, A, to the caller. A commission is retained by the OCP before the remainder is passed onwards, B. The payment of B is distributed between the TCP (to settle termination charges) and the service provider (to settle service charges). The TCP pays a call origination charge to the OCP, C.

In practice, in order to avoid double-billing, it is possible that the OCP retains the origination charge before passing the remainder of the retail charge onwards⁶⁵.

Based on this model, the following need to be settled:

- Call origination charges;
- Service charges which include the costs of providing service providers' services and call termination charges;
- Any other costs incurred, such as billing and payment collection; and
- Any profits made by the participants.

4.2.2 Price setting

Figure 5: Simplified model of call origination for revenue-sharing numbers Figure 5 illustrates that there are two main prices to consider: the retail charge (paid by the caller to the OCP) and the call origination charge (paid by the TCP to the OCP, or retained by the OCP from the retail charge). There are potentially three parties who may influence these charges: the OCP, service provider and regulator. The determination of call charges may be complex and dependent on the

⁶⁵ European Commission [1], http://ec.europa.eu/information_society/policy/ecomms/doc/library/ext_studies/2009_70_mr_final_study_report_F_101123.pdf

interaction of all three parties. The next three subsections consider the retail pricing of calls. The review then considers wholesale pricing of call origination.

Retail prices

Service providers offer a range of services, including – for example – customer support, information and entertainment-based services and television voting. A service provider will want to set a service charge which covers the cost of providing the service (this includes call termination and the hosting of services provided by the TCP, as well as content costs) and includes a suitable margin.

When receiving calls to its revenue-sharing number, the service provider will need to purchase call origination from an OCP. The OCP will set the level of the wholesale call origination charge.

As a result, the retail price charged to callers will need to reflect the following. For the OCP, the charge will need to take in to account the costs of call origination, an appropriate margin and any other costs, such as billing and payment collection. For the service provider, the retail charge will also need to take in to account the OCP's call origination charge⁶⁶, as well as the costs of providing the service and an appropriate margin.

This review identified examples of mobile retail charges to revenue-sharing numbers being higher than calls originating from fixed-lines. For example, as described in Section 3.1.2, it is standard practice in **France** for mobile OCPs to charge a 'communication' fee to the mobile caller in addition to the retail price for all calls (in order to cover the additional costs of mobile call origination). Consequently, mobile callers face higher charges for calls to revenue-sharing numbers. In the **Netherlands**, it is also typical for an additional, unregulated retail fee to be charged by mobile OCPs over and above fixed-line charges⁶⁷.

Regulatory intervention and retail prices

In certain countries, the regulator has provided a framework of telephone numbers with associated price caps. In **France**, for example, the system of non-geographic numbers is largely based on the 08 number range; the digit following the 08 prefix indicates the maximum retail price of the call. 080, for example, is freephone, while 0899 numbers are charged at premium rates and are uncapped. The retail price caps are summarised in Section 4.3.1. This is designed to give callers a signal over the price of the call and allows service providers to select which telephone number range is most appropriate for their service.

However, in other countries, there may be more reactive and circumstantial intervention to set prices if the regulator believes a market failure is apparent. In 2004, **Portugal** introduced maximum price caps for the non-geographic number range 700⁶⁸. 700 was largely used by service

⁶⁶ As this will either be retained by the OCP, or passed back to the OCP as in Figure 5.

⁶⁷ Based on interview of a Deloitte telecommunications expert in the Netherlands.

⁶⁸ More specifically, the 700 range refers to numbers with pre-fix 707 and 708. ANACOM's press release is available online at: <http://www.anacom.pt/render.jsp?contentId=159153>. This section is based on information contained in this online document. ANACOM also established price caps for other numbers including 760, 761 and 762 (maximum price for "760" was established at €0,60 per call:

providers for customer-service lines. However, the 700 range was increasingly being used for premium services; such services were intended to be supplied over 'premium' number ranges and were therefore inconsistent with 700's pricing image. Consequently, consumers faced unexpectedly high charges and discontent emerged.

The regulator, ANACOM, decided to set maximum retail prices in order to provide a clear signal of the pricing and usage of the 700 number to consumers. In addition, limiting potential earnings in the 700 range would signal to service providers the types of services which are intended to be offered in this range.

It was hoped that improving this pricing message would reduce the incidence of consumers both complaining and refusing to pay for call charges. This would benefit OCPs who are responsible for collecting bad debts on behalf of service providers even though a significant proportion of the call charge may lie outside of their control. The decision was largely supported by OCPs and a large consumer association.

Maximum prices were therefore set at €0.10 per minute from a fixed line and €0.25 per minute from a mobile. These are still in place today. The prices were established taking in to account both fixed and mobile origination costs (including billing and debt collection costs).

ANACOM intended that maximum prices would improve pricing information to consumers, allocate service providers to appropriate number ranges consistent with consumer expectations and protect consumers from excessive charges. When asked about the success of this regulation, ANACOM responded that it believes that these objectives have been met.

In certain countries, the regulator may decide not to directly intervene in the setting of retail call charges. In **Norway**, for example, the regulator explained that it aims to facilitate competition through increasing consumer awareness of call charges and therefore does not set price caps for revenue-sharing numbers.

Retail price setting and geographic calls

At the same time as introducing price caps for the 700 number range, **Portugal** also introduced a price cap for the 809 number. 809 is a shared-cost service⁶⁹ with a charge to both the caller and the service provider. However, similar to the 700 number range, retail call charges for 809 were also very high for consumers and the 809 number was being used for services for which it was not originally intended.

A price cap was set tying call charges to this number to the cost of national, geographic calls. A link already existed in the numbering plan connecting the other shared-cost service number (808) to the price of geographic calls. Therefore, this price cap would align consumer expectations of charges to 800 numbers.

<http://www.anacom.pt/render.jsp?contentId=420721>; maximum prices for "761" and "762" were set respectively at €1 and €2 per call: <http://www.anacom.pt/render.jsp?contentId=471594&languageId=1>).

⁶⁹ Note that Section 4 focuses on revenue-sharing numbers, but this example is included to illustrate other potential numbering solutions.

Based on this review, there are few other examples of non-geographic numbers being linked to the price of geographic numbers. The price of geographic calls may be a more recognisable for consumers; therefore, linking prices to such calls may enhance consumer understanding of the system.

In discussions with OPTA, it emerged that a proposal is being considered to regulate retail prices for non-geographic numbers so that they are more comparable to standard geographic calls. A similar idea is being proposed by the French regulator: this is reviewed in more detail in Section 4.3.2.

Wholesale prices

This section focuses on the call origination charge which is set by the OCP. An OCP's ability to set this charge will depend on the presence of regulatory intervention and the relative bargaining power of OCPs and service providers.

In Section 3.2.2, this review identified examples of the regulation of fixed-line origination charges in markets where there is an incumbent, fixed-line telecommunications company which retains its market power. It has also been highlighted that fixed-line origination costs attracted minimal comment from those regulators interviewed as part of this review.

Section 3.1.2 highlighted that mobile call origination is more expensive than fixed-line origination. This review did not identify any examples where mobile origination rates are regulated.

Furthermore, case studies from Netherlands and New Zealand in Section 3.2.3 highlighted that in these regimes, there is recognition that mobile OCPs may possess market power. This suggests that mobile OCPs – in some regimes – may be able to set charges above cost and this is consistent with the experience in the Netherlands. Where mobile OCPs possess market power, this may mean that they are able to reduce overall income to service providers through high mobile origination rates. An example of this is discussed in Section 4.4 for Germany.

Summary

The pricing of retail and wholesale call charges for revenue-sharing numbers can be complex and be influenced by the interaction of OCPs, service providers and regulators. Variation of charges can exist within a regime and this is likely to reduce consumer awareness of pricing. A specific example of this is discussed in Section 4.3.2 in relation to France.

4.3 Consumer awareness

This section considers consumer awareness of revenue-sharing numbers. In performing this review, only one study was identified (based in France) which considered consumer understanding of revenue-sharing call charges. This report is discussed in Section 4.3.2. Consequently, it is challenging to assess the extent to which price information remedies have impacted on consumer awareness.

This section therefore focuses on the methods employed by regimes in order to increase consumer understanding of call charges based on interviews with telecommunications experts at national

regulators and part of the international Deloitte network. The experience of consumers in France is then reviewed, where the regulator has identified that consumer dissatisfaction with the system exists.

4.3.1 Methods of raising consumer awareness

Based on this review, various methods have been employed in order to increase consumer awareness of the pricing of non-geographic numbers. These are briefly summarised below and illustrated with examples.

Telephone numbering signalling and price caps

The number range may give an indication of the telephone charge. For example, in **France**, call charges become increasingly more expensive in line with the progression of the third digit⁷⁰.

Table 6: 08 number range in France

	Retail price caps
080	Free
081	€0.06 per min
0820/21	€0.12 per min
0825/26	€0.15 per min
0884/90	€0.15 per min
0891	€0.30 per min
0892	€0.45 per min
0893	€0.75 per min
0897	€0.60 per call
0898	€1.20 per call
0899	Other rates (no cap)

Source: ARCEP consultation document (see footnote 5)

Similarly, in **Spain**, premium rate numbers are of the form 08XA: the higher the value of A, the greater the cost of the call. Retail price caps are set for each integer value of A; these price caps are the same irrespective of whether a call originates from a mobile or fixed line.

Alternatively, the setting of maximum prices may be used to reinforce consumer expectations of call charges as the example from **Portugal** in Section 4.2.2 illustrates⁷¹.

⁷⁰ In practice, mobile operators are able to charge a communication component in addition to the retail charge (as discussed in Section 3.1.2).

⁷¹ In certain premium rate number ranges, instead of imposing a price cap, ANACOM decided that service providers should block by default access to those services. Their activation, either generically or selectively, can only be made at the request of the respective client.

Print, radio and television advertisements

When prices are advertised, there is typically a set of minimum disclosure requirements for charges and other call-related information. The extent of requirements may vary between regimes and tend to be stricter for premium rate numbers.

In the United States⁷², for example, the following needs to be disclosed for 'pay-per-call' (premium rate) numbers:

- Overall charge (if there is a flat rate or the call lasts for a predetermined amount of time);
- The per minute rate and minimum charge (if relevant);
- The range of fees if charges are dependent on selected options;
- Charges for any other service which a caller may be transferred to; and
- Any other service charges.

In addition, depending on the form of media, call charges should be presented next to the telephone number in a font size at least half the size of the number and should be verbally disclosed.

Pre-call announcement

In many regimes, it is common for an introductory voice message to be announced at the beginning of the call, especially for premium rate numbers. Typically, the service provider is identified and the call charge is explained. This is followed by a grace period in which a caller is given the opportunity to hang up. Charges for the introductory message are usually nil or charged at a standard, non-premium rate.

For example, in **Spain**, an introductory message is played for fifteen seconds explaining the price of the call from both a fixed line and mobile (an indicative price per minute is disclosed given that call charges will vary between telephone operators). This is followed by a five second grace period. Premium rate charges commence after this period.

In the **United States**⁷³, the pre-call announcement must disclose:

- The name of the service provider and a description of the service;
- Call charges (in line with the requirements for print, radio and television advertisements discussed above);

⁷² Federal Trade Commission [1], "900 numbers". This publication is available online at: <http://www.ftc.gov/bcp/edu/pubs/consumer/telemarketing/tel04.pdf>

⁷³ Federal Trade Commission [2], "Complying with the 900-number rule". This publication is available online at: <http://business.ftc.gov/documents/bus06-complying-900-number-rule.pdf>

- When charging begins and how to avoid the charges (the introductory message itself is free); and
- That parental permission is required for callers under the age of 18.

It is important to note that service providers may find it challenging to advertise prices where call charges vary depending on a caller's OCP. This is discussed in further detail in Section 4.4.

Bill disclosures

Once a call has been made, telephone charges appear on consumers' bills. Effective bill disclosure may facilitate consumer challenge of the service delivered by service providers.

In **Spain**, premium rate call charges on bills are split out between amounts paid by consumers at the retail level to telephone operators and to service providers (even though they are not advertised separately in this way). A telephone operator is legally obliged to maintain a consumer's connection to the network providing the access charge is paid. Consumers are therefore able to withhold payment of the service charge if they are dissatisfied with the service provided without being disconnected.

It was not possible to obtain information on how often, in practice, this occurs. However, it is worth noting that this piece of legislation was introduced because there were instances of callers withholding full payment of call charges while disputing premium rate charges. This legislation has therefore benefitted telephone operators.

Consumer information websites

In **Norway**, where the extent of regulation of non-geographic numbers is fairly limited, the regulator has introduced a website⁷⁴ to help increase consumer knowledge of retail charges for all types of call. The website allows consumers to compare price plans for fixed-line and mobile operators.

Summary

As mentioned at the beginning of this section, the lack of studies on consumer understanding of call charging makes drawing conclusions in this area difficult. Despite the various attempts to improve awareness, this review did identify that consumer confusion over the charges for non-geographic calls does exist in certain countries. For example, the view of a third party telecommunications expert in **Spain** is that consumers tend to know that freephone numbers are free and premium rate numbers are expensive, with little knowledge of the actual range of prices. Similar views were noted in the Netherlands and Norway in discussions with Deloitte telecommunications professionals in those countries.

Furthermore, it seems that poor consumer experiences and negative publicity can lead to strong reputational effects which persist despite measures to increase price awareness. For example,

⁷⁴ This website address is <http://www.telepriser.no>

following abuses of the system in **Germany**, premium rate numbers continue to suffer from a negative reputation.

In particular, consumer dissatisfaction with the system has been identified as an issue by ARCEP in **France**. This next section reviews this case study.

4.3.2 Consumer dissatisfaction in France

In France, the 08 prefix denotes the bulk of non-geographic numbers (excluding mobile telephone numbers) and includes both freephone and revenue-sharing numbers. The French Numbering Plan has defined eleven categories for the 08 prefix; each category has an associated retail price cap. The progression of the digits following 08 is intended to signal to the caller the relative price of the call. These are summarised in Table 6 in Section 4.3.1.

The retail price caps apply to both fixed lines and mobiles. As described in Section 3.1.2 however, it is standard practice in France for mobile OCPs to charge a 'communication' fee to the mobile caller in addition to the retail price for all calls. This communication charge was historically introduced to cover the additional costs of mobile call origination. Therefore, the overall price for a mobile caller will also be dependent on the communication charge and may exceed the retail caps above.

In 2009, a study by Harris Interactive⁷⁵ was commissioned by the regulator ARCEP on consumer experience of value-added telephone services (which also included short codes). The study found that while consumers value the immediacy and accessibility of such services, they are generally dissatisfied with the lack of understanding over charges. In addition, French consumers tend to overestimate the average price of a non-geographic call at €2.60 per call (in fact, calls average €0.27 from a fixed line and €1.13 from a mobile). Furthermore, fraud has aggravated discontent by taking advantage of consumers' lack of knowledge.

The Harris Interactive study therefore highlights the poor consumer price awareness of call charges in France. This is despite the regime of retail price caps which is defined in the French Numbering Plan and intended to provide a signal to consumers over call prices.

ARCEP is taking steps to address this and has recently published a consultation on potential changes to the tariff structures of revenue-sharing, non-geographic numbers, including short codes⁷⁶. ARCEP's view is that the French experience appears to be driven by two main factors. First, there is a lack of transparency in the presentation of telephone charges. Secondly, the tariff structure is fairly complex and dependent on a number of factors, such as the mode (fixed or mobile) of the call. These are reviewed further below.

Transparency of prices

To address the lack of transparency, ARCEP is seeking views on the introduction of a pricing model which separates retail call charges as presented to consumers between a communication

⁷⁵ This study is discussed in ARCEP [1].

⁷⁶ ARCEP [1].

charge (paid to the consumer's telephone operator) and a service charge (paid to the service provider). The service charge would be set by the service provider and charged equally across all networks, irrespective of call origination.

The presentation of call charges in this format is intended to achieve greater clarity of call charges for consumers. In particular, it facilitates consumer challenge of the service delivered by service providers. In addition, it makes advertising prices simpler and this is discussed further in Section 4.4.

Complexity of tariff structure

ARCEP believes that a significant reason for consumer confusion is due to differences in charges depending on whether a call originates from a fixed line or mobile: this adds to the complexity of the current tariff structure. In order to address this, ARCEP is proposing that the communication element (the access charge) paid to the OCP should be harmonised across all providers. This means that when retail call charges are advertised, there should be no need to make a distinction between calls originating from fixed lines or mobiles.

Furthermore, the communication component should be aligned with a cost that is recognisable and understandable to the consumer. These proposals aim to decrease consumer confusion by reducing the number of variables a call charge is dependent on. ARCEP considers that a reasonable benchmark charge would be the price of a call made to either a fixed-line geographic number (with prefixes 01 to 05) or a fixed-line, non-geographic number with prefix 09⁷⁷. ARCEP's consultation document does not explicitly state whether the relevant benchmark charge would relate to calls originating from fixed-lines or mobiles; instead, ARCEP states that the charge should be set according to the price which applies to the majority of geographic 01 to 05 and non-geographic 09 numbers.

Service charges would also be assigned price caps which would increase in line with the current numbering system in Table 6 above. For example, a greater service charge would be incurred for dialling a 0899 number over a 0820 number. This would allow service providers to select an appropriate number range for their particular service.

Consultation period

The introduction of ARCEP's proposals may have significant financial implications for telephone operators. In particular, the harmonisation of fixed and mobile call costs in line with geographic rates would seem likely to reduce revenue per call for mobile OCPs and therefore may be unpopular with this group.

The consultation period closed on 12 October 2011. It appears that France will be an important regime for Ofcom.

⁷⁷ Non-geographic numbers not used for freephone or revenue-sharing purposes. ARCEP [6], "La numérotation". This document is available online at: <http://www.arcep.fr/index.php?id=8146>

4.3.3 Short codes

Short codes are being used increasingly in a number of regimes. These telephone numbers are significantly shorter than standard length numbers (in France, they are between four and six digits). Short codes are attractive to service providers because of their length: they are more convenient for consumers to remember and use. In the countries reviewed, examples were identified where it is possible to dial short codes from both fixed-lines and mobiles or send text messages to them.

In **Norway**, a wide range of public and private organisations use short codes. They are mainly used for customer service functions. Examples are given in Table 6: these numbers can be dialled from both fixed-lines and mobiles.

Table 7: Examples of short code use in Norway

Organisation	Number
Aftenposten customer service (Newspaper)	05040
Cancer Association	07877
DNB Nor customer service (Bank)	04800
Get customer service (Television and broadband)	02123
Number info services	1888
OBOS (Building society)	02333
Oslo Taxi	02323
Police service line: not emergencies	02800
Scandinavian Airlines customer service	05400
Telenor customer service (Telephone operator)	05000 and 09000

In the **United States**, short codes tend to be used to deliver chargeable services by text message. As text messaging grows, the use of short codes for this purpose represents a potential area of significant revenue generation for service providers⁷⁸. Examples of services currently provided by short codes include⁷⁹: television and radio voting; competition entry; chat; information-based services and subscriptions; games; charitable and other monetary donations; and the purchase of mobile specific content, such as ringtones and music.

It has not been possible to collect data to investigate whether there has been a migration from standard numbers to short codes. However, the experience in the United States suggests that short codes may be increasingly used by service providers, especially given the opportunities to earn income through text messaging.

⁷⁸ Common Short Code Administration, http://www.usshortcodes.com/csc_about.html

⁷⁹ This list is based on information presented in the website of Common Short Code Administration, http://www.usshortcodes.com/csc_whatDo.html

In **France**⁸⁰, short codes are used for information-based services, including government and customer services. These numbers can be dialled from fixed-lines and mobiles. Short codes with prefix 30 or 31 are free of charge if called from a fixed-line. Short codes with prefix 32, 36 and 39 are chargeable from both fixed-lines and mobiles. Similar to France's 08 numbers, mobile OCPs charge a supplement over and above the price of a fixed-line operator⁸¹. This can lead to variation in pricing for these numbers depending on the mobile operator⁸².

In this review, no instances have been identified where the emergence of short codes is linked to a failure within the current system of non-geographic numbers⁸³. Based on discussions with telecommunications experts as part of research, the emergence of short codes may be explained by the fact service providers perceive them to be more convenient for consumers to use. In addition, the experience in the United States highlights that short codes are associated with revenue-generating text-based services and therefore may be increasingly employed by service providers.

Consumer awareness of short code charges

This review identified examples where short codes are subject to the same advertising requirements as standard length numbers. For example, in **Spain**, print, radio and television advertisements require the same information to be disclosed for all premium voice calls and text-based services. This includes, for example, disclosure of the identity of the service provider, the service provider's website, a customer service contact, as well as indicative information about the price (from both fixed-lines and mobiles which may vary depending on a caller's OCP).

This review identified no studies assessing consumers' awareness of charges for short codes. However, ARCEP's review of the regime of non-geographic numbers includes short codes and the issues described in the previous section around consumer confusion apply to both short codes and the ten-digit 08 numbers.

A telecommunications expert at the regulator in the United States highlighted that consumers are aware that short codes are chargeable and that they are generally cheaper than premium rate numbers. However, it is difficult to form a view about whether there is consumer confusion over pricing of these numbers in the United States. Discussions with certain telecommunications experts in other regimes suggested that where short codes are used for premium services, their perception may be correlated with the overall regime of premium rate numbers. Certainly, the inclusion of short codes in the ARCEP's consultation illustrates how short codes can add to the complexity of charging structures and this may add to general consumer confusion.

⁸⁰ ARCEP [7], <http://www.telecom-infoconso.fr/je-m-informe-sur/numerotation/le-prix-des-numeros-courts.html>

⁸¹ ARCEP [1]

⁸² ARCEP [7], ARCEP's consumer website lists prices for a range of short code numbers.

⁸³ That is, no instances have been identified where short codes have emerged because the current regime of premium rate numbers is too confusing, or unpopular, with consumers.

4.4 Satisfaction among service providers

Service providers who offer services over revenue-sharing numbers are typically businesses aiming to maximise income from calls. Therefore, dissatisfaction among this group is likely to arise from any characteristics of non-geographic regimes which limit the ability to do this.

In certain regimes, the regulator did not consider satisfaction among service providers to be a problem. For example, in both Norway and the United States, the regulator did not typically receive complaints from service providers. In both countries, the regulator highlighted that the current system provided sufficient flexibility to allow businesses to be able to set prices and attract customers.

The ability for service providers to earn revenues may be dependent on a number of factors which are reviewed in further detail below.

The existence of a flexible numbering plan

A regime's numbering plan should provide a sufficient number of pricing options so that service providers are able to select a number range which is appropriate to their needs.

For example, as previously described, Spanish premium rate numbers are of the form 08XA: the higher the value of A, the greater the cost of the call. Maximum prices are set for each integer value of A. This allows service providers to select an appropriate value of A for their service.

However, a regime which is too prescriptive may mean service providers may need to change telephone numbers if they want to adjust the price of their service. ARCEP's consultation document illustrates this point with the following example in which the price of a 0825 prefix number, which has a maximum retail price of €0.15 per min, varies according to the last digit.

Table 8: Prescriptive pricing

	Retail prices
0825 00 00 01	≤ €0.15 per min
0825 00 00 02	≤ €0.12 per min
0825 00 00 03	≤ €0.09 per min

Source: ARCEP consultation document (see footnote 5)

Currently, the system requires a change in number if a service provider with a number ending in '3' wants to start charging more than €0.09 per minute. Not only does this lack of flexibility create an administrative burden, it may also result in a loss of custom as one established number among the existing customer base is replaced with a completely new, unknown number.

Regulatory intervention and market power

The extent of regulatory intervention to set prices will affect the ability for service providers to earn income. Certain regimes have introduced maximum prices for certain ranges.

In **Germany**, for example, there is an effective⁸⁴ retail price cap of €3 per minute on premium rate calls. The experience in Germany draws attention to another issue for service providers⁸⁵. The presence of the retail price cap reduces the available income to be distributed between the market participants, including OCPs and service providers. Mobile operators' hold a strong market position and mobile origination charges are not regulated. Therefore, service providers receive less income from mobile calls than they do from fixed lines. As an increasing number of calls are made from mobiles, this will effectively reduce income per call.

Consumer confusion

Limited transparency may allow service providers⁸⁶ to increase prices without necessarily experiencing corresponding falls in demand. If charges are unclear, and only become apparent when billed, consumers may purchase more of the service at the point of use than they would if they had full clarity of prices. In fact, instances of fraud involving revenue-sharing numbers have typically used misunderstanding of the system in order to extract excessive call revenues from consumers, such as in Germany and France⁸⁷.

High confusion can also be detrimental to service providers. Misunderstanding over call charges may in fact deter consumers from dialling non-geographic numbers and therefore reduce demand for service providers' services.

Of course, low awareness is not in the interest of consumers: it will inevitably lead to sub-optimal decisions. While it may benefit service providers by allowing them to maintain inflated prices, this has resulted in consumer distrust in a number of regimes which is likely to make the disincentive effect of using these numbers stronger. Therefore, as explored in Section 4.3, increasing consumer awareness and maintaining confidence in the system appears central to an efficient regime.

Price advertising

As well as consumers having access to appropriate pricing information, service providers should feel that they are able to publish their prices clearly. For example, the French regulator has identified that it is difficult for service providers to advertise prices clearly and succinctly in the current regime⁸⁸. This is largely because the price of the call is dependent on a number of factors outside of the control of the service provider, including the origin (fixed or mobile) of the call.

⁸⁴ As explained in Section 2, there is no regulated, maximum price for premium rate numbers in Germany, but in practice, it is not possible for retail prices to be set in excess of €3 per minute.

⁸⁵ Based on interview of telecommunications expert at the regulator.

⁸⁶ Consumer confusion may also allow OCPs to increase prices.

⁸⁷ Based on interviews with Deloitte telecommunications experts in these countries.

⁸⁸ This is documented in ARCEP [1].

The proposal in France (discussed in Section 4.3.2) to unbundle the access and service components of the charge, coupled with harmonisation of the access charge across networks, should facilitate simpler communication of prices.

Summary

Based on discussions with regulators and Deloitte telecommunications experts, there was little comment on the experience of service providers in revenue-sharing regimes. Most focus was placed on consumer awareness: this therefore appears to be the area of greater concern.

4.5 Conclusions

The wholesale and retail charges of non-revenue sharing numbers can be complex and depend on the interaction of OCPs, service providers and the level of regulatory intervention.

In Section 4.2.2, the setting of these charges was reviewed. The wholesale call origination charge set by the OCP will be dependent on regulation: this review has identified examples of the regulation of fixed-line origination charges, but not the equivalent mobile charges. An OCP will also be limited in setting origination charges by the extent of its market power. In Germany (Section 4.4), mobile OCPs hold strong market power and service providers consequently earn less from mobile originated calls than they do from fixed-line originated calls.

Retail prices are also determined by the interaction of a number of factors. This review identified examples of regulatory intervention to set price caps. Some regimes, such as France, have a framework of price caps. The example from Portugal in 4.2.2 highlights that regulators may intervene on a more reactive basis if a failure within the system is identified.

The potential complexity of retail charges that can exist within countries may contribute to consumer misunderstanding of charges. ARCEP considers this to be a key reason for consumer dissatisfaction with the French system.

For service providers, Section 4.4 highlighted that variation in charges faced by consumers can make it challenging to advertise the price of services clearly and succinctly. However, the experience of service providers attracted minimal comment from the telecommunications experts interviewed as part of research: consumer confusion tended to be perceived as a greater cause for concern.

Raising consumer awareness

Section 4.3 highlighted various price information remedies have been employed to increase price transparency and therefore consumer awareness of charges including:

- Signalling through the telephone numbering system and the setting of maximum prices;
- Setting minimum requirements for call charge advertisements on print, radio and television;
- Enforcing pre-call announcements; and

- Enhancing bill disclosures.

Despite the various methods used to improve awareness, this review has identified examples of consumer confusion over pricing persisting in the regimes reviewed. Research conducted did not identify any studies which had assessed the impact of price information remedies (such as those listed above) on consumer understanding of the system. It is therefore difficult to form a judgement on the effectiveness of these methods.

However, ARCEP considers that price transparency is just part of the problem: tariff complexity also has a role to play.

Lessons from France

As discussed in Section 4.3.2, the French regulator is consulting on changes to the system in the direction of Ofcom's proposals to unbundle call charges between an access and service component with the aim of increasing transparency of pricing.

The proposals also suggest harmonising the access charge across all networks, irrespective of call origination (fixed or mobile) and linking the access charge to a cost that is recognisable and understandable to the consumer, such as the price of a geographic call. This is intended to significantly reduce the complexity of the current tariff structure and therefore reduce consumer confusion.

This review identified few examples of non-geographic numbers being linked to the price of geographic numbers. However, the price of geographic calls may be more recognisable to consumers. Linking prices to such calls may enhance consumer understanding of the system and this theory appears to be driving, in part, the French proposal.

5 Conclusions

Ofcom is seeking answers to a number of key questions in conjunction with its consultation on non-geographic number regulation. This section explores the findings of this review in so far as these questions can be answered. However, due to the limitations on consumption data, as discussed at the beginning of Section 3, this paper is not able to draw a firm conclusion on the overall impacts of regulation other than by examining the perceptions of those interviewed.

In interviews with telecommunications professionals in national regulators, the following issues tended to attract the majority of comment, either from some or particular interviewees:

- There are increasing numbers of mobile users, including a growing proportion of mobile only callers. Mobile usage is becoming increasingly relevant to considerations around non-geographic numbers.
- Mobile origination charges are higher than fixed-line origination charges. The growing number of mobile users is therefore increasing freephone charges for service providers in universally-free freephone regimes. However, service providers continue to perceive freephone to be a valuable service, despite the rising charges.
- In certain regimes, such as Spain and the Netherlands, mobile origination charges are set above termination rates. In the Netherlands, the 2011 SEO study highlighted these appear to be set above cost. OPTA is currently considering regulation of wholesale prices for freephone so that they do not exceed retail charges for mobile calls made to standard geographic calls.
- The setting of retail and wholesale charges for non-geographic numbers is complex and can lead to variation in charges faced by consumers and low consumer awareness. OPTA has also recognised that retail prices of non-geographic calls are high and is therefore also considering proposals to introduce regulation of these charges.
- ARCEP, in particular, considers low consumer dissatisfaction with the system to be an issue in France and is consulting on significant revisions to the system.

5.1 Do universally-free freephone numbers increase satisfaction?

Ofcom is considering introducing universally-free freephone in the UK. This review has predominantly focussed on countries where this type of freephone regime exists.

Satisfaction of consumers

Evidence collected in Section 3.4 suggests that those countries reviewed with universally-free freephone numbers appear to correlate with high consumer awareness of the system.

The review of France in Section 4.3.2 highlighted ARCEP's view that heterogeneous retail call charges are linked to poor consumer understanding of prices. Universally-free freephone – irrespective of call origin – has no variation in retail charges; nor is a zero price particularly complex

to remember. For consumers, therefore, universally-free may be a very simple and clear pricing message and this may explain why consumer awareness of freephone is high in those regimes.

Contrary to this example, Norway is a non-universally free regime: mobile callers face unregulated retail charges for using freephone services. In some instances, retail charges to freephone numbers from mobiles may be higher than charges to non-freephone numbers. Section 3.4 suggested that this is likely to contribute towards low consumer understanding of mobile freephone charges.

It is uncertain whether Norwegian consumers are dissatisfied with this situation because there does not seem to be an active voice of consumer discontent regarding this issue. Mobile caller volumes to freephone are low, but it is not clear whether this is indicative of consumers deciding not to call freephone numbers because of potentially high call charges, or whether this is because freephone services are not important to callers or widely available. However, Section 3.5.2 outlined an important example in which NAV – a public body – opted for a low-cost, charge-bearing number for all callers rather than a freephone number because the latter would incur high costs for mobile users. The outcome is that all callers must now pay for using NAV's phone services and fixed-line callers have therefore lost out.

Satisfaction of service providers

Freephone was designed to provide a particular solution: free call access for callers to a service provider. NAV's experience in Norway (described above and in Section 3.5.2) highlights that this regime is not able to offer this service because mobile callers will be charged. This is also true of the current UK system. Furthermore, as an increasing number of callers are exclusively mobile only, the concept of 'freephone' in Norway and the UK will diminish further.

This may not be a problem if service providers do not demand freephone services; or if alternative forms of free or low-cost communication could be used instead. In Spain, for example, private companies tend to opt for 902 revenue-sharing numbers for customer purposes and not freephone or 901 numbers (which have lower retail charges for callers). Demand for freephone services is therefore low from businesses; public bodies tend to be the main service providers in the freephone market.

However, the experiences of the Netherlands and the United States in Section 3.5.1 suggest that service providers may place a high value on freephone because it is perceived as facilitating access to the target audience and it has no close substitutes. For this group of service providers, freephone is considered to be a desirable (or even necessary) business tool and a universally-free regime is therefore likely to increase their satisfaction.

5.2 What adverse effects may arise by introducing universally-free freephone numbers?

In this section, the French regime is used as an example to illustrate the potential impact of the introduction of a universally-free regime⁸⁹. In France, 08088 numbers are universally free but 0800 and 0805 numbers may be chargeable from mobiles. Mobile OCPs are able to charge a communication fee to callers for 0800 and 0805 numbers which compensates, to some extent, for the additional costs of mobile origination. Section 3.1.2 highlighted that this communication charge contributes towards the costs of call origination and this therefore reduces the mobile origination charge paid by the service provider to the OCP. Consequently, charges for the service provider are more expensive under the universally-free 08088 number. This implies that the introduction of a universally-free regime will lead to higher call origination charges for service providers as mobile OCPs will no longer be able to recover a portion of their costs from callers.

Therefore, by introducing a universally-free regime, a mobile OCP may wish to recover lost consumer revenues from service providers, especially if these revenues were contributing towards the costs of call origination, as is the case in France.

Furthermore, Section 3.2.3 provided examples of countries where there has been recognition that mobile OCPs have market power. Where mobile OCPs possess market power, they may have increased flexibility to transfer the burden on payment through higher mobile origination charges on to service providers in order to compensate for lost revenues.

Where mobile OCPs are able to impose higher charges on service providers following the introduction of a universally free regime, this may have a number of implications.

For example, service providers may decide to block calls originating from mobile networks. Section 3.3.1 highlighted that this may not be technically or legally possible in all regimes. In countries where it is possible, however, this review did not find evidence that blocking of mobile calls was common. In Germany, for example, call blocking appears to be an unpopular option for service providers because it isolates a large subset of the population.

Alternatively, higher freephone costs may lead to a contraction of the freephone market and a migration towards revenue-sharing numbers. The 2011 SEO study in the Netherlands (Section 3.5.1) highlighted that there may be resistance to switching numbers if service providers place a high value on being able to offer a freephone service⁹⁰. This may explain why the freephone market has not contracted in the Netherlands despite high freephone costs.

The key point is that the reaction of service providers will be driven by the costs they will face following the introduction of a universally-free regime. This review identified no examples where mobile origination charges are regulated. If this is coupled with the fact that mobile OCPs may be

⁸⁹ This section focuses on mobile-originated calls as fixed-line calls to freephone are free in all of the regimes reviewed.

⁹⁰ However, the experience of Spain discussed in Section 3.5.1 suggests that not all service providers may place a high value on freephone services.

able to exercise market power (as discussed above) and set charges above cost (as the experience in the Netherlands suggests) then this may lead to high costs for service providers. Furthermore, freephone charges will increase with the growing proportion of mobile users. Under these conditions, service providers may face a greater incentive to abandon freephone services.

Freephone in France

The question posed above implies a discrete choice between having a universally-free regime or not. However, France's system demonstrates that increased flexibility can be incorporated in to the system. For service providers who value a truly free freephone service and are willing to tolerate the higher costs, the universally free-to-caller 08088 number may be the preferred choice. However, for other service providers for whom freephone charges may be of greater concern, the alternative and cheaper 0800 and 0805 numbers are available.

5.3 How can consumers best be made aware of the costs of calls?

The determination of retail charges for non-geographic calls may depend on the interaction of a number of factors and may therefore lead to consumers being faced with differentiated charges for calling non-geographic numbers. The Harris Interactive study of the consumer experience in France (discussed in Section 4.3.2) highlighted the extent of misunderstanding of call charges. While similar studies were not available in other regimes, telecommunications experts interviewed did highlight that consumers generally had limited understanding of actual call charges (Section 4.3.1).

This question focuses on price information remedies which are designed to increase price transparency and therefore enhance consumer awareness. Research conducted identified a number of methods which have been implemented in the countries reviewed to achieve this. These were discussed in Section 4.3.1.

For example, typical across all of the countries reviewed is the existence of minimum advertising requirements. These include minimum requirements for call charge advertisements on print, radio and television, as well as pre-call announcements. Certain regimes may also use the telephone numbering system or maximum price regulation to send pricing signals to consumers. In Spain, bill disclosures separate access and service charges and this has facilitated consumer challenge of service providers' charges.

This review identified no studies which had been conducted in order to assess the impact of any of these measures on consumer understanding of the system. It is therefore difficult to draw firm conclusions based on this information.

5.4 How can the regulatory environment impact on consumer satisfaction?

Despite the use of the pricing information remedies above, this review has identified regimes in which low consumer awareness of non-geographic numbers appears to persist. Low awareness of charges may exist to some extent because callers infrequently dial non-geographic numbers.

The measures listed in Section 5.3 attempt to address price transparency. However, this review indicated that the lack of price transparency may only be part of the reason for low consumer awareness. Complexity in tariff structures may also be a cause.

Pricing transparency

Ofcom's proposal centres on unbundling call charges between an access and service charge with the aim of making call prices clearer to consumers. This review has identified limited examples where charges are presented in this way.

As discussed in Section 4.3.2, ARCEP is currently consulting on changes to the French system in line with Ofcom's proposals. However, ARCEP is also consulting on significant simplifications to the tariff structure.

Complexity of the tariff structure

ARCEP believes that complex tariff structures and the resulting variation in call charges to non-geographic numbers is a major contributor to consumer dissatisfaction in France. ARCEP's proposals suggest harmonising the access charge across all networks, irrespective of call origination (fixed or mobile) and linking the access charge to a cost that is recognisable and understandable to the consumer. This is intended to simplify the current tariff structure and therefore reduce consumer confusion.

The view of ARCEP is that a recognisable and understandable charge to a consumer would be the price of a call made to either a fixed-line geographic number (with prefixes 01 to 05) or a fixed-line, non-geographic number with prefix 09. It is not explicitly stated whether such a charge would be fixed-line or mobile originated; instead, ARCEP states that the charge should be set according to the price which applies to the majority of calls made to geographic 01 to 05 and non-geographic 09 numbers. Based on this review, there are few examples of non-geographic call charges being linked to the price of geographic numbers. However, the price of geographic calls may be a more recognisable quantity to consumers.

The French experience highlights that tariff complexity may also be an important factor for consumer dissatisfaction with the non-geographic number regime. Addressing this, alongside pricing transparency, is considered to be key to improving the experience for consumers in France.