Final report for Ofcom

The flow of funds in the market for non-geographic calls

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analysys mason

Contents

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1 Executive summary

Ofcom is undertaking a review of non-geographic numbers to examine the structure of markets and identify areas where intervention may be required. Analysys Mason has been commissioned by Ofcom to carry out a two-part study to assist this review.

Ofcom needs to understand how services provided through non-geographic numbers are provided to consumers. This study is intended to assist Ofcom in that regard.

This study is split into two separate parts:

- **Part 1** of the study investigates the use of non-geographic number ranges by service providers
- **Part 2** aims to establish a flow of funds for non-geographic numbers. In other words, to ascertain the level of revenue and volumes passing through various points of the supply chain for individual non-geographic number ranges.

This report presents our findings from Part 2 of the study. The outputs of Part 1 of our study are presented to Ofcom in a separate report.

Underlying all non-geographic number ranges is a complex value chain, as depicted in Figure 1.1. The aim of a call is to reach an information provider (IP) providing the services or information required by the caller. In the process of this call, there could be several communications providers involved in transmitting the call. Figure 1.1 depicts a case where the call has to be routed from the originating communications provider (OCP) over the network of a transit communications provider (Transit CP) before reaching the network of the terminating communications provider (TCP). It should be noted that in the simplest case, the OCP, the Transit CP and TCP could be on the same network.

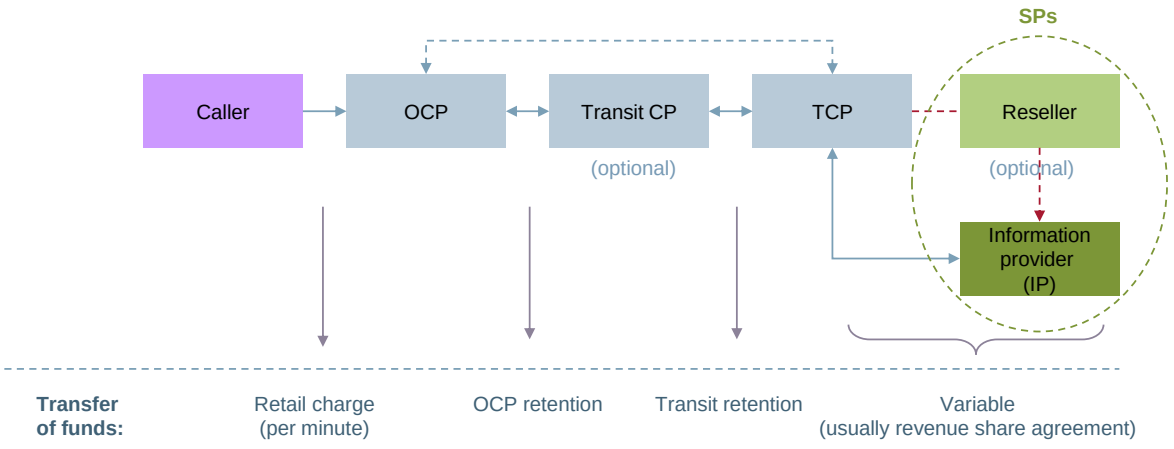

Figure 1.1: Value chain for supply of non-geographic calls [Source: Ofcom]

The complexity of the value chain is mirrored in the transfer of funds between the parties involved. Except for some calls to 080 (freephone) numbers, payments are made by a caller to its OCP. A proportion of this payment is then retained by each CP. In the final stage, the TCP and IP typically have a revenue share agreement in place which assigns the remainder of the revenues between both parties, and, if required, the reseller.

In general funds can theoretically flow in either direction between the TCP and SP. The TCP may pay the SP as part of a revenue share agreement whilst the SP may pay the TCP for services such as hosting. The direction of the net payment flow is therefore not immediately obvious. Whilst for some number ranges, such as 09, there is a large net payment from the TCP to the SP, this is not always the case. In particular for the 080 number range, the net flow of funds is from the SP to the TCP and in fact there is then, in general, a further flow from the TCP to the Transit CP and the OCP.

The non-geographic calls market

The non-geographic calls market represents a significant proportion of total call volumes and revenues in the UK. In 2009, fixed operators generated around 135 billion minutes of voice calls. Of these, around 27.6 billion were to non-geographic number ranges accounting for around 20% of total volumes, as shown in Figure 1.2 below.

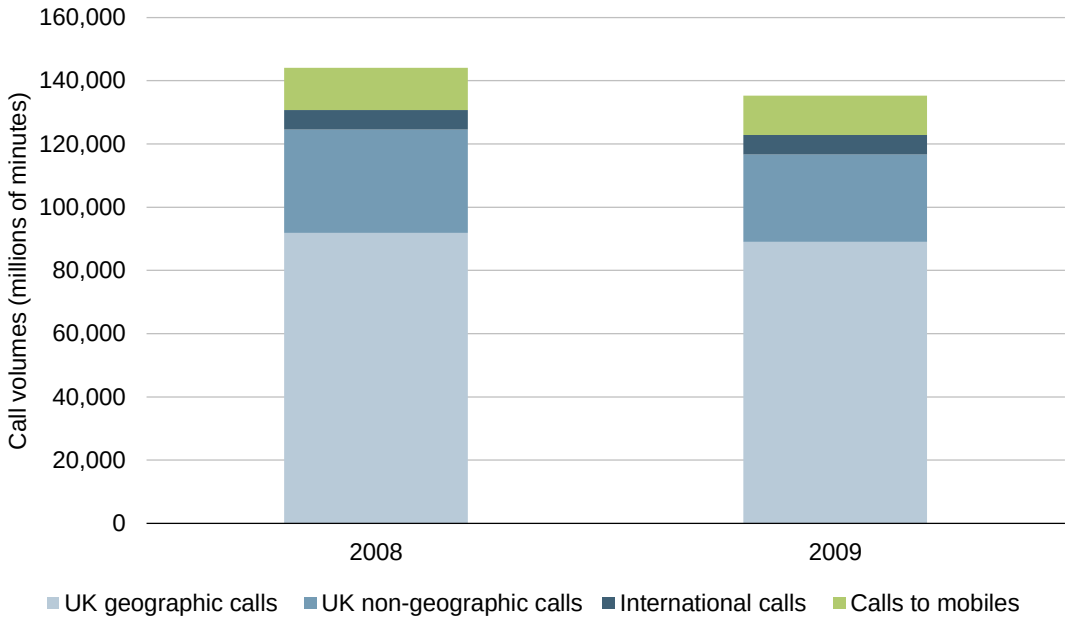

Figure 1.2: Breakdown of fixed originated call volumes by destination [Source: Analysys Mason using Ofcom quarterly market data]

Whilst non-geographic calls account for around 20% of all fixed network originated voice minutes they are even more important in terms of revenues, accounting for around 23% of fixed operators' call revenues, or GBP1001k,[1] in 2009.

Figure 1.3 below shows call revenues split by destination and is analogous to Figure 1.2 which showed call volumes. It should be noted that although non-geographic calls account for 23% of fixed call revenues, fixed network operators also generate substantial revenue from selling access. Of total network access and call revenues in 2009, call revenues made up only around 49%. Therefore, whilst non-geographic calls represent around 23% of call revenues, they account for closer to half that amount of fixed operators' total telephony revenues.

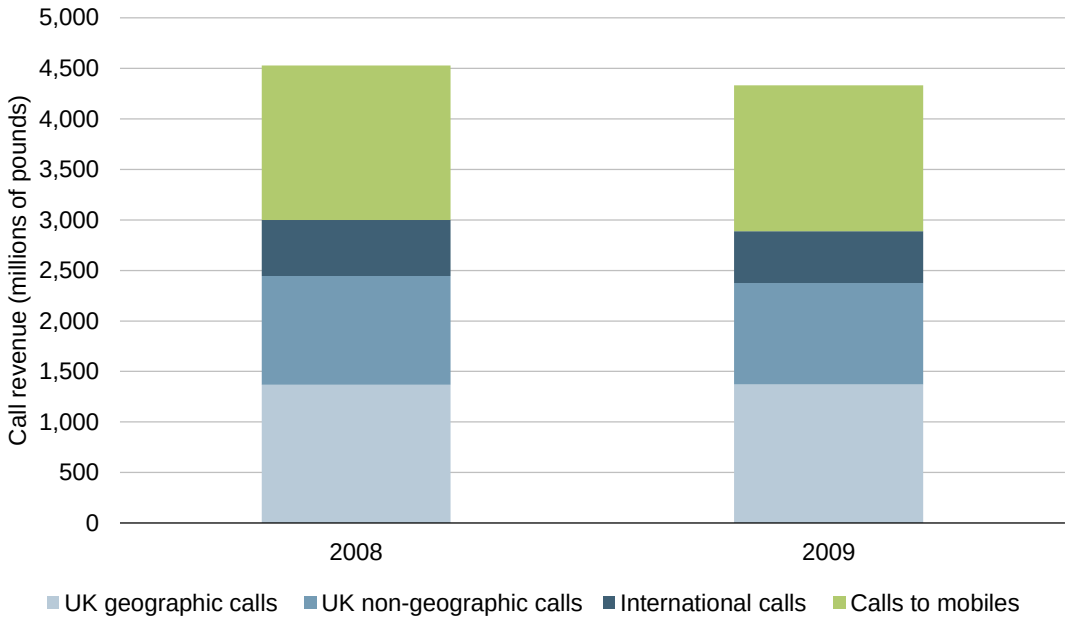

Figure 1.3: Breakdown of fixed originated call revenues by destination [Source: Analysys Mason using Ofcom quarterly market data]

Fixed operators do not charge for calls to 080 numbers and as such these call volumes could tend to skew a comparison between volumes and revenues. Whilst 20% of call minutes are to non-geographic numbers and generate 23% of call revenues, in fact we estimate that almost 10.7 billion call minutes to 080 numbers originated from fixed networks in 2009. Since these calls do not generate retail call revenues for fixed operators, we can estimate that the 23% of call revenues are actually derived from around 13% of call volumes.

For mobile operators, non-geographic call volumes are substantially lower than for fixed operators. Ofcom's quarterly market data provides call volume data for the UK's five largest

[1] This revenue figure is exclusive of VAT, as are all revenue figures throughout this report.

mobile operators in 2009: O2, Vodafone, T-Mobile, Orange and Three[2]. This data indicated a total of around 113 billion minutes of voice traffic originated by these operators in 2009. The responses from these operators to Ofcom's data request for this report implied a total of just over 3.2 billion minutes of originated traffic to non-geographic numbers. This implies that only around 2.8% of mobile originated minutes are to non-geographic number ranges.

From the same data sources we can surmise that from around GBP11.5 billion of total call revenues in 2009 for these five operators, almost GBP640 million was from non-geographic calls, corresponding to around 5.6% of total call revenues (or 4.5% including SMS and MMS). Since mobile operators generally charge customers for calls to 080 numbers, we do not need to split these calls out from the total non-geographic call volumes as we did for fixed line calls.

In total, across the fixed and mobile networks considered here, non-geographic calls account for 12.4% of traffic volumes and generate 10.4% of call revenues.

Approach and limitations

The aim of this part of our study was to analyse the revenue and volume information as provided by communications providers from a data request sent by Ofcom, identifying the flow of funds and how these are allocated between the originating communications provider, the transit communications provider, the terminating communications provider and the service provider.

Ofcom's data request was sent to the majority of the large communications providers at each level of the value chain (i.e. OCPs, Transit CPs and TCPs) with the aim of building a data set providing a picture of the entire market.

We have constructed a flow of funds model which collates data from the communications providers and models how call minutes are routed through the value chain, as well as payments between service and communications providers, and revenue retention by providers at each level of the value chain.

Our model, as with any such model, is naturally limited by the quality of the input data used. The quality of responses to Ofcom's data request varied between different communications providers and in some cases this may limit the accuracy of our model. Problems with the data collected and the modelling assumptions made to address these problems are discussed in Sections 4.2 and 6.

[2] Where data was unavailable for Three, we have assumed throughout this report that Three generates the same number of voice minutes per subscriber as the average of the other four MNOs and that the same proportion of these calls are to non-geographic number ranges.

Key findings from our analysis

Our flow of funds model has provided the flow of volumes across all non-geographic number ranges based on responses to Ofcom's data request, as shown in Figure 1.4 below.

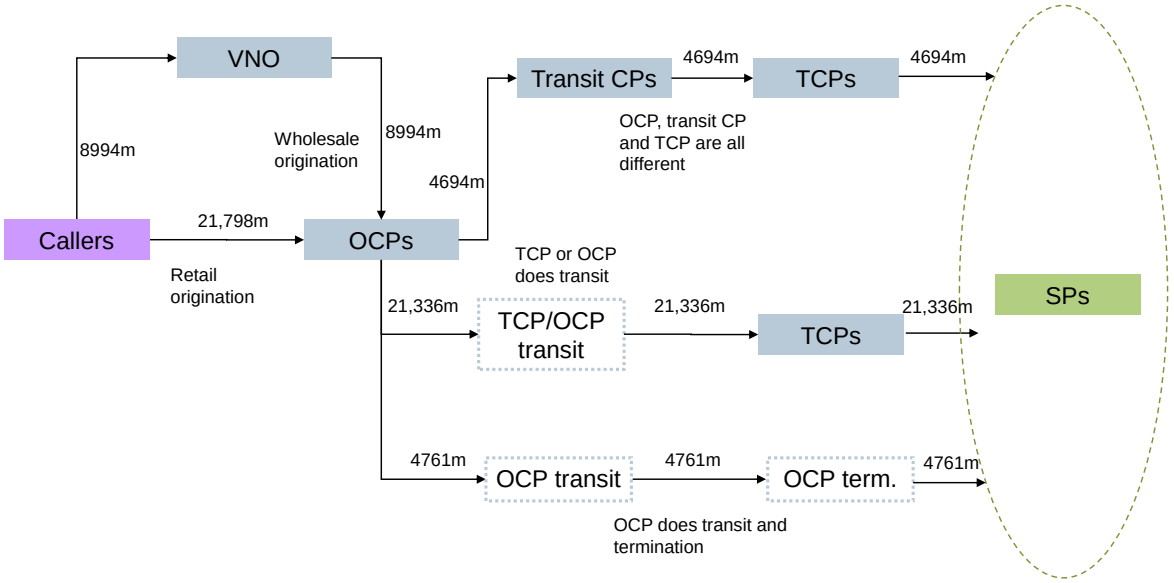

Figure 1.4: Flow of aggregated volumes across all non-geographic number ranges [Source: Analysys Mason based on communications provider data]

There were almost 30.8 billion minutes of traffic to non-geographic number ranges in 2009. Of these 30.8 billion minutes only around 3.3 billion originated from the mobile operators responding to Ofcom's data request,[3] Of the 27.5 billion minutes originated by fixed operators, around 12.4 billion were originated by BT Retail and a further 4.3 billion minutes were wholesale-originated by BT.

After origination around 4.7 billion minutes are transited by third-party providers (around 4.5 billion by BT) before being terminated by another communications provider (different to the Transit CP). Conversely, around 4.8 billion minutes are originated, notionally transited and terminated by the same operator. Of this 4.8 billion BT accounts for just over 4 billion with over 0.5 billion corresponding to Virgin Media's fixed line business.

The remaining minutes are terminated by a different communications provider to the originating provider and do not explicitly involve transit by a third party. In the case of these 21.3 billion minutes, the notional transit step is carried out by either the OCP or the TCP. Around 12.7 billion of these minutes are originated by BT at either the retail or wholesale levels.

[3] O2, Orange, T-Mobile, Three, Virgin Mobile and Vodafone. Everything Everywhere responded separately as Orange and T-Mobile because the data request was issued before their merger was finalised.

In general, we have observed relatively little variation in the proportion of traffic which is wholesale originated across the different non-geographic number ranges. This trend could indicate that most consumers do not tend to choose their telephony providers on the basis of what non-geographic numbers they call.

On the other hand, the split of traffic originated from mobile operators varies much more significantly across number ranges, as seen in *Figure 1.5* below. Of particular note is the fact that fewer than 5% of all 080 calls originate from the mobile operators in our study, compared to mobile origination more generally accounting for 46% of all calls. Conversely, for 03 calls which are often included in mobile call bundles, the percentage is 51%. This shows quite clearly that consumers adapt their calling patterns to non-geographic numbers from fixed and mobile lines based on the relative pricing. Where mobile call prices are competitive (such as for 03) the proportion of calls from mobiles is similar to the proportion for geographic numbers, but where mobile rates are un-competitive (such as for 080) only a small fraction of this proportion of calls is made from mobiles.

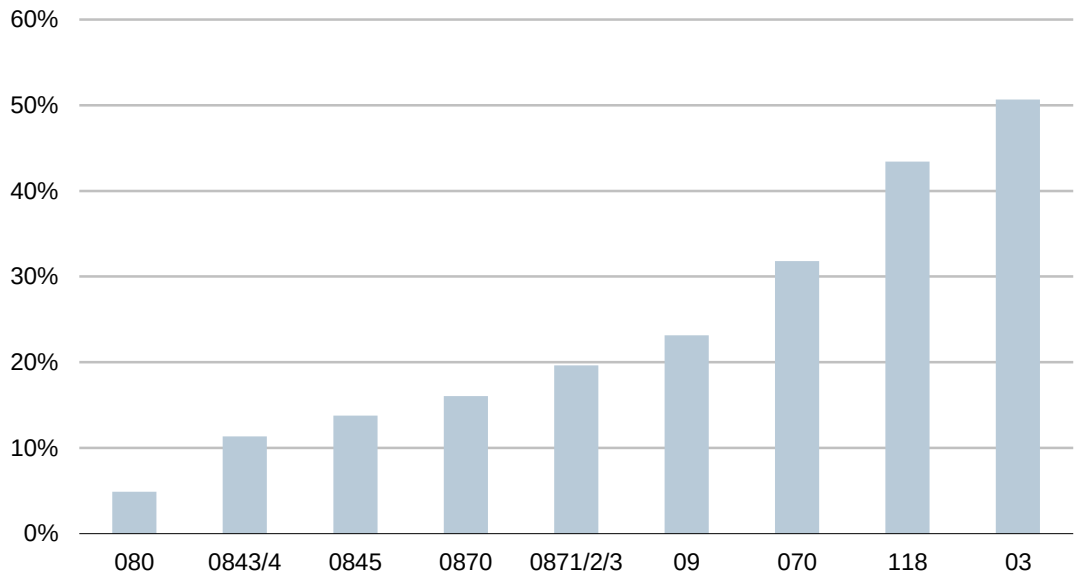

Figure 1.5: Mobile proportion of all originated traffic across each non-geographic number range [Source: Analysys Mason based on communications provider data]

We have also used our model to calculate the flow of revenues across all non-geographic number ranges shown in Figure 1.6 below.

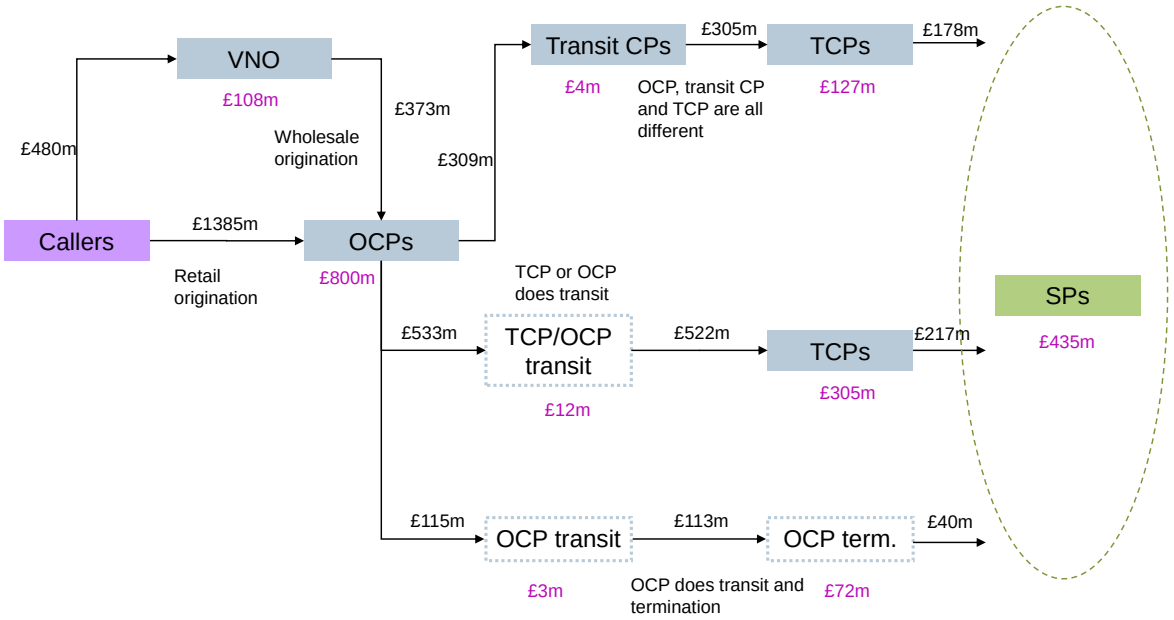

Figure 1.6: Flow of aggregated revenues across all non-geographic number ranges[4] [Source: Analysys Mason based on communications provider data]

There were GBP1865 million of revenues, excluding VAT, entering the non-geographic calls market in 2009. Of the GBP1865 million entering our system, around GBP908million is retained by OCPs (including GBP108 million by VNOs), a total of GBP18 million is retained by transit providers and GBP504 million is retained by TCPs. The remaining amount of roughly GBP435 million makes its way to SPs. In percentage terms this corresponds to OCPs retaining 49% of total revenues, transit providers retaining 1%, TCPs retaining 27% and 23% reaching SPs. This implies that, on average, OCPs are able to retain the lion's share of retail revenues but that a significant proportion is also taken by TCPs and SPs. Transit is a low-margin service.

The share of total retail revenues retained by SPs varies substantially by number range, as shown in Figure 1.7 below. We exclude the 080 and 03 number ranges from our analysis because net SP retention is negative (i.e. SPs pay a net amount to communications providers for connecting calls).

4 Whilst the purple figures represent retention by a provider, the black figures show the flow of revenue along different branches of our diagram. These figures always correspond to a net flow of revenues and the arrow shows the direction of that flow.

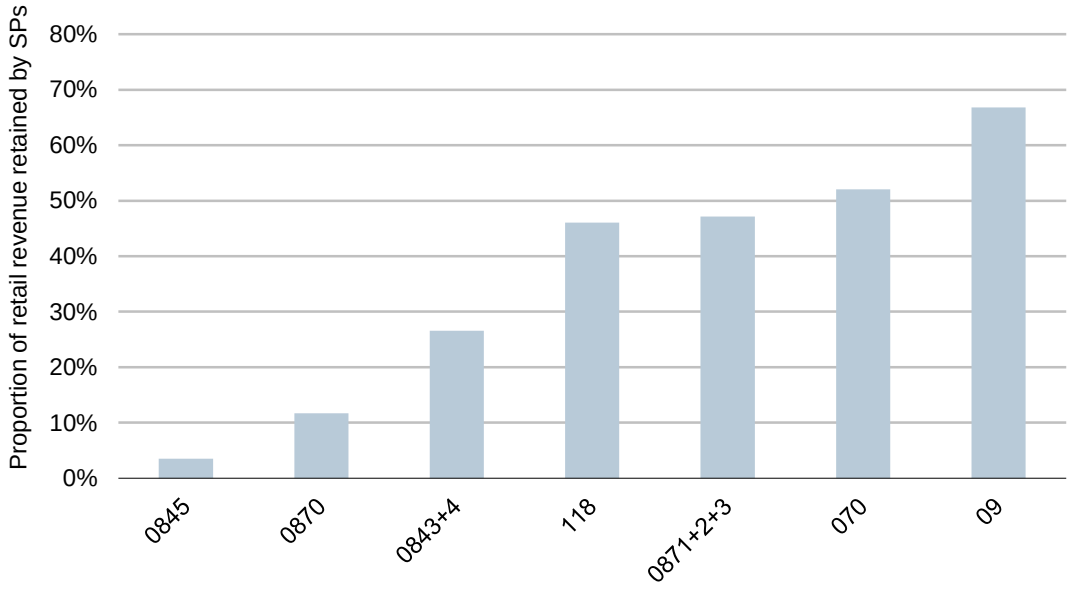

Figure 1.7: Proportion of retail revenue retained by SPs for each number range [Source: Analysys Mason based on communications provider data]

For the 0871/2/3 number range, SP retention is 47% of total revenues. This range appears much more attractive to SPs wishing to generate revenue from calls than, for example, the 0845 and 0870 number ranges where retention is only around 4% and 12% respectively. As expected, SP retention is high for the premium-rate 090 number range and for 118 directory enquiries.

For 0870 calls prior to August 2009, termination rates were set at levels that supported some revenue share on 0870 calls. Following a dispute determination that came into effect on 1 August 2009, termination rates for 0870 calls were set at a comparable level to geographic termination rates.[5] As a result, from August 2009 there should be very little revenue share for SPs using this number range. The figures in this report relate to the whole of the calendar year 2009. They thus reflect an average between these two situations.

A final aspect of our analysis focuses on revenue retention by OCPs. OCP retention varies greatly by number range, but it is also clear that the retention varies substantially between fixed and mobile OCPs for a given number range, as shown in Figure 1.8 below, which shows per-minute retention of fixed and mobile OCPs.

5 http://stakeholders.ofcom.org.uk/binaries/consultations/resolve0870calls/statement/determination.pdf

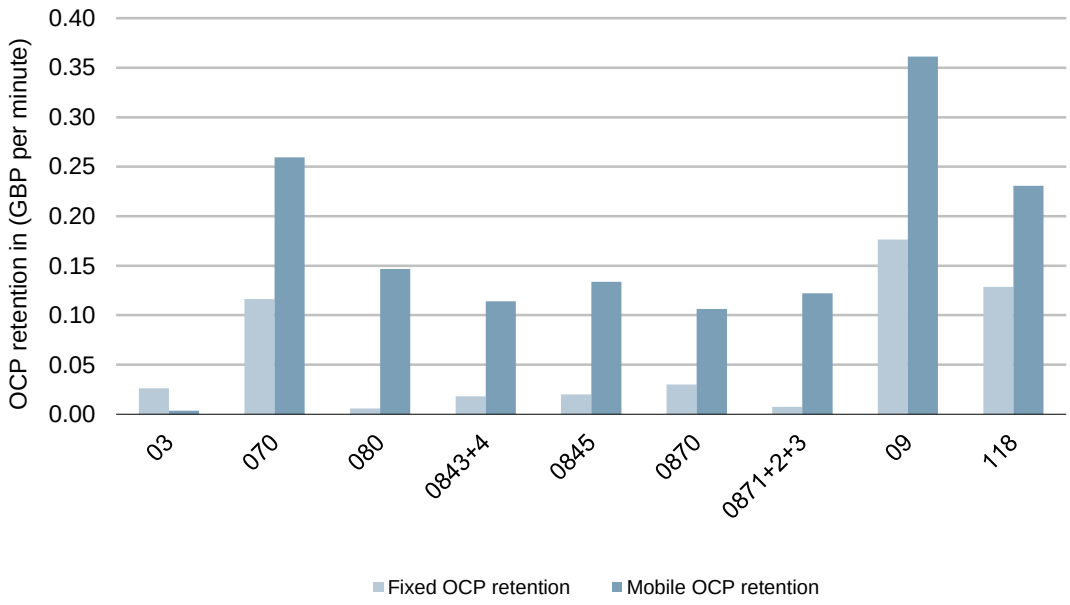

Figure 1.8: Per-minute revenue retained by fixed and mobile OCPs for each number range [Source: Analysys Mason based on communications provider data]

Of the total of GBP1865 million of generated retail revenue, GBP610 million was generated by the mobile operators studied. This 39% of total revenues generated derives from only 10% of the volume of minutes originated.

The differences observed between fixed and mobile operators are large in magnitude but are particularly exaggerated for the 080 range. In this case, the fixed OCP revenue comes almost entirely from SPs, whereas mobile operators are able to receive the small SP payment in addition to receiving large sums of revenue directly from consumers.

There is no significant retention by fixed OCPs for the 0871/2/3 number range. This is somewhat surprising as we would have expected some level of fixed OCP retention. However, this is a reflection of the data provided in response to Ofcom's data request where several fixed OCPs provided data implying a negative retention for this number range.

To consider these figures in the context of other call types, we estimate that revenue retention on UK geographic calls for fixed OCPs is of the order of 1ppm or slightly higher on average.[6] For calls to mobiles from a fixed line, we estimate that this figure could be as high as 7ppm. This implies that fixed OCP retention on most non-geographic number ranges is above the levels for UK geographic calls, but below the level of calls to mobiles (other than for premium rate or directory enquiries numbers). For mobile OCPs, we estimate that retention for calls to fixed lines and mobile numbers is between 5 and 10ppm on average. This is likely to be substantially below the revenue retention for calls to most of the non-geographic number ranges.

6 Figures are derived by dividing total call revenues by total volumes of calls in 2009 based on Ofcom's quarterly market data and subtracting estimated average termination rates.

2 Introduction

Ofcom is undertaking a review of the non-geographic call market to examine the structure of the market and identify areas where intervention may be required. Analysys Mason has been commissioned by Ofcom to carry out a study to assist this review.

2.1 Background

For the purpose of this study, the scope for evaluation has been limited to the following number ranges:

- **03**: Public sector and not-for-profit organisations, calls at a geographic rate – applies to all CPs, no revenue share
- **070**: Personal numbers with no revenue share
- **0800/0808**: Special services, free to customer, except where there is a pre-call announcement (PCA)
- **0843/4**: Special services, up to 5ppm/5ppc for BT customers
- **0845**: Special services, charged at BT's local call price for BT customers
- **0870**: Special services, charged at BT's national call price for BT customers
- **0871/2/3**: Special services, up to 10 ppm/ppc for BT customers, PhonepayPlus regulation
- **09**: Special services, Premium rate between 10ppm/ppc to £1.50 ppm/ppc for BT customers, PhonepayPlus regulation
- **118**: Directory enquiries.

Underlying all these non-geographic number ranges is a complex value chain, as depicted in Figure 2.1. The aim of a call is to reach an information provider (IP) supplying the services or information required by the caller. In the process of this call, there could be several communications providers involved in transmitting the call. Figure 2.1 depicts a case where the call has to be routed from the originating communications provider (OCP) over the network of one (or several) transit communications providers (Transit CP) before reaching the network of the terminating communications provider (TCP). It should be noted that in the simplest case, the OCP, the Transit CP and TCP could be on the same network. Finally, reselling service providers (resellers) often serve as an intermediary for the IPs in assigning number ranges and negotiating contracts with TCPs. For the purposes of this report, resellers and information providers are referred to as service providers (SPs).

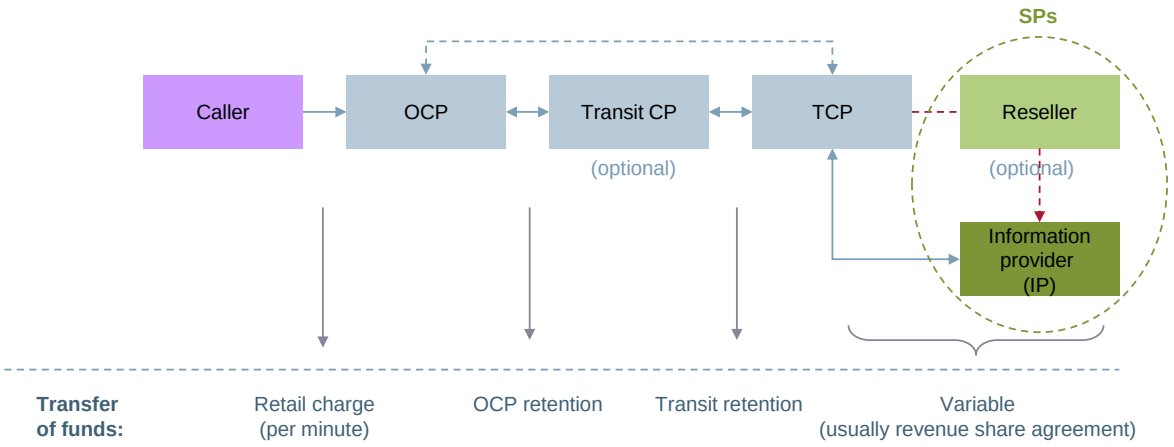

Figure 2.1: Value chain for supply of non-geographic calls [Source: Ofcom]

The complexity of the value chain is mirrored in the transfer of funds between the parties involved. Except for some calls to 080 (freephone) numbers, payments are made by a caller to its OCP. A proportion of this payment is then retained by each CP. In the final stage, the TCP and the IP typically have a revenue share agreement in place which assigns the remainder of the revenues between both parties, and, if required, the reseller.

In general funds can theoretically flow in either direction between the TCP and SP. The TCP may pay the SP as part of a revenue share agreement whilst the SP may pay the TCP for services such as hosting. The direction of the net payment flow is therefore not immediately obvious. Whilst for some number ranges (such as 09), there is a large net payment from the TCP to the SP, this is not always the case. In particular, for the 080 number range, the net flow of funds is from the SP to the TCP and in fact there is then, in general, a further flow from the TCP to the Transit CP and the OCP.

Since their inception, non-geographic numbers have encouraged and supported the development of a market for value-added telephony services. The regime was built upon a regulation centred on BT's dominance in the provision of narrowband service in the mid-1990s. It has a number of attractive features, including ease of entry by service providers; clear funding models; and a diversity of services.

While the regime has been largely successful in fostering the new services, there have historically been a number of concerns centred largely on pricing transparency and the consumer experience. In addition, it is not clear that the current regime meets the requirements desired by SPs and the various communications providers forming part of the non-geographic value chain (OCP, Transit CP and TCP).

2.2 The aims of this study

In order to address these concerns, Ofcom needs to understand how services provided through non-geographic numbers are provided to consumers. This study is intended to assist Ofcom in that regard.

This study is split into two separate parts:

- **Part 1** of the study investigates the use of non-geographic number ranges by service providers.
- **Part 2** aims to establish a flow of funds for non-geographic numbers. In other words, to ascertain the level of revenue and volumes passing through various points of the supply chain for individual non-geographic number ranges.

This report presents our findings from Part 2 of the study. The outputs of Part 1 of our study are presented to Ofcom in a separate report.

In carrying out our analysis, we have relied on data obtained by Ofcom through a formal data request to the most significant communications providers active in the value chain for non-geographic calls. The primary aim of our analysis is to better understand the flow of call volumes and call revenues through the value chain both for each non-geographic number range individually, and for non-geographic numbers as a whole.

2.3 Structure of this document

The remainder of this document is laid out as follows:

- Section 3 examines the significance of non-geographic numbers in the UK market.
- Section 4 describes our approach to Part 2 of this study.
- Section 5 analyses the outputs of our flow of funds analysis.
- Section 6 discusses the data used and the assumptions we have made.

3 The non-geographic calls market

The non-geographic calls market represents a significant proportion of total call volumes and revenues in the UK. In 2009, fixed operators generated around 135 billion minutes of voice calls. Of these, around 27.6 billion were to non-geographic number ranges accounting for around 20% of total volumes, as shown in Figure 3.1 below.

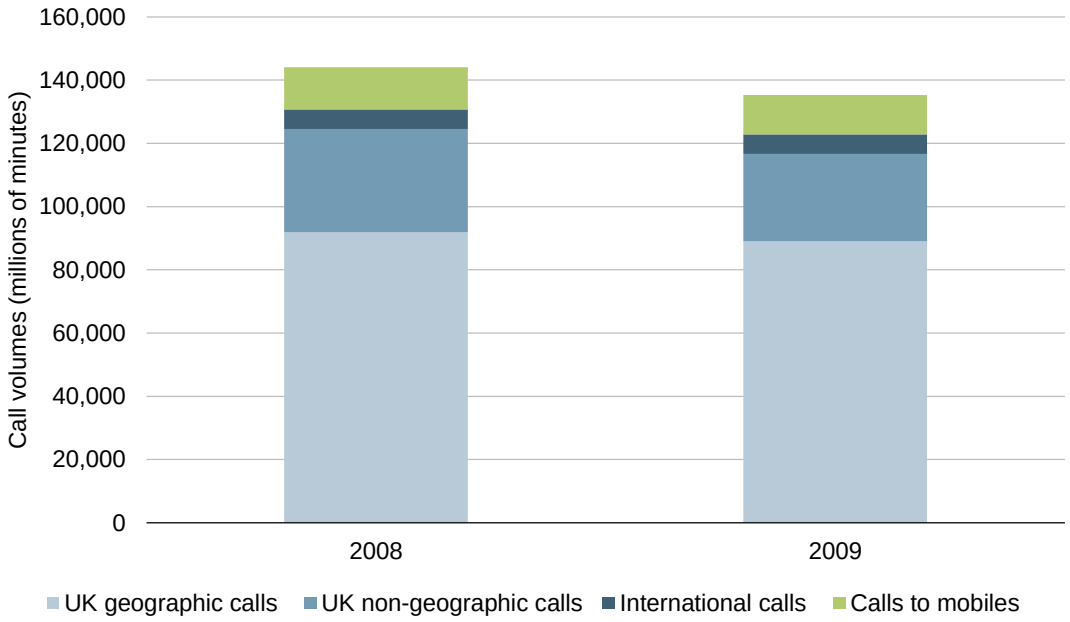

Figure 3.1: Breakdown of fixed originated call volumes by destination [Source: Analysys Mason using Ofcom quarterly market data]

In 2009, BT had a market share at the retail level for fixed origination of non-geographic calls of almost 48% compared to around 42% across all call types, as shown in Figure 3.2 below.

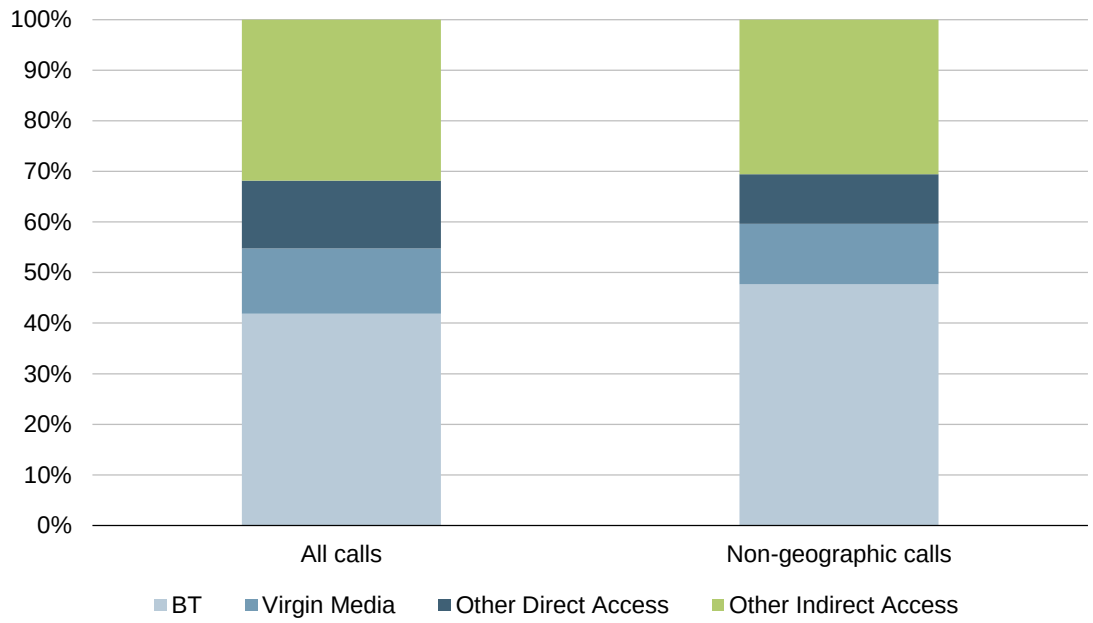

Figure 3.2: Breakdown of fixed originated call volumes by operator [Source: Analysys Mason using Ofcom quarterly market data]

Whilst non-geographic calls account for around 20% of all fixed network originated voice minutes, they are even more important in terms of revenues, accounting for around 23% of fixed operators' call revenues, or GBP1001k,[7] in 2009.

Figure 3.3 below shows call revenues split by destination and is analogous to Figure 3.1, which showed call volumes. It should be noted that, although non-geographic calls account for 23% of fixed call revenues, fixed network operators also generate substantial revenues from selling access. Of total network access and call revenues in 2009, call revenues made up only around 49%. Therefore, whilst non-geographic calls represent around 23% of call revenues, they account for closer to half that amount of fixed operators' total telephony revenues.

7 This revenue figure is exclusive of VAT, as are all revenue figures throughout this report.

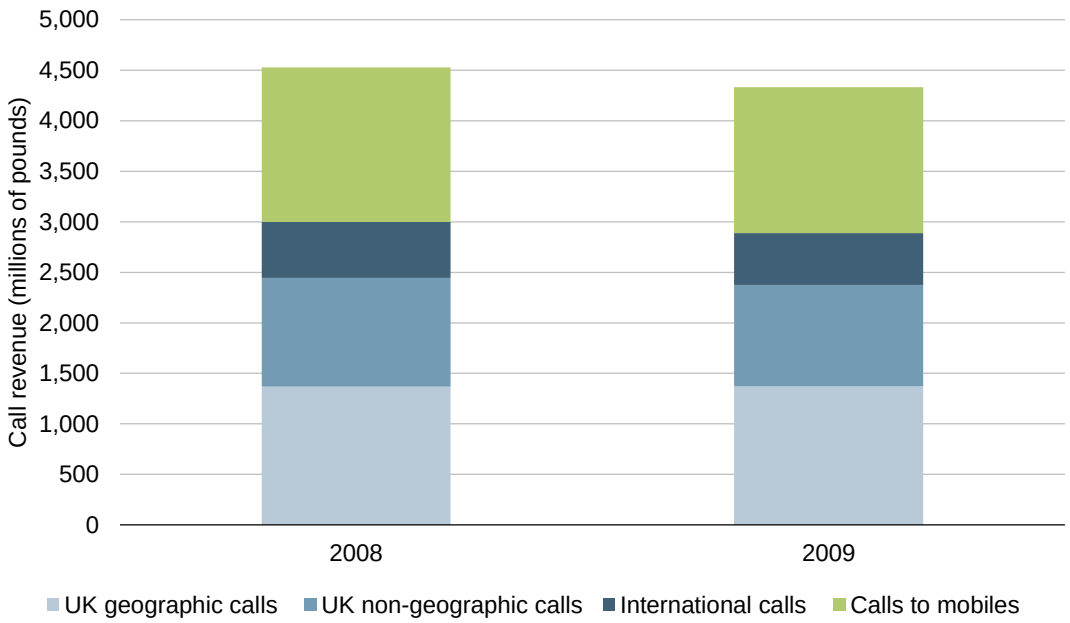

Figure 3.3: Breakdown of fixed originated call revenues by destination [Source: Analysys Mason using Ofcom quarterly market data]

Fixed operators do not charge for calls to 080 numbers and as such these call volumes could tend to skew a comparison between volumes and revenues. Whilst 20% of call minutes are to non-geographic numbers and generate 23% of call revenues, in fact we estimate that almost 10.7 billion call minutes to 080 numbers originated from fixed networks in 2009. Since these calls do not generate revenues from callers for fixed operators, we can estimate that the 23% of call revenues are actually derived from around 13% of call volumes. Note that fixed OCPs did receive payments of around GBP58 million from TCPs in 2009 for originating 080 calls.

Figure 3.4 below shows the market share by revenue for fixed originated calls.

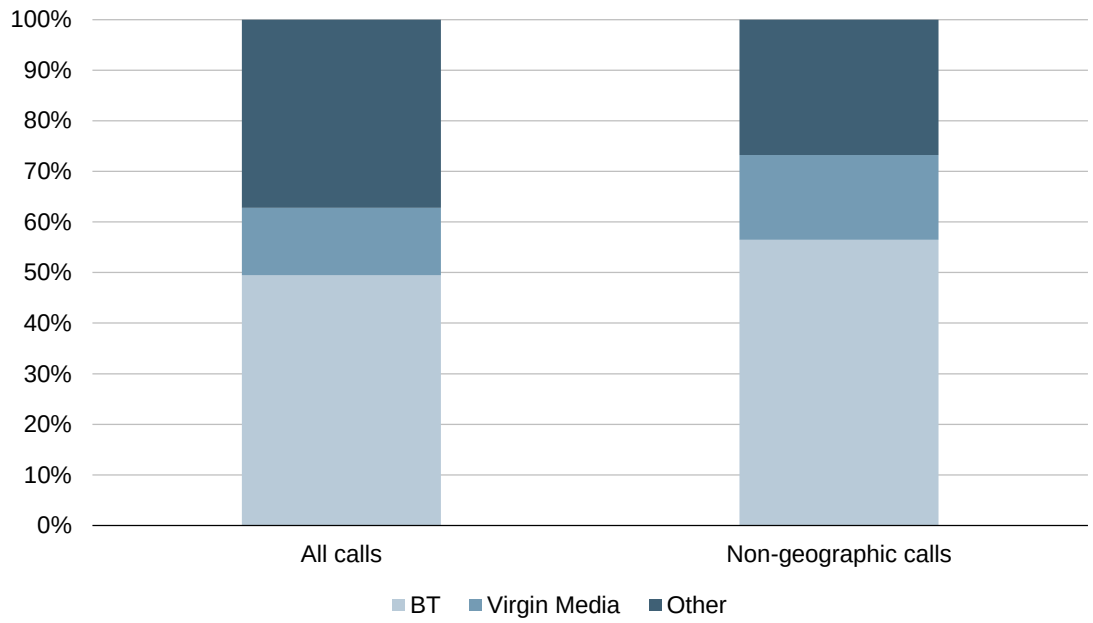

Figure 3.4: Breakdown of fixed originated call revenues by operator [Source: Analysys Mason using Ofcom quarterly market data]

For mobile operators, non-geographic call volumes are substantially lower than for fixed operators. Ofcom's quarterly market data provides call volume data for the UK's five largest mobile operators in 2009: O2, Vodafone, T-Mobile, Orange and Three[8]. This data indicated a total of around 113 billion minutes of voice traffic originated by these operators in 2009. The responses from these operators to Ofcom's data request for this report implied a total of just over 3.2 billion minutes of originated traffic to non-geographic numbers. This implies that only around 2.8% of mobile originated minutes are to non-geographic number ranges, as shown in Figure 3.5 below.

8 Where data was unavailable for Three we have assumed throughout this report that Three generates the same number of voice minutes per subscriber as the average of the other four MNOs and that the same proportion of these calls are to non-geographic number ranges.

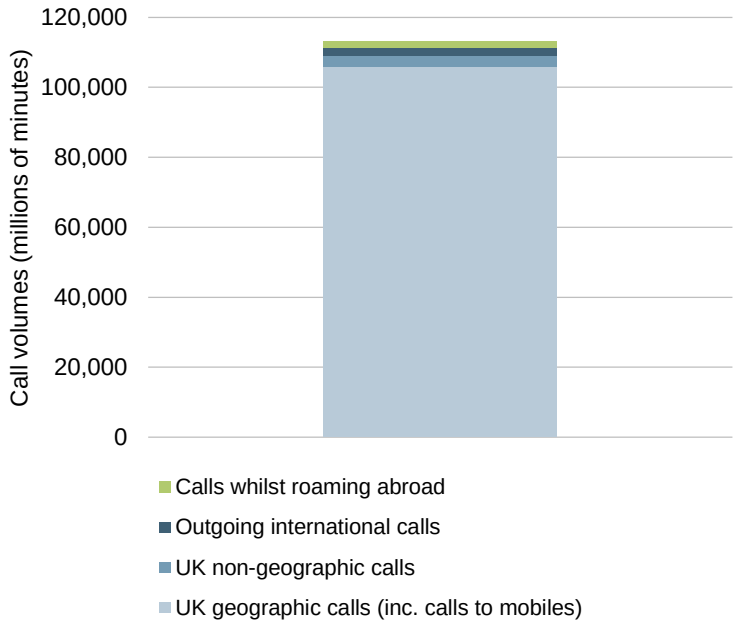

Figure 3.5: Breakdown of mobile originated call volumes by destination [Source: Analysys Mason using Ofcom market data][9]

From the same data sources we can surmise that from around GBP11.5 billion of total call revenues in 2009 for these five operators, almost GBP640 million was from non-geographic calls, corresponding to around 5.6% of total call revenues (or 4.5% including SMS and MMS) as shown in Figure 3.6 below. Since mobile operators generally charge customers for calls to 080 numbers, we do not need to split these calls out from the total non-geographic call volumes as we did for fixed line calls.

9 Data is for O2, Orange, T-Mobile, Three and Vodafone, but excludes other smaller mobile operators.

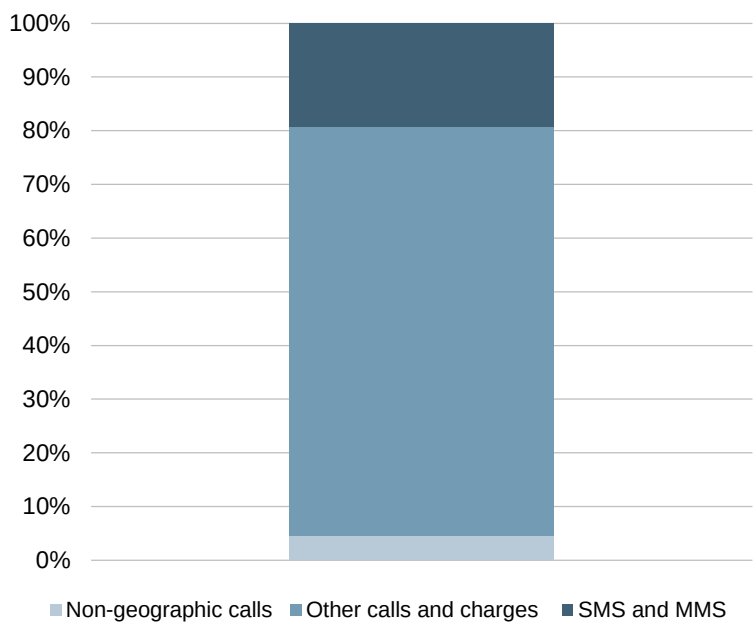

Figure 3.6: Breakdown of mobile originated call revenues by destination [Source: Analysys Mason using Ofcom market data][9]

In summary, non-geographic calls are very significant to both fixed and mobile operators. For fixed operators, they account for around 23% of call revenues and form 20% of traffic (12.5% excluding 080). For mobile operators, non-geographic calls represent around 5.6% of revenues but this is generated from only 2.8% of traffic. Due to the higher call revenues of mobile operators we also note that, for only the five operators studied here, revenue from mobile originated non-geographic calls accounts for around 39% of total non-geographic retail call revenues. This compares to around 10% of total non-geographic call volumes.

In total, across the fixed and mobile networks considered here, non-geographic calls account for 12.4% of traffic volumes and generate 10.4% of call revenues.

4 Approach and limitations

4.1 Approach

The aim of this part of our study was to analyse the revenue and volume information as provided by communications providers from Ofcom's data request, identifying the flow of funds and how these are allocated between the originating communications provider, the transit communications provider, the terminating communications provider and the service provider.

Ofcom's data request was sent to the majority of the large communications providers at each level of the value chain (i.e. OCPs, Transit CPs and TCPs) with the aim of building a data set providing a picture of the entire market. The set of communications providers from which Ofcom received responses which have been incorporated into our analysis is shown in Figure 4.1 below.

Questions in Ofcom's data request covered a wide range of topics. Data used for this analysis centred on questions in the following main areas for each non-geographic number range:

- volumes of calls and call revenues earned for retail originated minutes
- volumes of calls and call revenues earned for wholesale originated minutes
- OCP payments to transit communications providers and TCPs
- volumes of originated minutes terminated by the OCP, by third-party TCPs and requiring transit by third-party providers
- volume of calls transited and revenues earned on transiting these calls by transit providers
- transit provider payments to TCPs
- volumes of calls terminated and revenues earned on these calls by TCPs
- revenues received from SPs and payments to SPs by TCPs.

Communications provider	*Active in retail/wholesale origination*	*Active in selling transit services to third parties*	*Active in termination of non-geographic calls*
BT	✓	✓	✓
Cable & Wireless	✓	✓	✓
KCOM Group	✓	✓	✓
BSkyB	✓	×	✓
Gamma Telecom	✓	×	✓
Virgin Media (fixed)	✓	×	✓
TalkTalk	✓	×	✓
O2	✓	×	×
Orange[10]	✓	×	×
T-Mobile	✓	✓	✓
Virgin Mobile	✓	×	×
Vodafone	✓	×	×
Magrathea Telecommunications	×	✓	✓
4D Interactive	×	×	✓
Flextel	×	×	✓
IV	×	×	✓
Skycom	×	×	✓

Figure 4.1: List of communications providers responding to Ofcom's data request [Source: Ofcom, Analysys Mason]

The clarity and level of detail provided in responses differed greatly by communications provider. Ofcom's data request covered three calendar years: 2007, 2008 and 2009. Data provided by some providers for 2007 and 2008 was particularly variable in quality. This was largely due to the complete records needed to answer all questions not necessarily being available to all communications providers after this far on. As a result, the flow of funds model that we have developed presents a snapshot of the calendar year 2009.

The flow of funds model collates data from the above listed communications providers[11] and models how call minutes are routed through the value chain, as well as payments between service and communications providers, and revenue retention by providers at each level of the value chain. Figure 4.2 provides a simplified illustration of the flow of volumes and revenues which we model for each non-geographic number range. A caller places a call which is originated by an OCP. This call then flows to a TCP either directly or via a Transit CP. TCPs then pass the call to the service

10 Orange and T-Mobile initially provided separate responses but after completion of their merger to form Everything Everywhere responded jointly to follow-up questions sent by Ofcom.

11 The model also explicitly covers the flow of funds for Three. Although a response to the data request was not received we have modelled Three's call volumes and revenues based on average behaviour of the other four MNOs with values scaled by subscriber numbers.

provider often engaging in a revenue share agreement of some form, whereby the TCP retains a certain proportion of revenue received from OCPs/Transit providers and passes on a share to the SP, whilst also often providing services such as hosting. Arrangements between TCPs and SPs are covered in more detail in the report for Part 1 of this study.

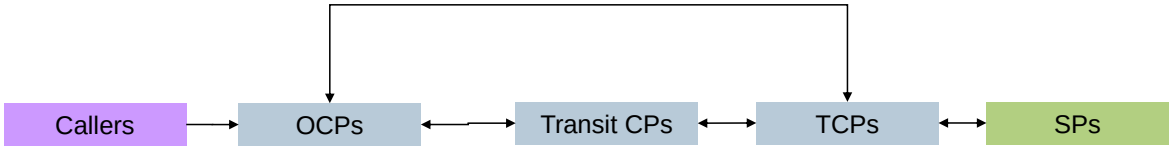

Figure 4.2: Simplified illustration of the flow of funds [Source: Analysys Mason]

Capturing the flow of revenues is more complicated than the flow of volumes. For some number ranges, such as 09 which is used for premium rate services, a caller will pay an OCP for the call. The OCP will retain a certain proportion of the revenue before passing on the rest to a Transit CP or a TCP. Again, these providers may retain a certain proportion of the remaining revenue before passing the rest onwards, in the case of the TCP to the SP. This revenue flow is illustrated in Figure 4.3 below.

We understand that the term "transit" is usually used to refer to calls where a third party is involved in conveying the call between the OCP and the TCP. Where the OCP and TCP directly interconnect, this is normally referred to as "conveyance".

For many calls, the OCP and TCP directly interconnect and thus no third-party transit provider is involved. In these cases, our model still includes a notional transit step for these calls, with either the OCP or TCP assumed to transit (convey) the call. For consistency of language, this report uses the term transit to refer to these calls, although we recognise that this differs from the typical industry terminology.

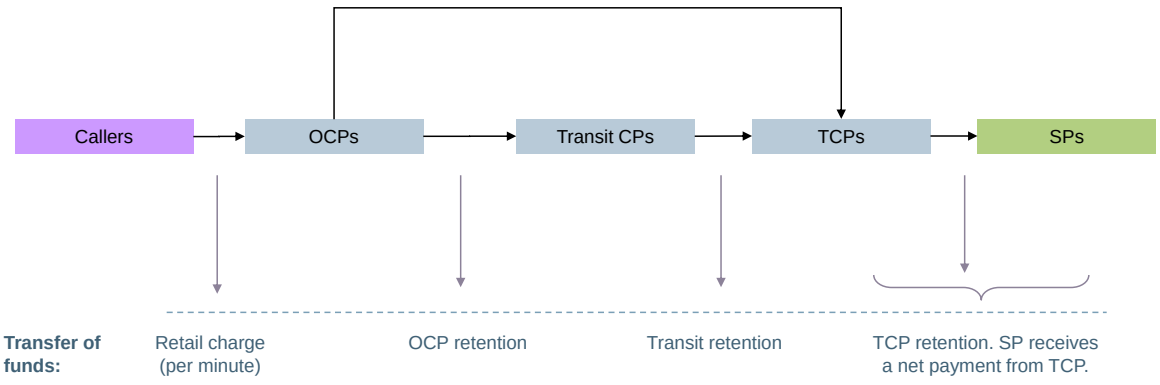

Figure 4.3: Simplified illustration of the flow of funds for the 09 number range [Source: Analysys Mason]

Conversely for the 080 number range the SP will pay the TCP for the call before the TCP generally passes revenue onwards to a Transit CP or OCP after retaining a share.[12] Transit providers may then retain a share and OCPs the remainder of the SPs' initial payment. In general for this number range the caller does not pay the OCP, although this can sometimes happen. For example this is generally the case with mobile OCPs. This revenue flow is illustrated in Figure 4.4 below.

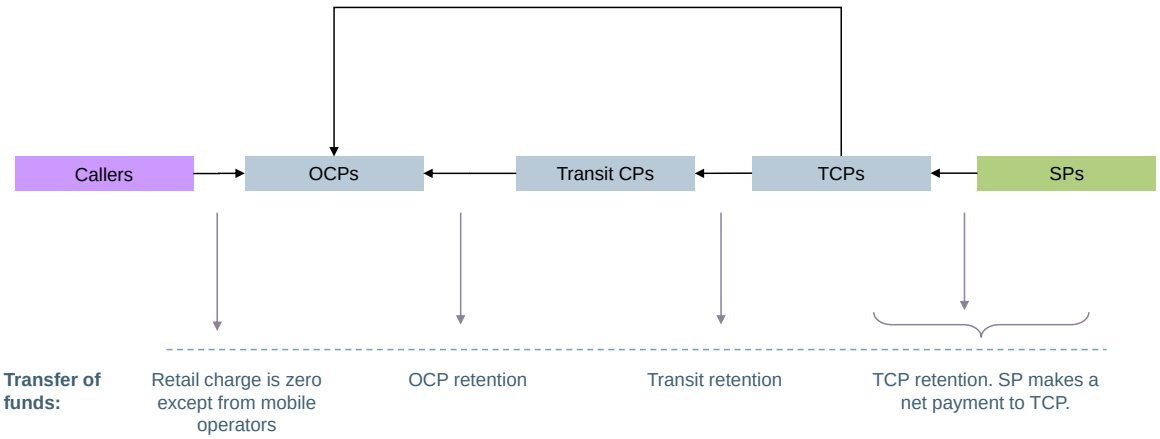

Figure 4.4: Simplified illustration of the flow of funds for the 080 number range [Source: Analysys Mason]

Our model seeks to follow the flow of volumes and revenues along different possible routes through the value chain for non-geographic calls. As a result, our model separates traffic (and revenues) into three separate paths, as illustrated in Figure 4.5 below. The top path models the situation in which traffic is originated, transited and terminated by three separate communications providers (i.e. an individual OCP, Transit CP and TCP). On the other hand, the bottom path shows the case where one communications provider originates, transits and terminates calls. The middle path covers cases where exactly two communications providers handle the call. On this path the OCP and TCP are always separate and one of these providers also carries out the notional transit step described above.

12 Whilst the TCP generally passes some revenue to the OCP, this is not always the case. For example, some TCPs such as BT have introduced differentiated pricing for termination, affecting these payments, dependent on the OCPs' retail price.

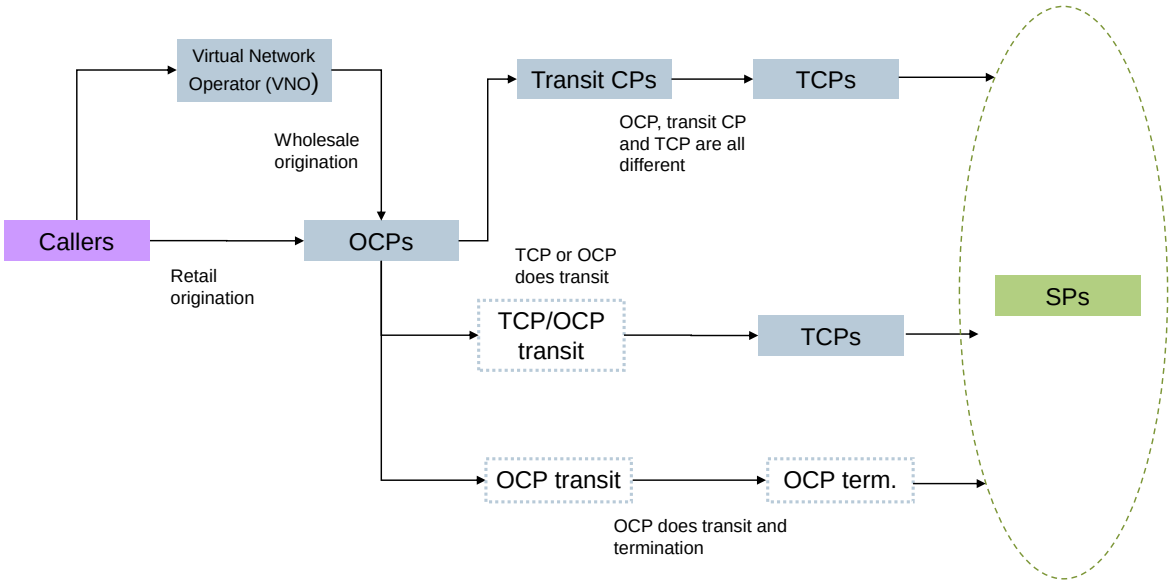

Figure 4.5: Modelling approach for the flow of volumes and revenues [Source: Analysys Mason]

We model all calls made to each non-geographic number range and therefore seek to capture the volume of calls flowing down each route of the above diagram. Our approach therefore seeks to capture volume flows from left to right in the above diagram and revenue flows in both directions, where applicable, leading to a net flow of revenues.

4.2 Limitations of the analysis

We have built a flow of funds model on which this report is based. Any such model is naturally limited by the quality of the input data used. As described above the input data is from responses to an Ofcom data request to communications providers. We consider that the main limitations of our approach using this data are as follows:

- We have received limited data from TCPs on revenue in-flows from SPs, in particular for the 080 range but possibly also for other number ranges. We have applied assumptions to some TCPs based on the responses of others.
- BT has a very significant presence at each level of the value chain. As a result, whilst BT has provided a detailed response to Ofcom's data request which has been of tremendous value to this study, there is a heavy reliance on BT's data in a number of areas.
- We have received weak responses to numerous questions from some communications providers at each level of the value chain resulting in the need to make various important assumptions.
- We have not received a response to the data request from Three. For modelling purposes, we have therefore modelled Three's call volumes and revenues based on average behaviour of the other four MNOs with values scaled by subscriber numbers.

- We have received a response to the data request from many VNOs and have therefore estimated the retail origination revenues from VNOs and VNO revenue retention assuming that the same average retail price per minute is charged as for network operators responding to the data request.

- Some communications providers' systems have not been able to split revenues, costs and volumes between certain number ranges, requiring us to make allocation assumptions.

- Some communications providers' systems do not keep data records as far back as the beginning of 2009, meaning that some pro-rata extrapolations have been required.

- The one issue of note arising from not having full year 2009 data for all operators concerned mobile operators' payments to TCPs and transit providers. BT introduced a ladder pricing scheme prior to the end of 2009 to differentiate termination charges to different OCPs depending on the retail price charged. Thus using only late 2009 or 2010 data for mobile operator costs has the effect of distorting the termination costs paid over the whole of 2009. We have used the average costs incurred by fixed OCPs for transit and termination (on a-per minute basis for each number range) and applied these costs to the mobile OCPs. As such our model is effectively an annualised flow of funds for the first half of calendar year 2009.

- The Ofcom data request was designed to understand flows of funds at a high level and therefore it is not possible to clearly identify which providers receive payments from which other providers at an individual communications provider level.

Assumptions made to address problems with the data are discussed in Section 6.

5 Key findings

In this section, we present the findings of our analysis. We begin by presenting the flow of volumes from callers through to SPs for both non-geographic numbers as a whole and then for individual non-geographic number ranges. We then go on to present the corresponding flows of revenues.

5.1 The flow of volumes in the market for non-geographic calls

As discussed in Section 4.1 above, although Ofcom's data request to communications providers covered a period of three years, our flow of funds model has only been built for the calendar year 2009. Data in previous years was generally less complete due to some operators not retaining the relevant data for this length of time.

At a high level we observed that volumes of calls to non-geographic numbers have generally declined between 2008 and 2009. Whilst data for wholesale origination in 2008 was unreliable, the total retail originated traffic volumes decreased by 14% (from around 24.4 billion minutes to 20.9 billion minutes). This decrease in volumes was generally observed across most number ranges. One notable exception, however, was the 0871/2/3 number range where retail originated traffic volumes increased by around 10% in 2009. This is discussed further in Section 5.1.2 below.

5.1.1 Flow of volumes across all non-geographic number ranges

In our flow of funds model for 2009, we have split calls leaving the OCPs along three different paths to reach the SPs, as described in Section 4.1. Figure 5.1 below shows the flow of aggregated volumes across all non-geographic number ranges studied (03, 070, 080, 0845, 0843/4, 0870, 0871/2/3, 09 and 118).

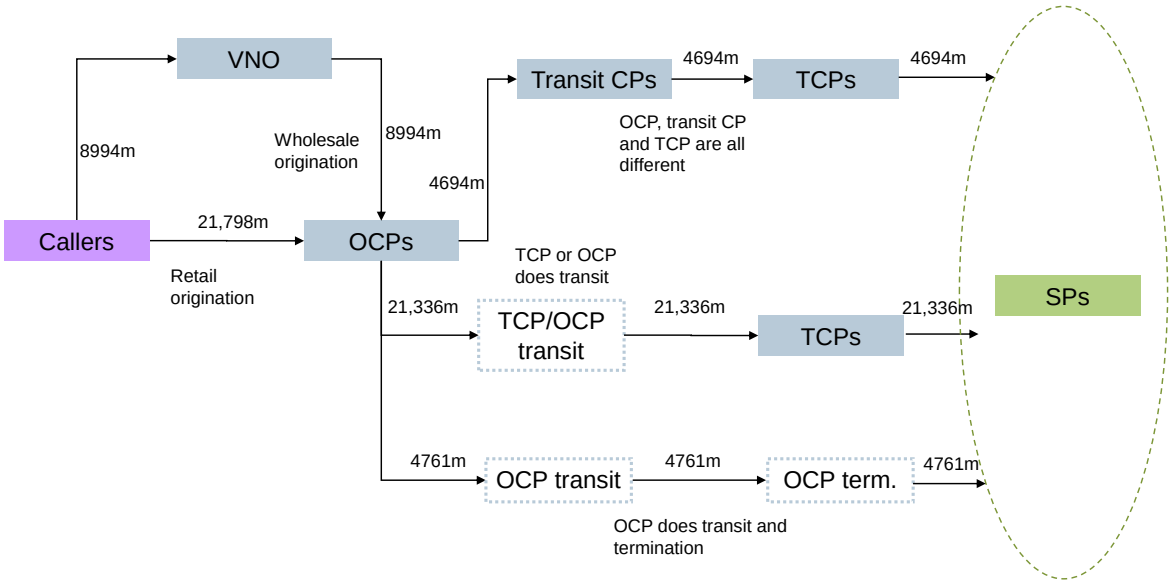

Figure 5.1: Flow of aggregated volumes across all non-geographic number ranges [Source: Analysys Mason based on communications provider data]

Responses to Ofcom's data request indicated that, in aggregate, there were almost 30.8 billion minutes of traffic to non-geographic number ranges in 2009. We note that this may vary slightly from the actual amount of minutes for 2009 since the data request did not cover all communications providers, and in some cases data for the whole of 2009 was not available meaning that certain assumptions are required. Further detail on these assumptions is provided in Section 6. The volume of minutes originating on the left of the diagram will always equal the volume terminating on the right. Note that in some of our diagrams this is not exactly the case due to rounding to the nearest million minutes (such as Figure 5.1 above).

Of these 30.8 billion minutes only around 3.3 billion originated from the mobile operators responding to the data request,[13] as shown in Figure 5.2 below. This low percentage of mobile originated minutes is in contrast to the market as a whole where we estimate there were around 135 billion minutes of fixed originated calls in 2009 compared to around 113 billion mobile originated minutes.

Of the 27.5 billion minutes originated by fixed operators, around 12.4 billion were originated by BT Retail and a further 4.3 billion minutes were wholesale originated by BT. In total, around 9 billion minutes are wholesale originated with BT clearly accounting for a substantial proportion of this amount.[14]

13 O2, Orange, T-Mobile, Virgin Mobile and Vodafone. Everything Everywhere responded separately as Orange and T-Mobile because the data request was issued before their merger was finalised.

14 Figure 5.2 below includes a very small amount of wholesale originated minutes from mobiles i.e. MVNO minutes.

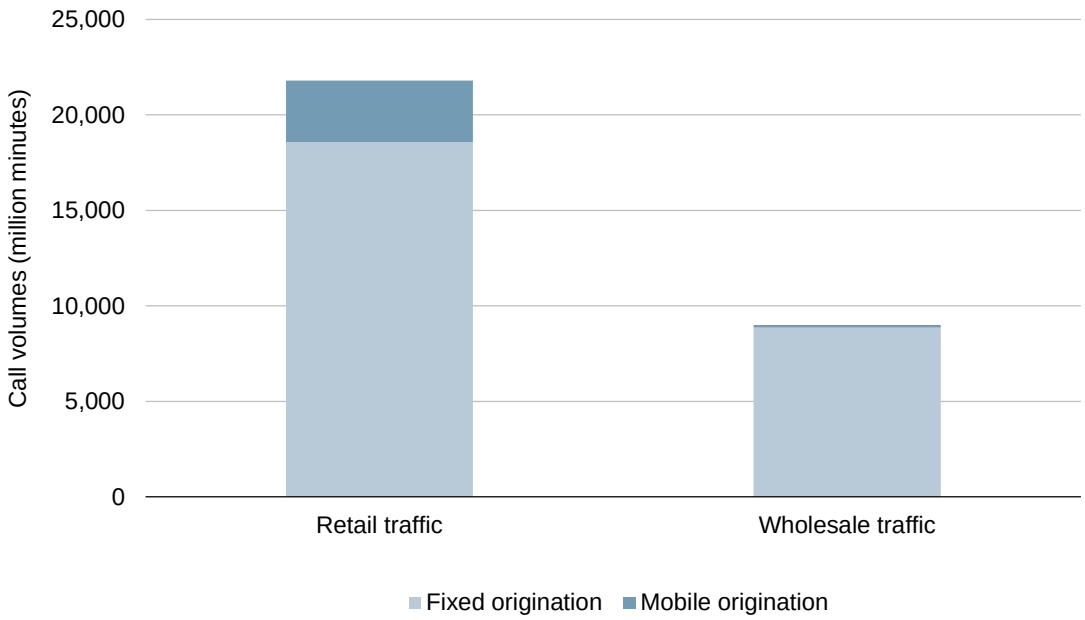

Figure 5.2: Breakdown of originated traffic across all non-geographic number ranges [Source: Analysys Mason based on communications provider data]

After origination around 4.7 billion minutes are transited by third-party providers (around 4.5 billion by BT) before being terminated by another communications provider (different to the Transit CP). Conversely, around 4.8 billion minutes are originated, notionally transited and terminated by the same operator. Of this 4.8 billion BT accounts for just over 4 billion with over 0.5 billion corresponding to Virgin Media's fixed line business.

The remaining minutes are terminated by a different communications provider to the originating provider and do not explicitly involve transit by a third party. In the case of these 21.3 billion minutes, the notional transit step is carried out by either the OCP or the TCP. Around 12.7 billion of these minutes are originated by BT at either the retail or wholesale levels.

The termination market for non-geographic calls appears reasonably fragmented with no individual communications provider having a market share of above 25%. The market share of different TCPs based on the responses to Ofcom's data request is shown in Figure 5.3 below. As described in Section 6, Ofcom's data request has not covered all TCPs. Given that every originated minute must be terminated, we can calculate the number of minutes not accounted for by the TCPs responding to Ofcom's data request. These minutes are assigned to "Other TCPs" in Figure 5.3 below.

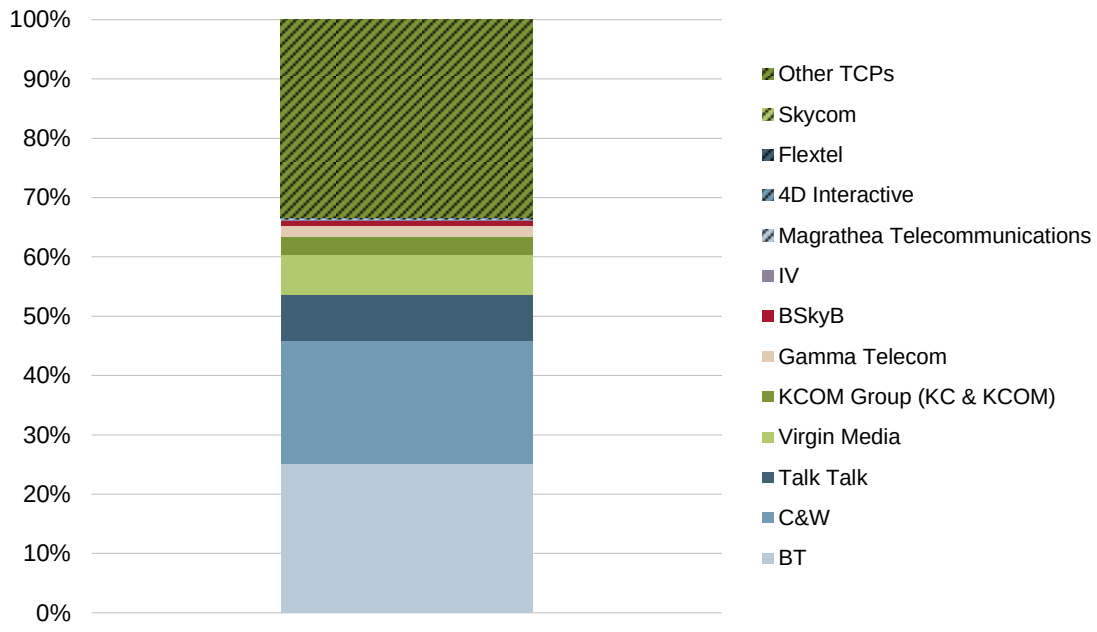

Figure 5.3: Market share of TCPs [Source: Analysys Mason based on communications provider data]

Ahead of examining the flow of volumes across each individual non-geographic number range in Section 5.1.2, we first provide a breakdown of the total non-geographic call volumes by number range in Figure 5.4 below. The highest volume of call minutes (nearly 11.2 billion minutes) were made to 080 numbers in 2009. Call volumes to 070 and 03 were extremely small, whilst calls to 118 and 09 number ranges both totalled under 400 million minutes.

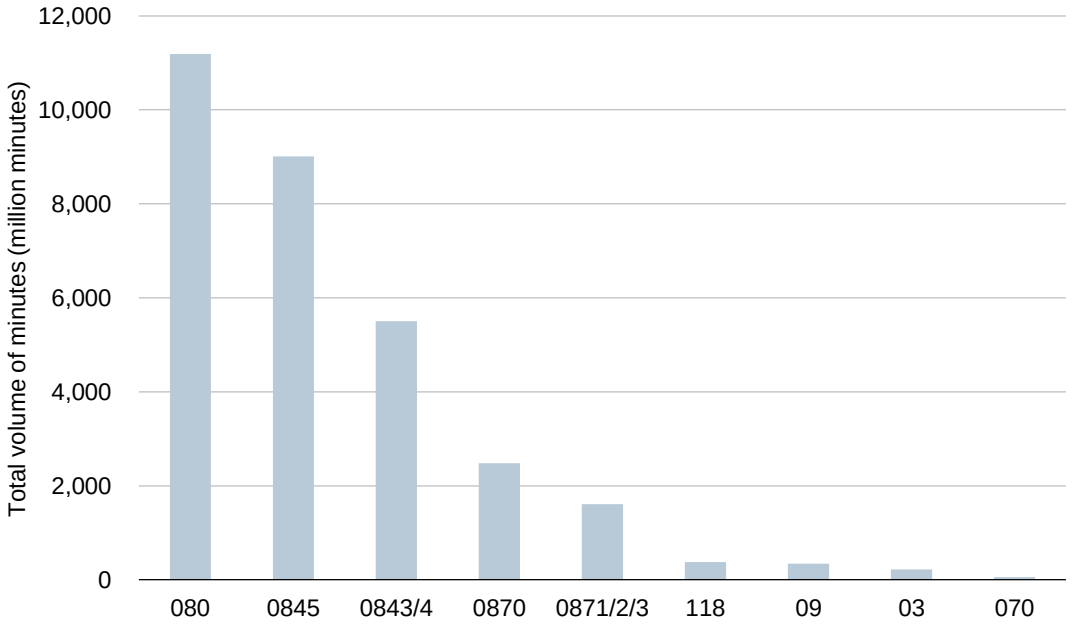

Figure 5.4: Breakdown of volumes of minutes to non-geographic numbers by number range in 2009. [Source: Analysys Mason based on communications provider data]

5.1.2 Flow of volumes across individual non-geographic number ranges

In this section, we provide an illustration of the flow of volumes through the value chain for each individual number range in the same format as the flow diagram for the aggregate of all non-geographic number ranges in Figure 5.1 above.

03 – Calls at a geographic rate

The 03 range does not at this stage generate significant volumes of traffic in the overall scheme of non-geographic numbers. Whilst calls to 03 numbers are often included in bundle and are therefore attractive to consumers, usage levels by service providers is currently low and total traffic volumes in 2009 were only reported at around 223 million minutes. Figure 5.5 below shows the flow of volumes through the 03 number range.

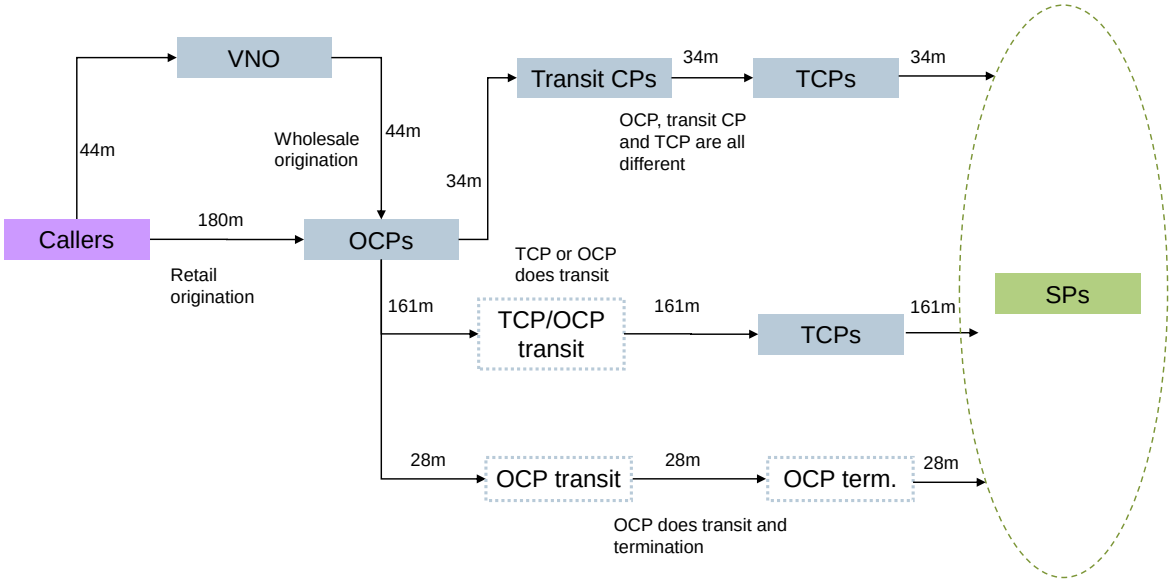

Figure 5.5: Flow of volumes across the 03 number range [Source: Analysys Mason based on communications provider data]

070 – Personal numbers

Volumes of calls to the 070 range are extremely small with only around 59 million minutes of calls in 2009. A reasonably high proportion of these calls, around 32%, are originated, transited and terminated by three separate communications providers.

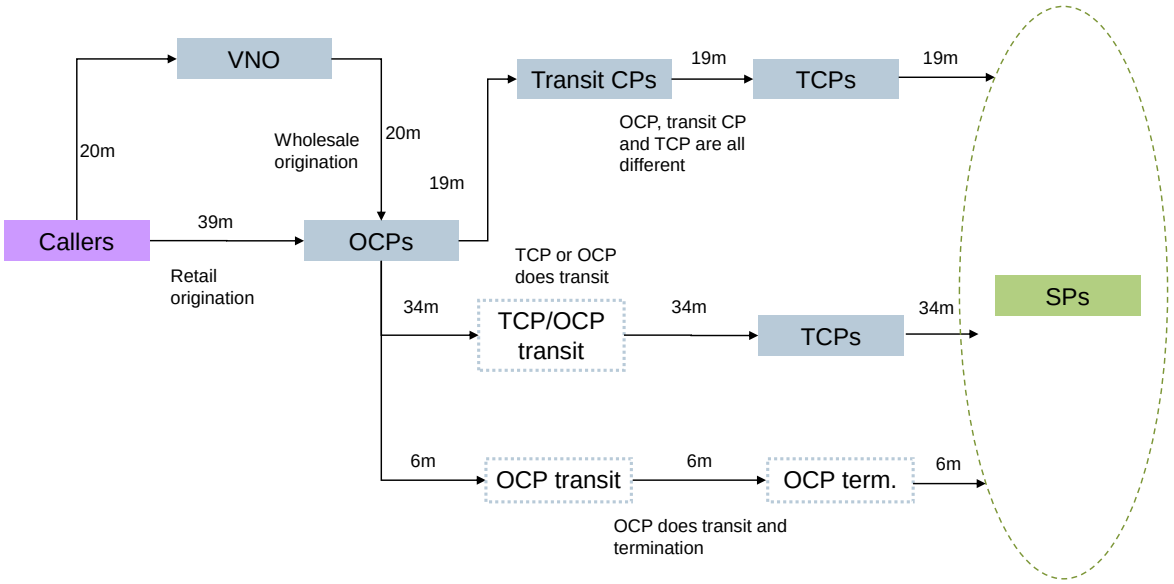

Figure 5.6: Flow of volumes across the 070 number range [Source: Analysys Mason based on communications provider data]

080 – Freephone services (except where there is a PCA)

080 still represents the largest volume of calls of any non-geographic number range, although volumes have declined in recent years. Out a total of 30.8 billion minutes in 2009 for non-geographic number ranges, around 11.2 billion were to the 080 range. The flow of volumes for 080 numbers is shown in Figure 5.7 below.

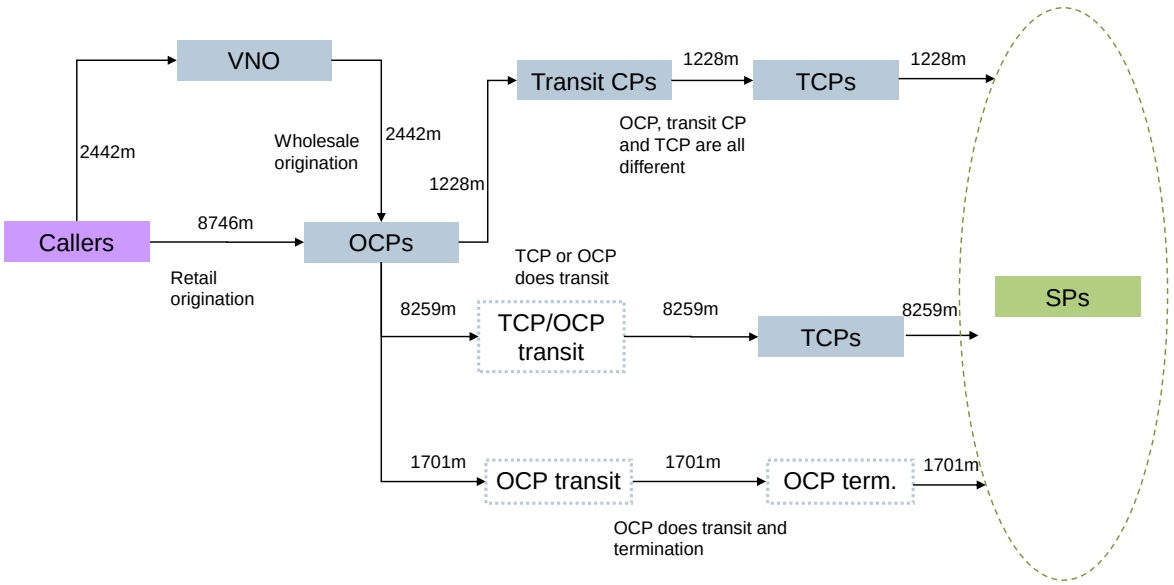

Figure 5.7: Flow of volumes across the 080 number range [Source: Analysys Mason based on communications provider data]

0843/4 – Special services (up to 5ppm for BT customers)

There were around 5.5 billion minutes of calls to 0843/4 numbers in 2009 accounting for around 18% of all calls to non-geographic number ranges. Around 35% of these minutes are wholesale originated (compared to an average of 29% across all non-geographic number ranges) and a relatively high proportion, of around 23% use third-party transit. Figure 5.8 below shows the flow of volumes for 0843/4 calls.

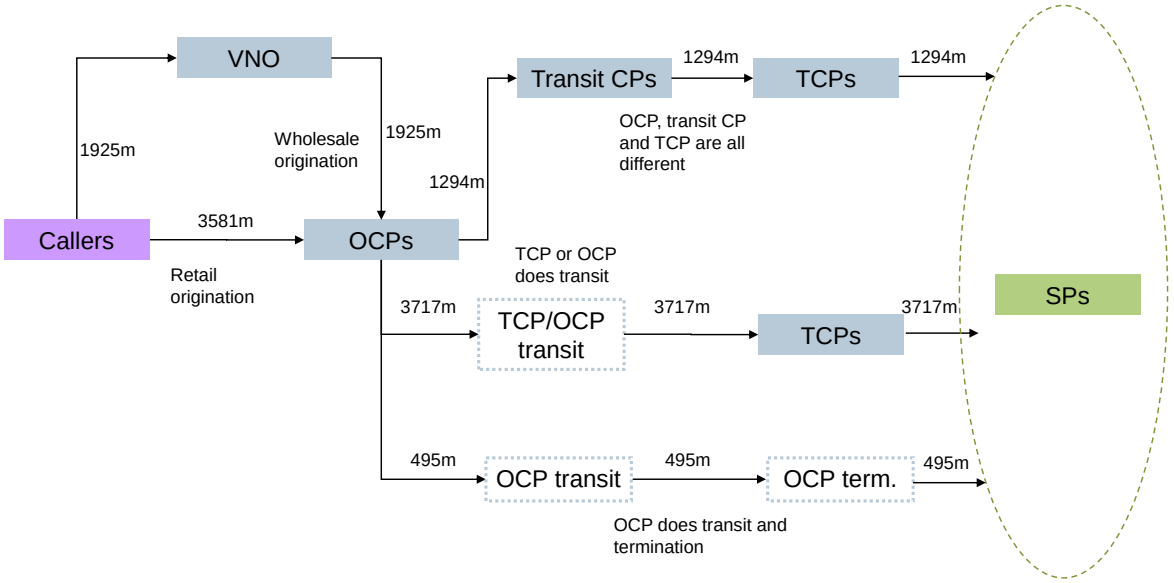

Figure 5.8: Flow of volumes across the 0843/4 number ranges [Source: Analysys Mason based on communications provider data]

0845 – Special services (charged at BT's local rate)

0845 is the second most called of all the non-geographic number ranges. A total of around 9 billion minutes of calls were made in 2009, as shown in Figure 5.9 below. A relatively high proportion of calls (21%) are originated, transited and terminated by the same communications provider (mostly BT).

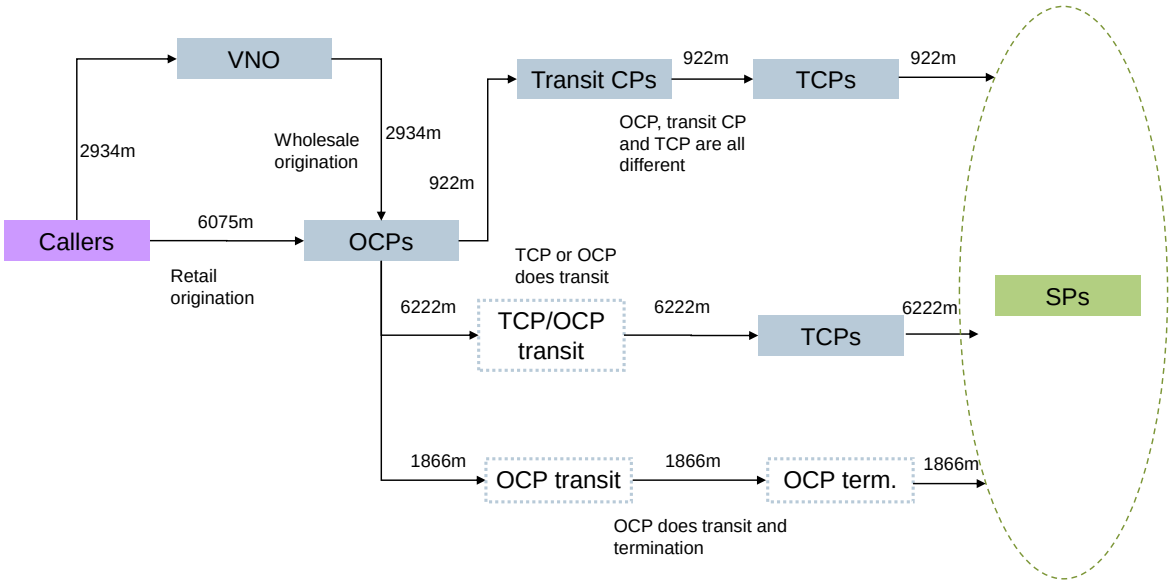

Figure 5.9: Flow of volumes across the 0845 number range [Source: Analysys Mason based on communications provider data]

0870 – Special services (charged at BT's national rate)

Despite declines in recent years, there were still around 2.5 billion minutes of calls to 0870 numbers in 2009. Of these, around 1.6 billion were retail originated minutes, although in 2008 there had been around 2.3 billion retail originated minutes showing a decline of around 35%. This is likely to be a reflection of the reduction in 0870 termination rates as a result of Ofcom's determination.[15] Ofcom has previously stated that this reduction in termination rates was likely to have encouraged a significant proportion of SPs to move to other number ranges such as 0844 and 0871.

Around 36% of the total 2009 minutes were wholesale originated, as shown in Figure 5.10 below.

15 http://stakeholders.ofcom.org.uk/binaries/consultations/resolve0870calls/statement/determination.pdf

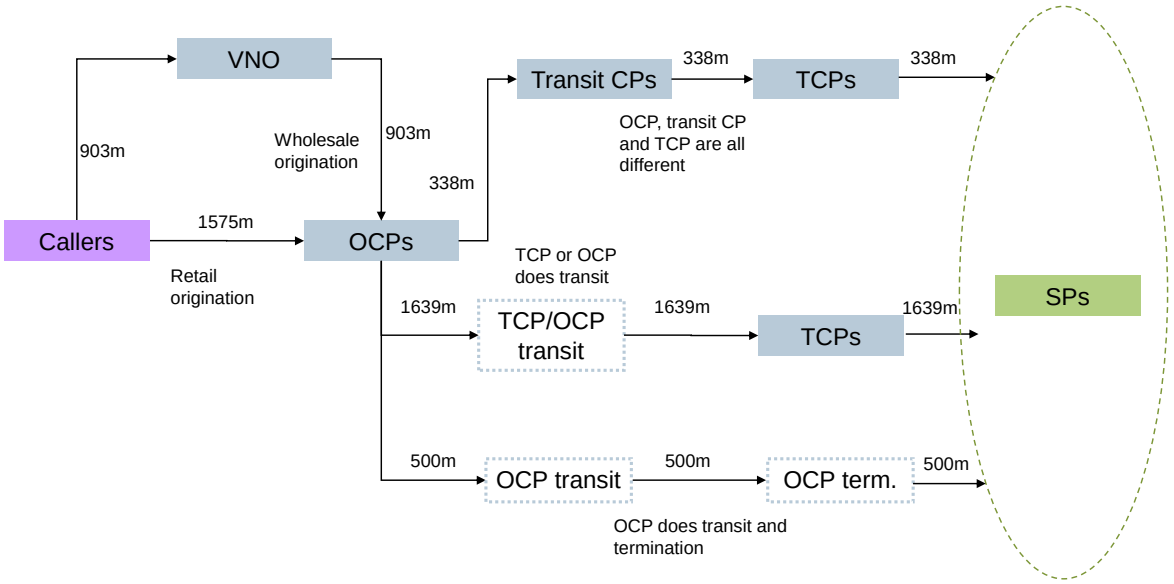

Figure 5.10: Flow of volumes across the 0870 number range [Source: Analysys Mason based on communications provider data]

0871/2/3 – Special services (up to 10ppm for BT customers)

Following Ofcom's determination on 0870 termination rates from August 2009, there has been an increase in usage volumes on the 0871/2/3 number ranges as service providers have migrated away from the 0870 range. The 0871/2/3 ranges accounted for around 1.6 billion minutes in 2009, which whilst still below the volumes on 0870, is an increase on previous years. In particular, there were around 984 million retail originated minutes in 2009 compared to 891 million in 2008[16]. Figure 5.11 below shows the flow of volumes for 0871/2/3 number ranges with 36% of traffic using third-party communications providers for transit but only around 6% of minutes originated, transited and terminated by the same communications provider.

16 Based on the operators providing data for both 2008 and 2009 in response to Ofcom's data request.

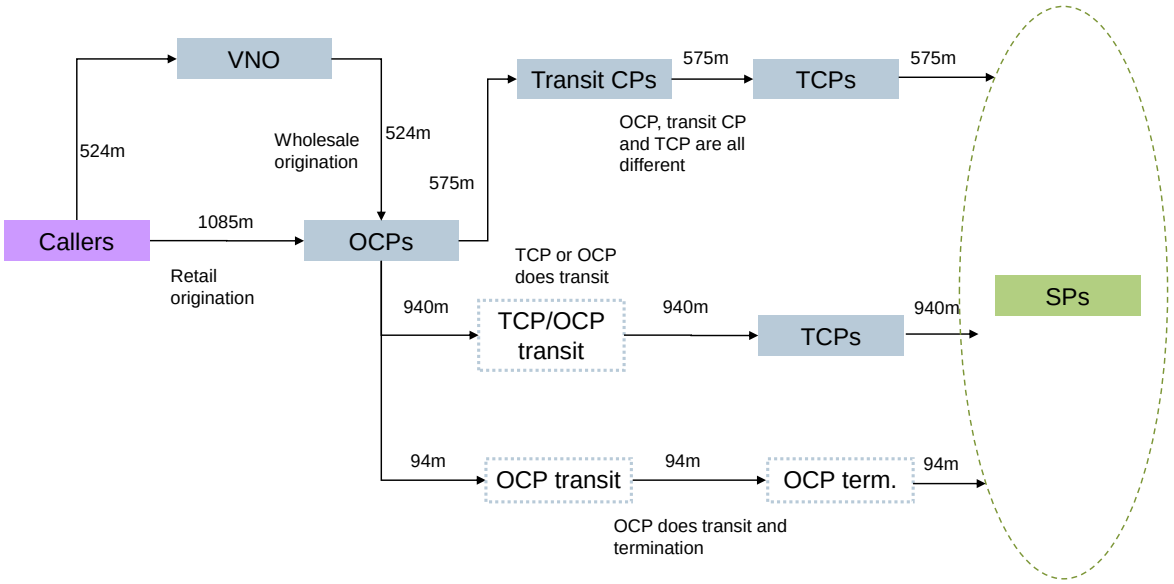

Figure 5.11: Flow of volumes across the 0871/2/3 number ranges [Source: Analysys Mason based on communications provider data]

09 – Premium-rate services

09 numbers are used for premium rate calls and, as such, represent a relatively small proportion of non-geographic call volumes. In 2009, there were around 342 million minutes of calls modelled representing just over 1% of total non-geographic call volumes, as shown in Figure 5.12 below.

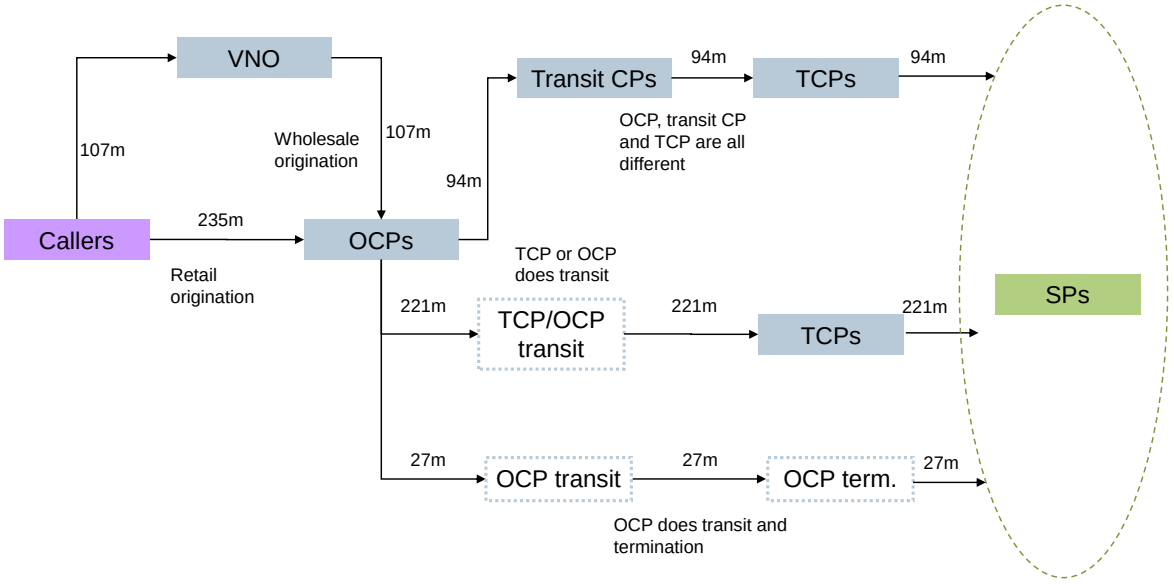

Figure 5.12: Flow of volumes across the 09 number range [Source: Analysys Mason based on communications provider data]

118 – Directory enquiries services

Like 09 numbers, 118 numbers represent only just over 1% of total non-geographic call volumes. Only around 25% of minutes are wholesale originated, below the average for non-geographic number ranges, whilst only around 38% of call minutes follow the central path through our flow diagram to SPs.

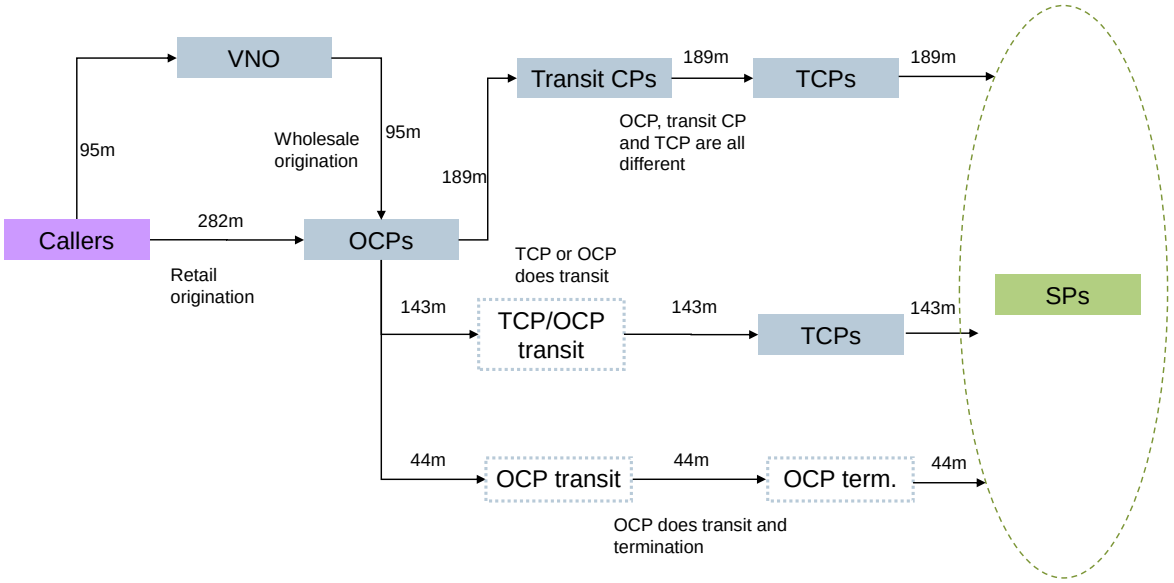

Figure 5.13: Flow of volumes across the 118 number range [Source: Analysys Mason based on communications provider data]

Summary

In general, we have observed relatively little variation in the proportion of traffic which is wholesale originated across the different non-geographic number ranges. This trend, as illustrated in Figure 5.14 below, could indicate that most consumers do not tend to choose their telephony providers on the basis of what non-geographic numbers they call. As an example, for a similar study looking at international calls we might have expected a greater proportion of wholesale origination for certain numbers.

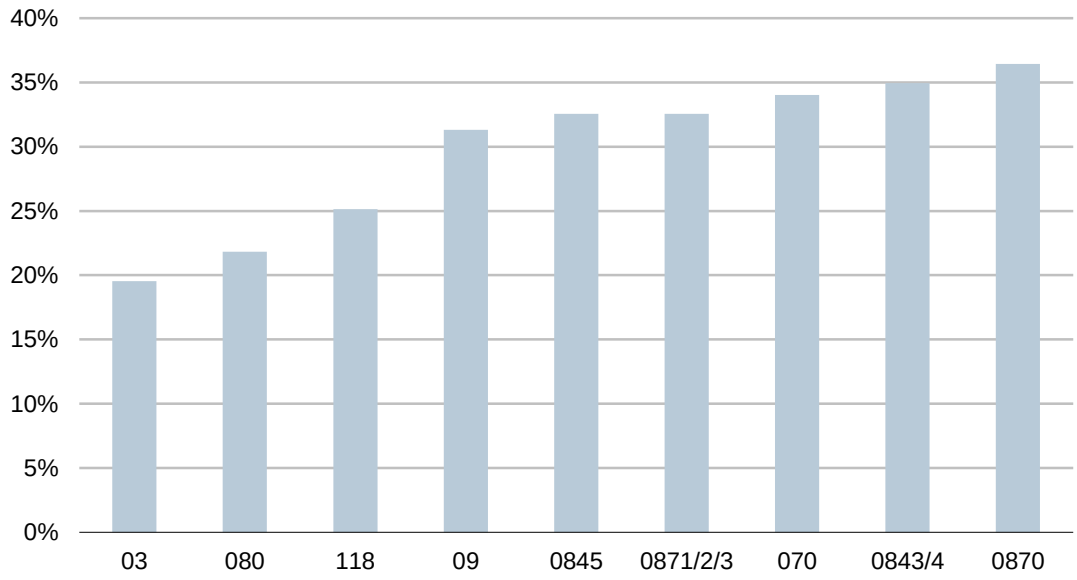

Figure 5.14: Wholesale proportion of all originated traffic across each non-geographic number range [Source: Analysys Mason based on communications provider data]

On the other hand, the split of traffic originated from mobile operators varies much more significantly across number range. Figure 5.15 shows the results of our analysis. Of particular note is the fact that under 5% of all 080 calls originate from the mobile operators in our study, compared to mobile origination more generally accounting for 46% of all calls. Conversely, for 03 calls which are often included in mobile call bundles, the percentage is 51%. This shows quite clearly that consumers adapt their calling patterns to non-geographic numbers from fixed and mobile lines based on the relative pricing. Where mobile call prices are competitive (such as for 03) the proportion of calls from mobiles is similar to the proportion for geographic numbers, but where mobile rates are un-competitive (such as for 080) only a small fraction of this proportion of calls is made from mobiles.

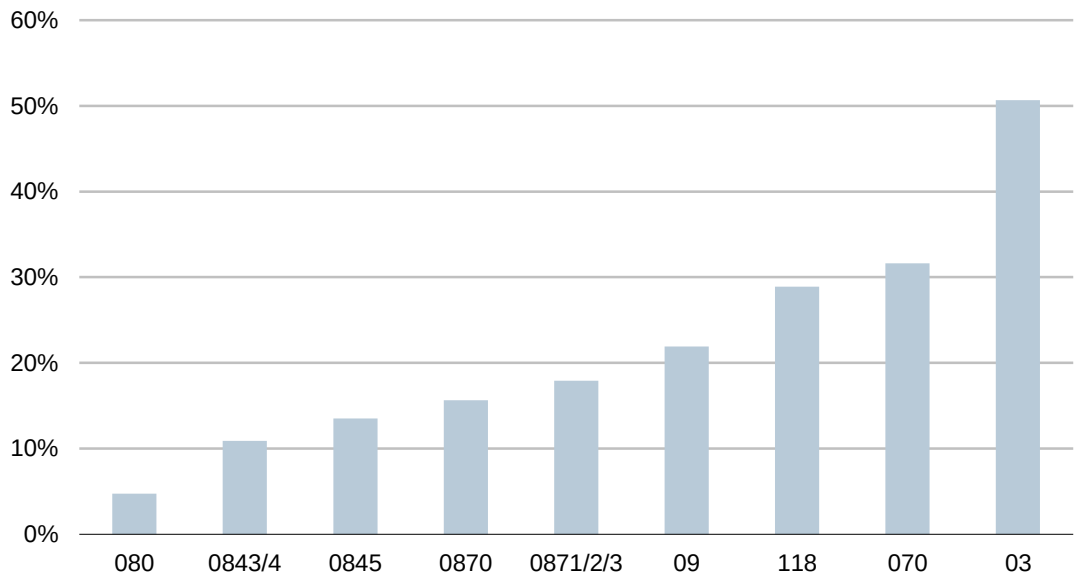

Figure 5.15: Mobile proportion of all originated traffic across each non-geographic number range [Source: Analysys Mason based on communications provider data]

5.2 The flow of revenues in the market for non-geographic calls

As discussed in Sections 4.1 and 5.1 above, although Ofcom's data request to communications providers covered a period of three years, our flow of funds model has only been built for the calendar year 2009. Data in previous years was generally less complete due to some operators not retaining the relevant data for this length of time.

At a high level, we observed that revenues from calls to non-geographic numbers have generally decreased between 2008 and 2009. Total non-geographic call revenues in fact decreased by 7%, compared to a 14% decrease in volumes.

5.2.1 Flow of revenues across all non-geographic number ranges

As described above, in our flow of funds model for 2009 we have split calls leaving the OCPs, and the associated revenues, along three different paths to reach the SPs. Figure 5.16 below shows the flow of aggregated revenues across all non-geographic number ranges studied (03, 070, 080, 0845, 0843/4, 0870, 0871/2/3, 09 and 118).

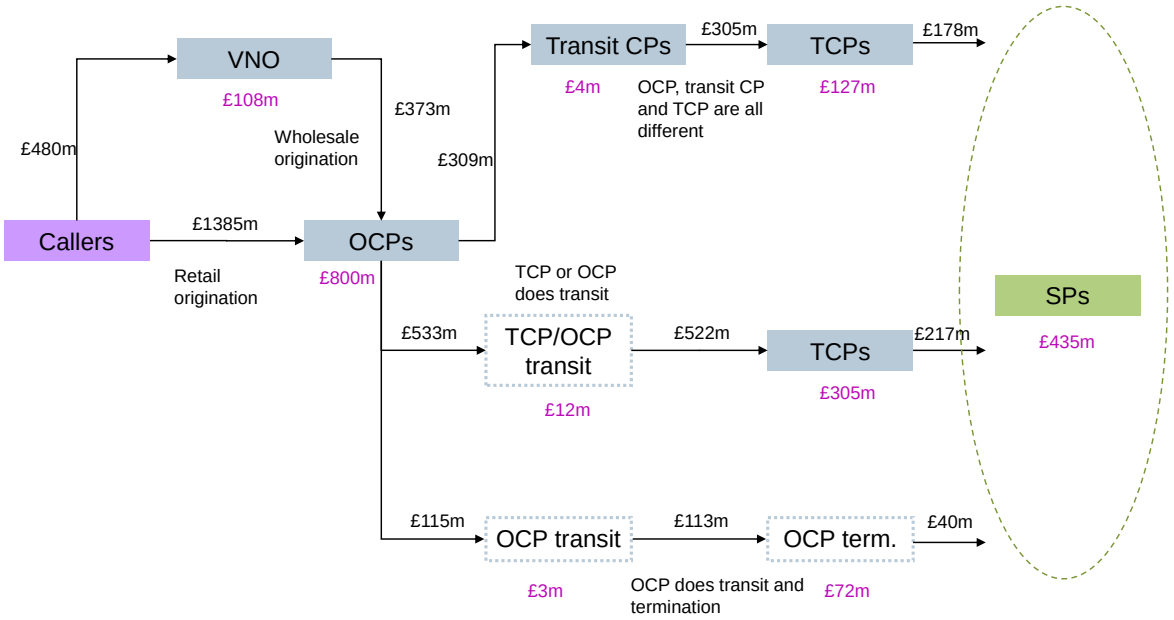

Figure 5.16: Flow of aggregated revenues across all non-geographic number ranges [Source: Analysys Mason based on communications provider data]

Responses to Ofcom's data request indicated that, in aggregate, there were GBP1865 million of revenues, excluding VAT, entering the non-geographic calls market in 2009. For virtual network operators, volumes were captured through data provided by wholesale origination providers and VNO retail revenues and retention have been calculated assuming the same retail prices as those operators responding to Ofcom's data request. Once again, we note that this total may vary slightly from the actual amount of revenues for 2009 since the data request did not cover all communications providers, and in some cases data for the whole of 2009 was not available meaning that certain assumptions are required. Finally, our revenue figures do not include any notional element of bundle revenues where a call is covered in bundle. Including such notional revenues would increase total revenues and OCP retention by the same amount with no additional revenue passed on further down the value chain. Further detail on these assumptions is provided in Section 6.

The revenues originating on the left of the diagram will always equal the sum of the retentions at each level of the value chain, indicated by the purple numbers in Figure 5.16. Note that in some of our diagrams, such as Figure 5.16, this is not exactly the case due to rounding to the nearest million pounds. Whilst the purple figures represent retention by a provider, the black figures show the flow of revenue along different branches of our diagram. These figures always correspond to a net flow of revenues and the arrow shows the direction of that flow. In all cases other than for 080 (and for 03 between SPs and TCPs only), as seen in Section 5.2.2, the direction of the net flow is from left to right (i.e. from OCPs towards SPs).

Of the GBP1865 million entering our system, around GBP908 million is retained by OCPs (including GBP108 million by VNOs), a total of GBP18 million is retained by transit providers and GBP504 million is retained by TCPs. The remaining amount of roughly GBP435 million

makes its way to SPs. In percentage terms this corresponds to OCPs retaining 49% of total revenues, Transit CPs retaining 1%, TCPs retaining 27% and 23% reaching SPs, as shown in Figure 5.17 below. This implies that on average OCPs are able to retain the lion's share of retail revenues but that a significant proportion is also taken by TCPs and SPs. Transit is a low-margin service. As we discover in Section 5.2.2, this breakdown, and in particular the SP retention, can vary dramatically between number ranges.

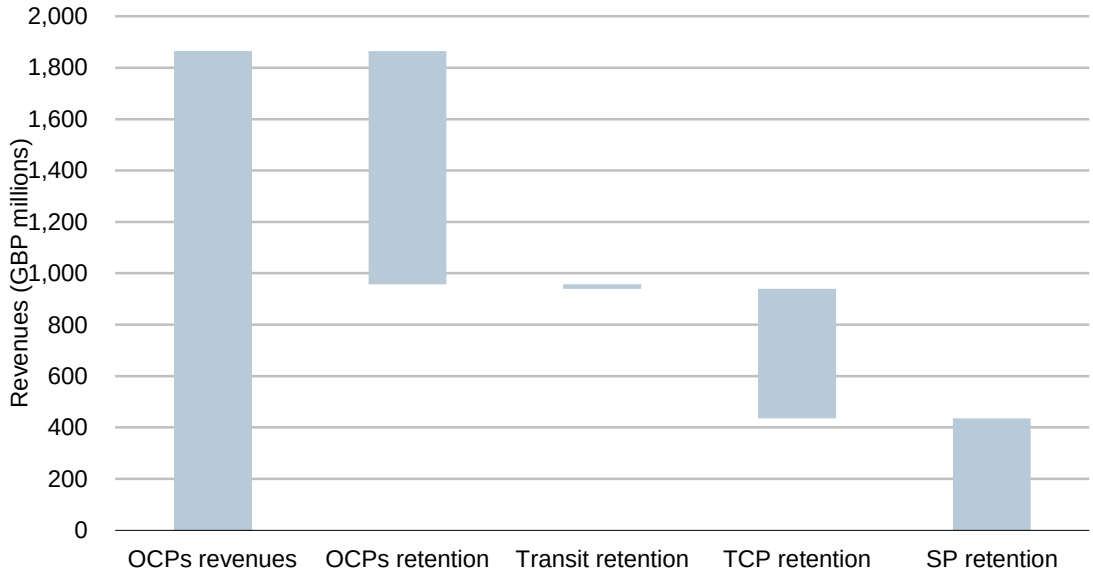

Figure 5.17: Retention at each level of the value chain across all non-geographic number ranges [Source: Analysys Mason based on communications provider data]

Of the total of GBP1865 million of generated retail revenue, GBP654 million were generated by the mobile operators responding to the data request and Three.[17]. This 35% of total revenues generated derives from only 11% of the volume of minutes originated.

Figure 5.18 below shows retail and wholesale origination revenues for both fixed and mobile operators, excluding VNOs. The total retail and wholesale revenues are therefore equal to GBP1757 million (GBP1865 million minus the GBP108 million of retail retention of VNOs). Of the GBP1108 million generated by these fixed operators, around GBP344 million were generated by BT Retail and a further GBP177 million were BT wholesale origination revenues. This represents a similar proportion of fixed origination revenues generated by BT to its share of fixed origination volumes. In total, around GBP373 million were generated through wholesale origination with BT again clearly accounting for a substantial proportion of this amount.[18]

17 O2, Orange, T-Mobile, Three, Virgin Mobile and Vodafone. Everything Everywhere responded separately as Orange and T-Mobile because the data request was issued before their merger was finalised.

18 Figure 5.18 below includes a very small amount of revenue from wholesale-originated minutes from mobiles i.e. MVNO minutes.

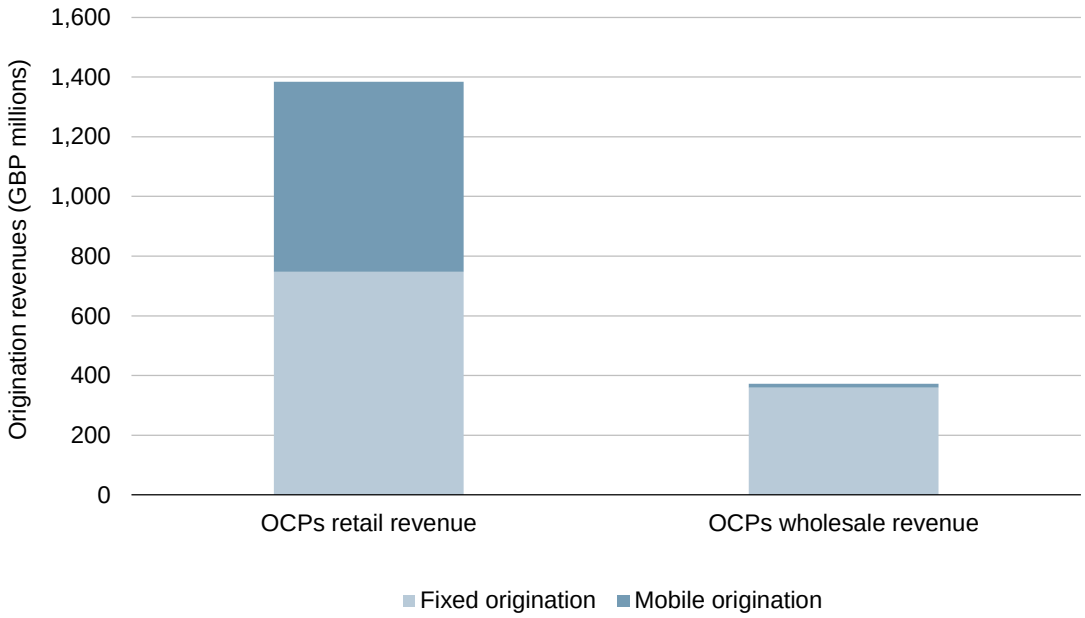

Figure 5.18: Breakdown of origination revenues across all non-geographic number ranges [Source: Analysys Mason based on communications provider data]

After origination OCPs pass on a total of GBP957 million further down the value chain. Of this amount, around GBP309 million worth of calls are transited by third-party providers (mostly by BT) before being terminated by another communications provider (different to the Transit CP). Conversely, around GBP115 million worth of calls are originated, notionally transited and terminated by the same operator. In these examples, the GBP115 million could be considered OCP retention but we have calculated notional revenues as described in Section 6 to assign a proportion of the revenues to the transit and termination functions of integrated operators. Of this GBP115 million, BT accounts for over GBP94 million with another GBP12 million corresponding to Virgin Media's fixed line business.

The remaining revenues flow down the middle path of Figure 5.16 and are terminated by a different communications provider to the originating provider and do not explicitly involve transit by a third party. In the case of these GBP533 million worth of traffic the notional transit step is carried out by either the OCP or the TCP. In places the proportion of volumes of revenues flowing down each path can appear different. However, this is an effect of looking at an aggregate view across multiple non-geographic number ranges. When considering any individual number range, the revenue and volume proportions flowing down each path are actually very similar.

As discussed in Section 5.1.1, the termination market for non-geographic calls is reasonably fragmented in terms of volumes with no individual communications provider having a market share of above 25%. The same is true for revenues, as shown in Figure 5.19 below. This chart shows a broad consistency in the relationship between revenues and volumes for each TCP when compared to Figure 5.3, implying a rough consistency of termination pricing.

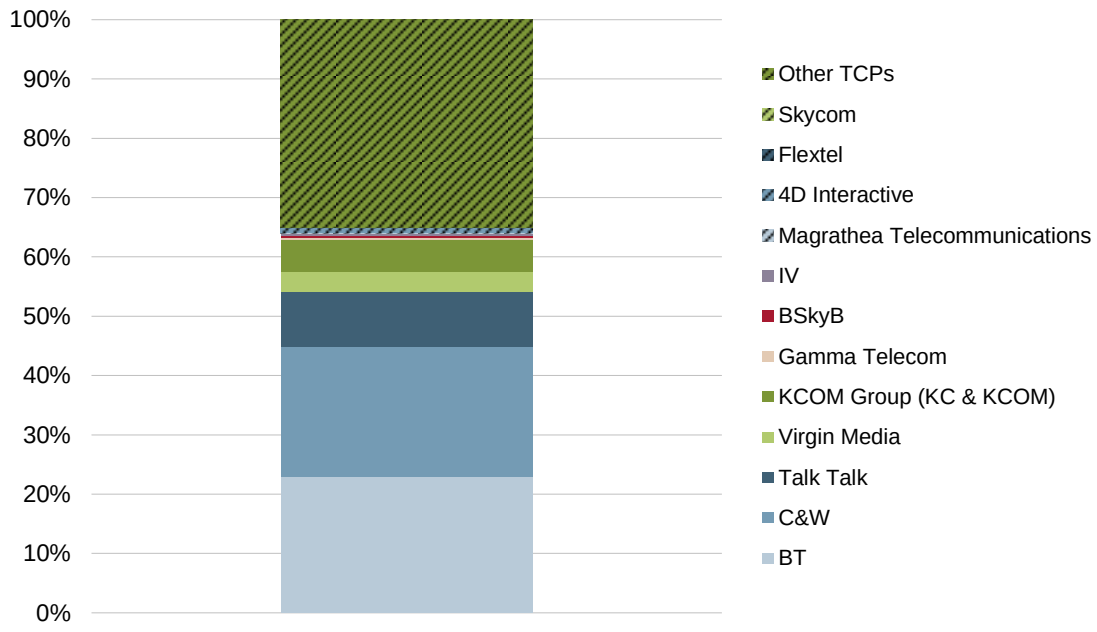

Figure 5.19: Market share of TCPs [Source: Analysys Mason based on communications provider data]

Ahead of examining the flow of revenues across each individual non-geographic number range in Section 5.2.2, we first provide a breakdown of the total non-geographic call revenues by number range in Figure 5.20 below. The highest revenue from calls (GBP469 million) came from calls to 0845 numbers in 2009. Call volumes were highest to 080 numbers, but revenues are substantially lower since these calls are free from fixed OCPs. Call volumes to 070 and 03 numbers were extremely small and this is reflected in the revenue figures. However, 118 and 09 number ranges both generate high revenues per minute meaning that total revenues are high despite both having call volumes totalling under 400 million minutes in 2009.

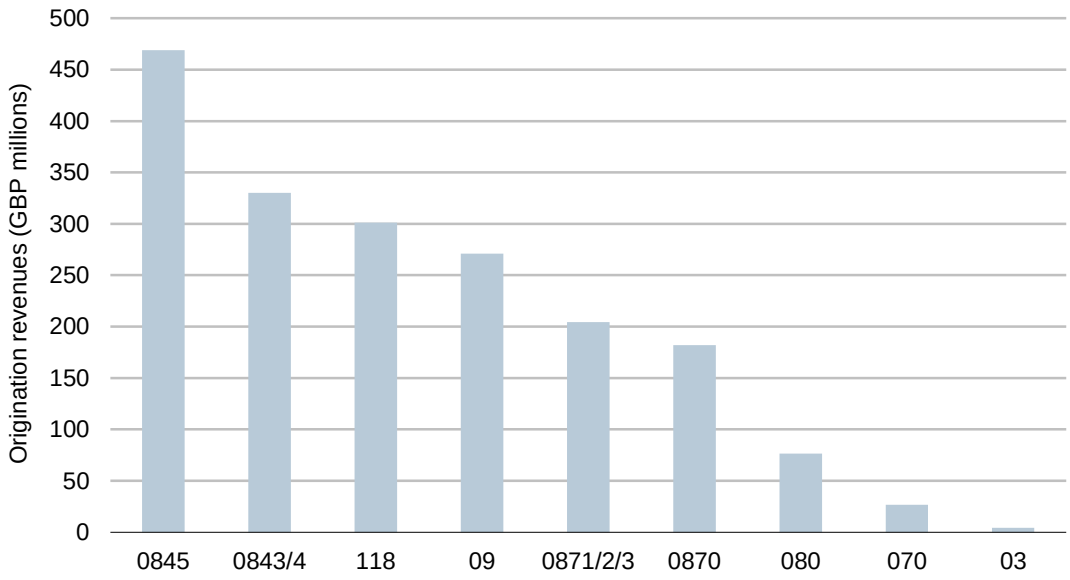

Figure 5.20: Breakdown of call revenues from non-geographic numbers by number range in 2009. [Source: Analysys Mason based on communications provider data]

5.2.2 Flow of revenues across individual non-geographic number ranges

In this section, we provide an illustration of the flow of revenues through the value chain for each individual number range in the same format as the flow diagram for the aggregate of all non-geographic number ranges in Figure 5.16 above.

03 – Calls at a geographic rate

As discussed above, the 03 number range does not at this stage generate significant volumes of traffic in the overall scheme of non-geographic numbers. Total revenues for 2009 were just GBP4.3 million, corresponding to a volume of around 223 million minutes. Revenue retention at each level of the value chain differs from the overall picture for non-geographic numbers. In particular, OCP retention is higher at 76% of retail revenues (compared to an overall average of 49%) and SP revenue retention is actually slightly negative, or in other words SPs make a net payment to TCPs for this number range. Overall retention for TCPs and transit CPs is similar to the average across all non-geographic number ranges.

We note that due to the small volumes and revenues involved, the responses to Ofcom's data request are likely to be less accurate than for other number ranges. For example, the rounding of revenue figures by individual communications providers may have a material effect on overall figures at some points of the value chain.

Figure 5.21 below shows the flow of revenues through the 03 number range.

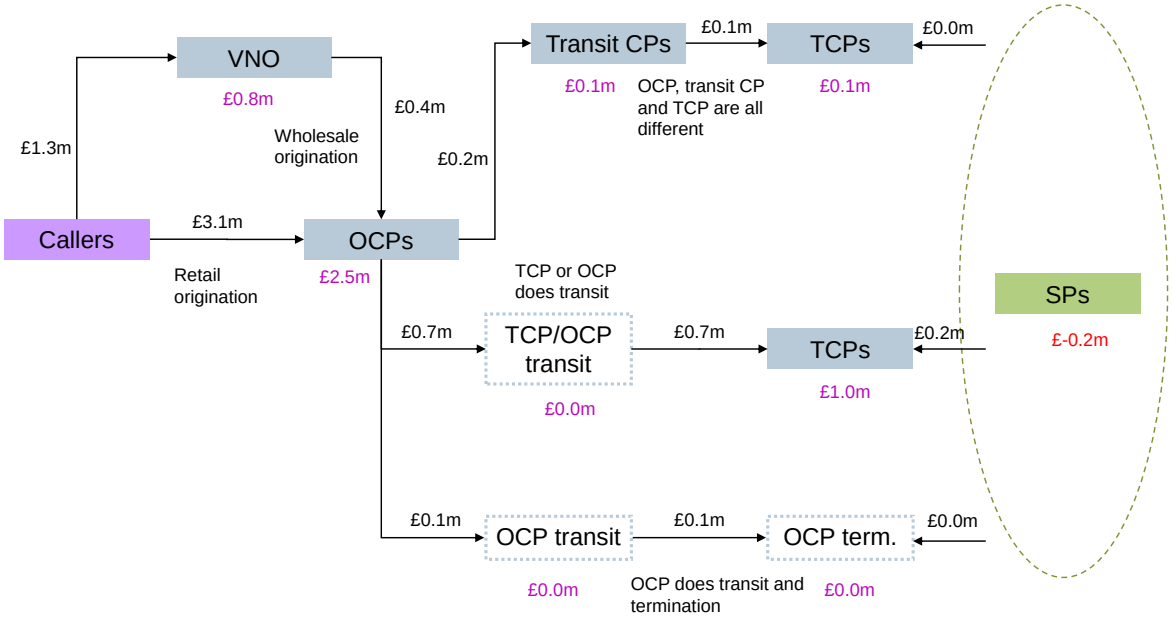

Figure 5.21: Flow of revenues across the 03 number range [Source: Analysys Mason based on communications provider data]

070 – Personal numbers

Volumes of calls to the 070 range are also extremely small with only around 59 million minutes of calls in 2009. This generated GBP26.5 million of retail revenues, of which GBP13.8 million (or 52%) were retained by SPs, a larger proportion than the 23% average across all number ranges.

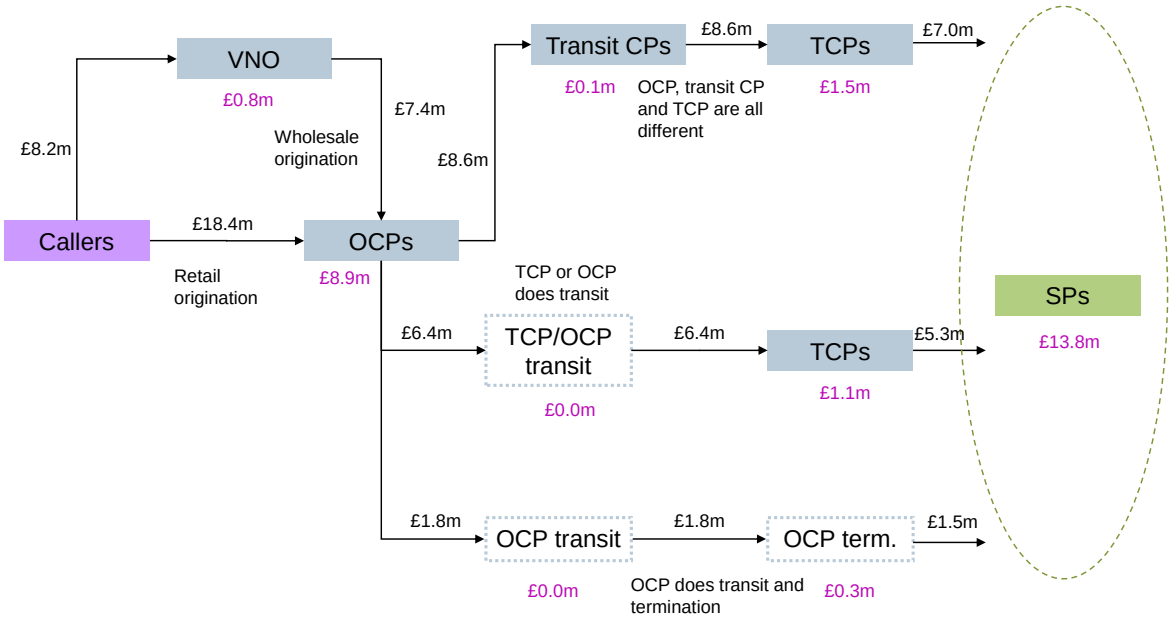

Figure 5.22: Flow of revenues across the 070 number range [Source: Analysys Mason based on communications provider data]

080 – Freephone services (except where there is a PCA)

As discussed in Section 5.1.2, 080 numbers represent the largest volume of calls of any non-geographic number range at around 11.2 billion minutes in 2009. However, since 080 calls are free to customers unless there is a PCA, these minutes generate only GBP76 million of revenue from customers, practically all from mobile operators.

Instead, the majority of revenue from the calls comes from SPs who paid a net total of GBP120 million to communications providers in 2009. TCPs retain GBP57 million (48%) of these revenues with the rest flowing to OCPs barring a retention of less than GBP2 million by transit providers. The flow of revenues for 080 numbers is shown in Figure 5.23 below. Note that the flow is right to left from SPs to OCPs for this number range.

Of the GBP137 million retained by OCPs, GBP78 million are retained by mobile operators. Thus mobile operators retain around 56% of the total OCP revenues for this number range for only 5% of the calls. In particular, the mobile operators receive revenue from both consumers and SPs for originating 080 calls, providing a total revenue of around 14.5p per minute for 080 origination.[19]

[19] Note that this analysis covers the period prior to the introduction of BT's ladder pricing scheme, which will reduce mobile OCP revenue retention and increase TCP revenue retention.

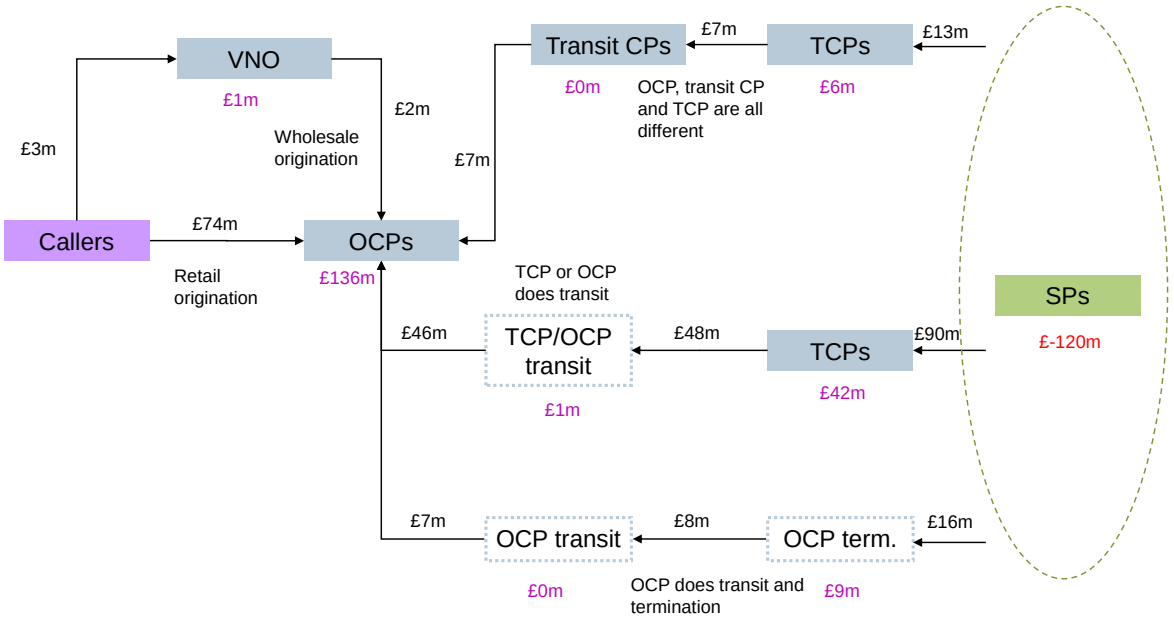

Figure 5.23: Flow of revenues across the 080 number range [Source: Analysys Mason based on communications provider data]

0843/4 – Special services (up to 5ppm for BT customers)

There were around 5.5 billion minutes of calls to 0843/4 numbers in 2009, accounting for around 18% of all calls to non-geographic number ranges. Similarly, the total revenue of GBP330 million was 18% of total non-geographic call revenues. Retention proportion at each level of the value chain is also similar to the aggregate level. Figure 5.24 below shows the flow of volumes for 0843/4 calls.

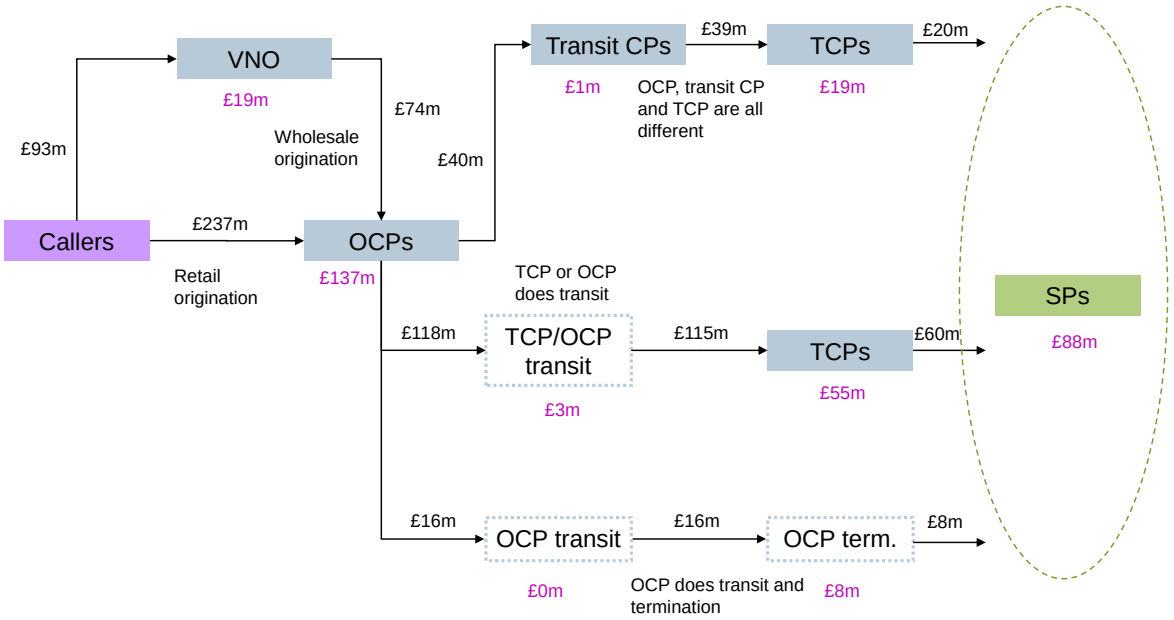

Figure 5.24: Flow of revenues across the 0843/4 number ranges [Source: Analysys Mason based on communications provider data]

0845 – Special services (charged at BT's local rate)

The 0845 number range is the second most called of all the non-geographic number ranges. A total of around 9 billion minutes of calls were made in 2009. These calls generated a total of GBP469 million minutes, the most from any non-geographic number range, as shown in Figure 5.25 below. It is notable that of this GBP469 million, only GBP16 million or 4% is retained by SPs. Whilst TCPs retain around 27%, the same as the average over all number ranges, OCPs retain 68% of the revenue for this number range. This compares to only 49% averaged over all ranges.

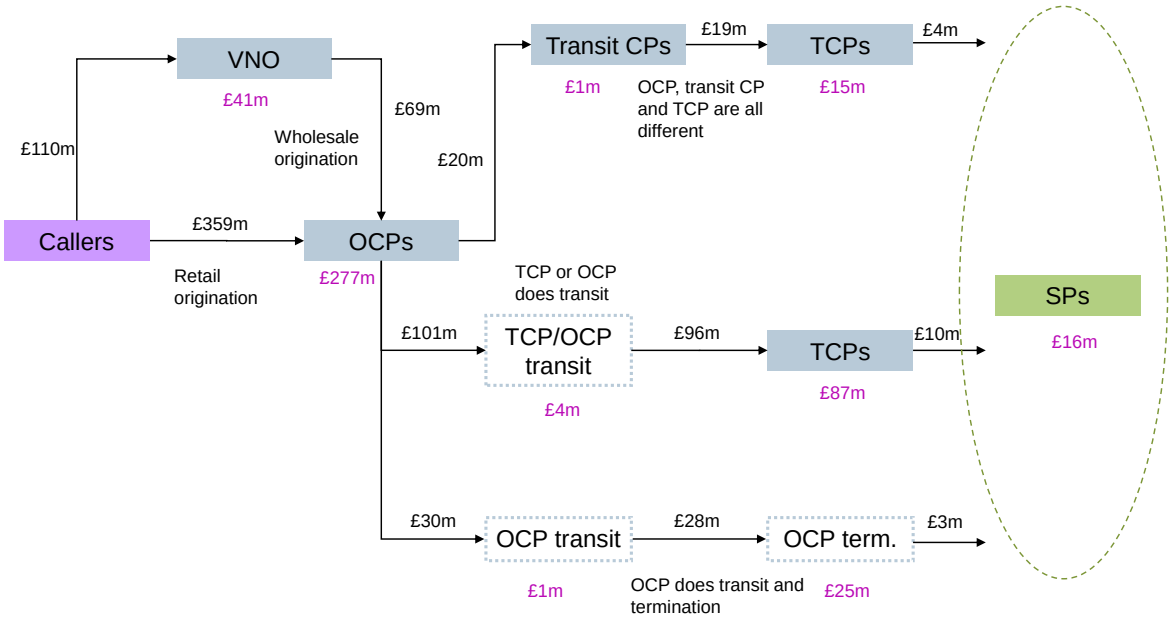

Figure 5.25: Flow of revenues across the 0845 number range [Source: Analysys Mason based on communications provider data]

0870 – Special services (charged at BT's national rate)

There were around 2.5 billion minutes of calls to 0870 numbers in 2009 and this generated GBP182 million of revenues. This is an average revenue per minute of around 7.3p per minute compared to 5.2p per minute for 0845 numbers. The pattern of revenue retention for 0870 numbers is very similar to that of 0845 numbers with SPs only retaining GBP21 million, or 12% of total revenues. Again, the difference from the average over all ranges is made mostly up by the OCPs, which retain 57% of revenues. The flow diagram for the 0870 range is shown in Figure 5.26 below.

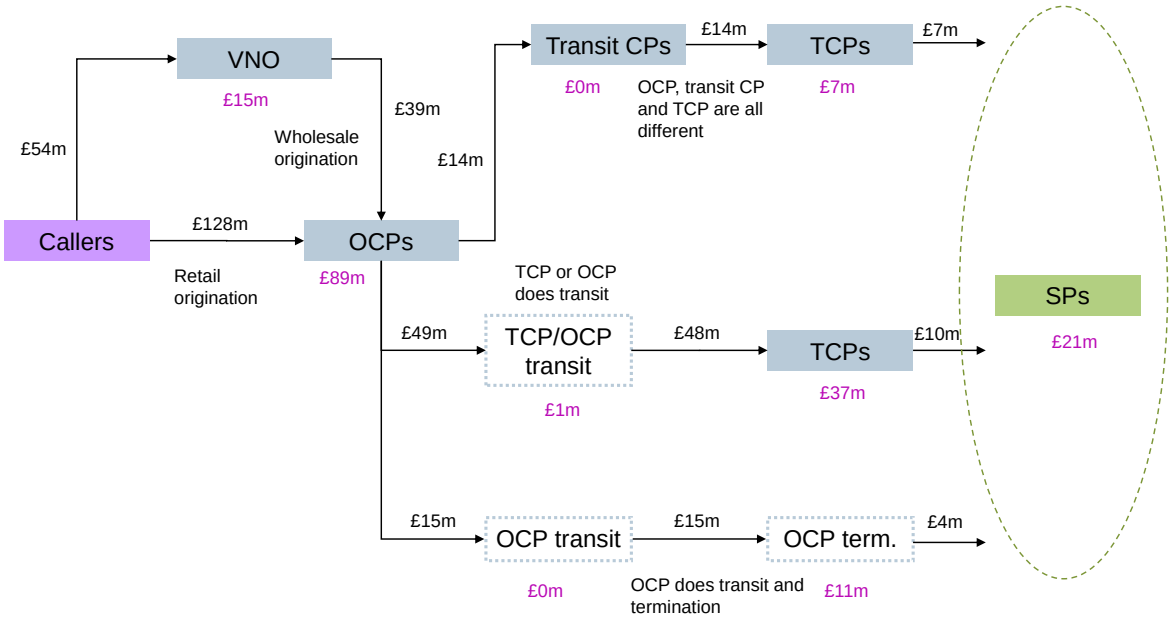

Figure 5.26: Flow of revenues across the 0870 number range [Source: Analysys Mason based on communications provider data]

0871/2/3 – Special services (up to 10ppm for BT customers)

The 0871/2/3 number ranges follow a very different pattern from 0845 and 0870, making them much more attractive to service providers looking to generate revenue through calls. From total revenues of GBP204 million (generated at an average of over 12.7p per minute from 1.6 billion minutes in 2009) SPs are able to retain GBP96 million. This corresponds to 47% of revenues in stark contrast to 0845 and 0870. Whilst Transit providers and TCPs retain a typical proportion of revenues, OCPs are only able to retain 22% of revenues for this number range. Figure 5.27 below shows the flow of revenues for 0871/2/3 number ranges.

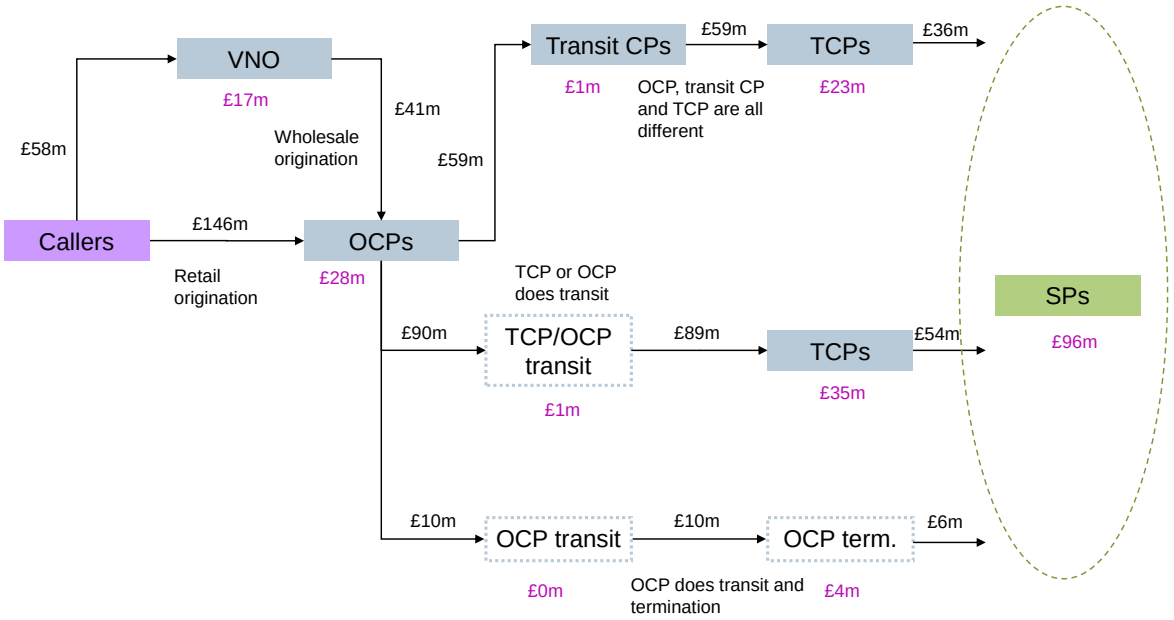

Figure 5.27: Flow of revenues across the 0871/2/3 number ranges [Source: Analysys Mason based on communications provider data]

09 – Premium-rate services

09 numbers are used for premium-rate calls and as such represent a relatively small proportion of non-geographic call volumes. In 2009, there were around 342 million minutes of calls modelled representing just over 1% of total non-geographic call volumes. However, these relatively modest call volumes accounted for GBP271 million of retail revenues: around 15% of the total for non-geographic numbers. As might be expected, SPs are able to generate a large amount of revenue from the 09 number range, totalling around GBP181 million or 67% of total market revenues. In contrast, OCPs and TCPs retain 27% and just 6% respectively. It should be noted that these low percentages do not necessarily imply low revenues. With an average of 79p per minute of revenue for an 09 call, TCPs are still receiving in excess of 4.6p per minute whilst OCPs can retain almost 21p per minute on average.

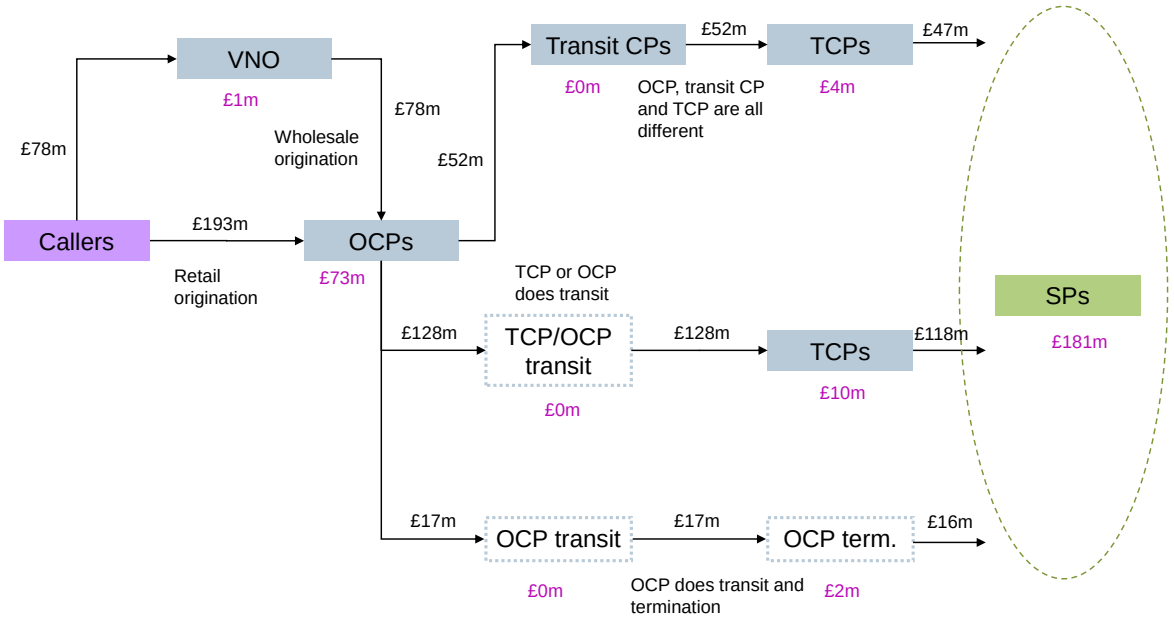

Figure 5.28: Flow of revenues across the 09 number range [Source: Analysys Mason based on communications provider data]

118 – Directory enquiries services

Like 09 numbers, 118 numbers represent only just over 1% of total non-geographic call volumes but around GBP301 million of revenues. SPs are again able to retain a large proportion of revenues at around 46%. However, with OCPs only retaining 20% of revenues this is not as large as might be expected with TCPs retaining an above average 34% of total revenues. Figure 5.29 below shows the flow of revenues for 118 numbers.

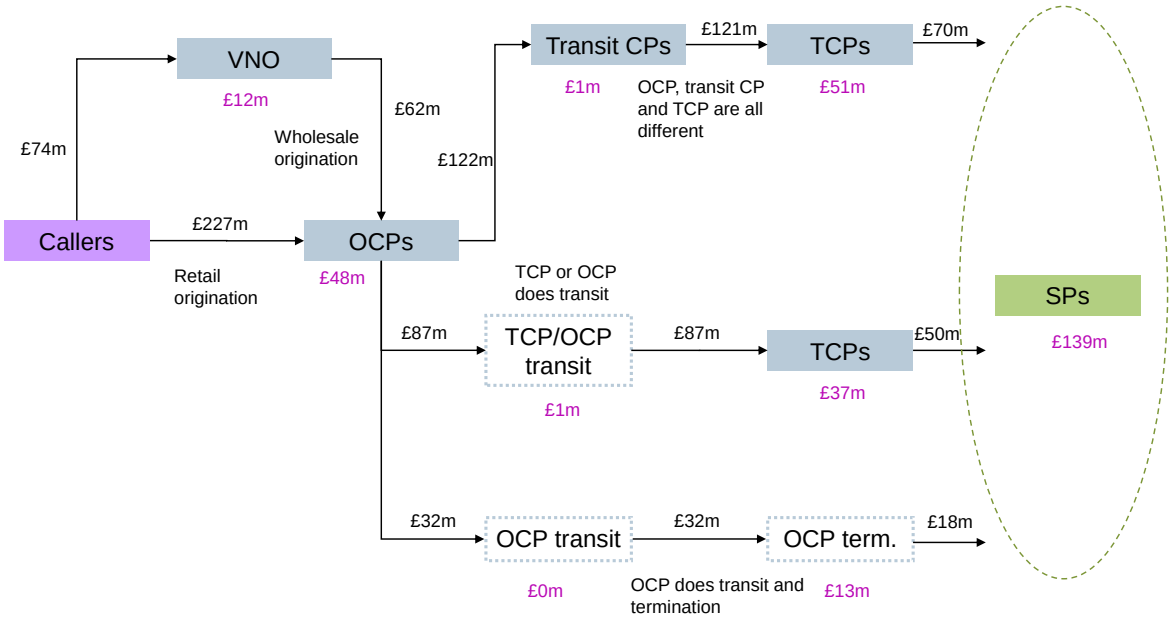

Figure 5.29: Flow of revenues across the 118 number range [Source: Analysys Mason based on communications provider data]

Summary

In general, we have observed relatively little variation in the proportion of revenue following each path in our flow diagrams versus the proportion of minutes traversing each path, implying relatively consistent transit and termination charges between providers.

The most interesting aspect of analysing the flow of revenues which our flow of volumes work did not reveal is the revenue retention by providers at each level of the value chain. In particular, we have observed that the share of total retail revenues retained by SPs varies substantially by number range, as shown in Figure 5.30 below. We exclude the 080 and 03 number ranges from our analysis because net SP retention is negative (i.e. SPs pay a net amount to communications providers for connecting calls).

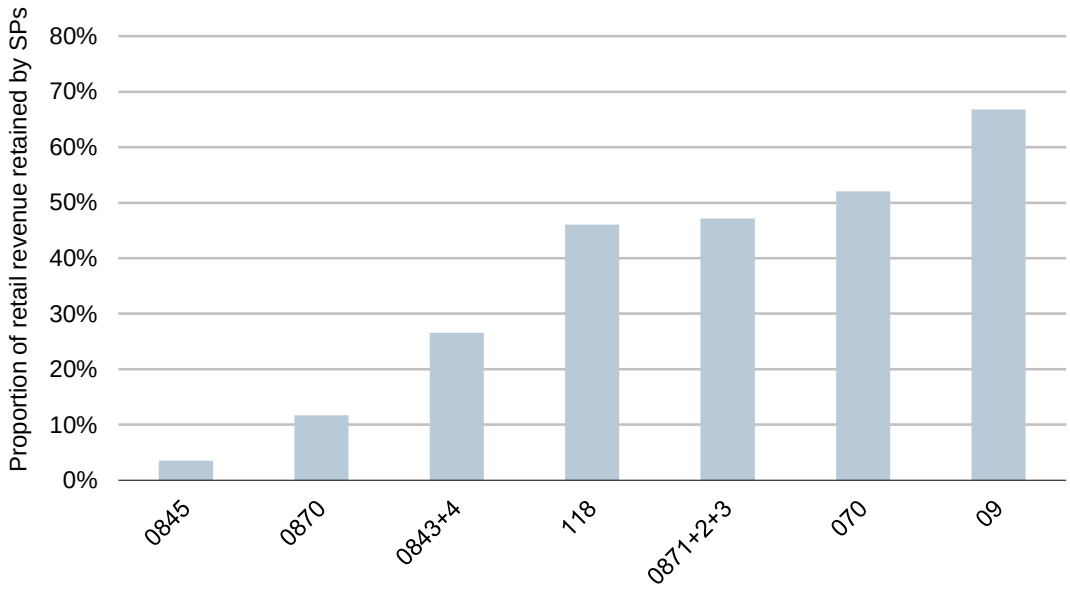

Figure 5.30: Proportion of retail revenue retained by SPs for each number range [Source: Analysys Mason based on communications provider data]

For the 0871/2/3 range, SP retention is 47% of total revenues. This range appears much more attractive to SPs wishing to generate revenue from calls than, for example, the 0845 and 0870 number ranges where retention is only around 4% and 12% respectively. As expected, SP retention is high for the premium-rate 09 number range and for 118 directory enquiries.

For 0870 calls prior to August 2009, termination rates were set at levels that supported some revenue share on 0870 calls. Following a dispute determination that came into effect on 1 August 2009, termination rates for 0870 calls were set at a comparable level to geographic termination rates.[20] As a result, from August 2009 there should be very little revenue share for SPs using this number range. The figures in this report relate to the whole of the calendar year 2009. They thus reflect an average between these two situations.

Another important aspect of our analysis focuses on revenue retention by OCPs. OCP retention varies greatly by number range but it is also clear that the retention varies substantially between fixed and mobile OCPs for a given number range, as shown in Figure 5.31 below, which shows per-minute retention of fixed and mobile OCPs.

20 http://stakeholders.ofcom.org.uk/binaries/consultations/resolve0870calls/statement/determination.pdf

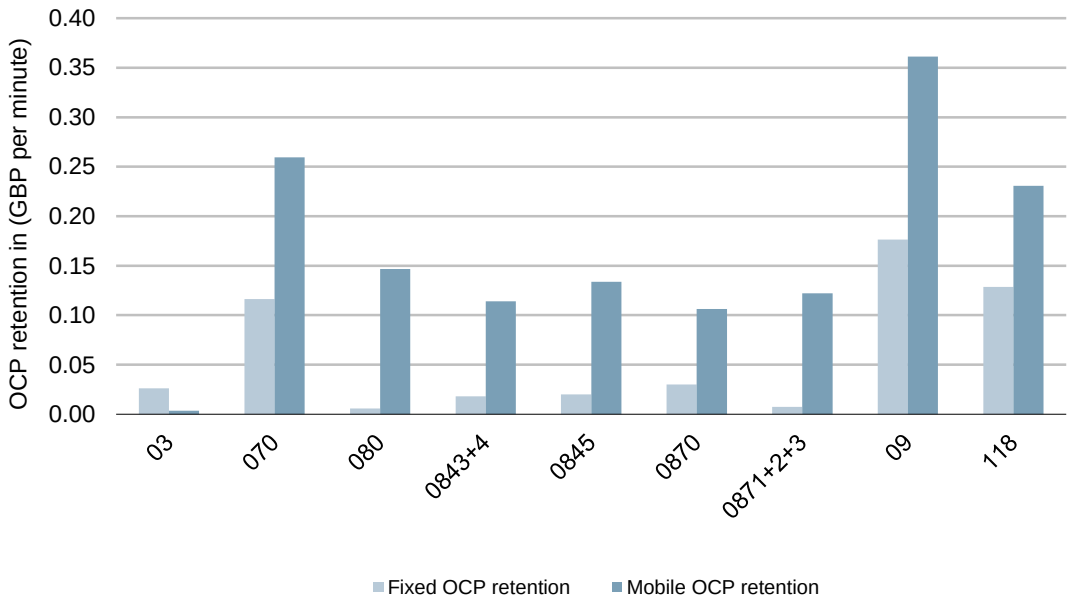

Figure 5.31: Per-minute revenue retained by fixed and mobile OCPs for each number range [Source: Analysys Mason based on communications provider data]

The differences observed between fixed and mobile operators are large in magnitude but are particularly exaggerated for the 080 range. In this case, the fixed OCP revenue comes almost entirely from SPs, whereas mobile operators are able to receive the small SP payment in addition to receiving large sums of revenue directly from consumers.

There is no significant retention by fixed OCPs for the 0871/2/3 number range. This is somewhat surprising as we would have expected some level of fixed OCP retention. However, this is a reflection of the data provided in response to Ofcom's data request where several fixed OCPs provided data implying a negative retention for this number range.

To consider these figures in the context of other call types, we estimate that revenue retention on UK geographic calls for fixed OCPs is of the order of 1ppm or slightly higher on average.[21] For calls to mobiles from a fixed line, we estimate that this figure could be as high as 7ppm. This implies that fixed OCP retention on most non-geographic number ranges is above the levels for UK geographic calls, but below the level of calls to mobiles (other than for premium rate or directory enquiries numbers). For mobile OCPs, we estimate that retention for calls to fixed lines and mobile numbers is between 5 and 10ppm on average. This is likely to be substantially below the revenue retention for calls to most of the non-geographic number ranges.

[21] Figures are derived by dividing total call revenues by total volumes of calls in 2009 based on Ofcom's quarterly market data and subtracting estimated average termination rates.

6 Data and assumptions

As described in Section 4.2, we have used data provided by communications providers in response to a data request sent by Ofcom. As noted above, the quality of the input data acquired through this data request naturally has an impact on our model. In Section 4.2, we noted several main limitations of our model in this regard. In this section, we describe problems with the data in more detail and outline the assumptions that we have taken to address these problems.

SP to TCP payments

We have received limited data from TCPs on revenue in-flows from SPs, in particular for the 080 range but possibly also for other number ranges. We have applied assumptions to some TCPs based on the responses of others.

Only BT was able to provide a full breakdown of payments received from SPs by number range. These revenues are generally small other than for the 080 range and have been applied on a per-minute basis to all other TCPs. For the 080 number range, several communications providers provided detailed responses showing net payments received from SPs. Where provided, these responses have been incorporated into our model. Where this data was not provided, BT's per-minute revenues have been assumed.

It is assumed for all number ranges other than 080 that TCP receipts from SPs are not passed on further up the value chain. For 080 numbers, the amount retained by each TCP, where not provided, is assumed to be the weighted average of the proportions of revenues from SPs retained by all TCPs providing responses.

Figures for calendar year 2009

Some communications providers have been unable to provide figures for the whole of the calendar year 2009 for volumes, revenues and/or costs. In these cases, we have scaled up the figures provided on a pro-rata basis to arrive at annual figures for 2009. In some cases, data provided has actually included data for 2010 but we do not generally consider this to be problematic.

Mobile operator payments to TCPs and Transit CPs

The one issue of note arising from not having full year 2009 data for all operators concerned mobile operators' payments to TCPs and Transit providers. BT introduced a ladder pricing scheme prior to the end of 2009 to differentiate termination charges to different OCPs depending on the retail price charged. Thus using only late 2009 or early 2010 data for mobile operator costs has the effect of distorting the termination costs paid over the whole of 2009.

Furthermore, to avoid the added complexity in interpreting our flow of funds model results, we have chosen to remove the effects of the ladder pricing scheme. We have used the average costs incurred by fixed OCPs for transit and termination (on a per-minute basis for each number range) and applied these costs to the mobile OCPs. As such, our model is effectively an annualised flow of funds for the first half of calendar year 2009. A similar analysis for the second half of 2009 would be likely to show higher termination costs incurred by the mobile operators (since retail prices for calling non-geographic numbers are generally higher from a mobile than from a fixed line).

BT's response to Ofcom's data request

BT has a very significant presence at each level of the value chain. As a result, whilst BT has provided a detailed response to Ofcom's data request, which has been of tremendous value to this study, there is a heavy reliance on BT's data in a number of areas. In some areas, we have had to make assumptions with regard to data provided by BT:

- BT's termination volumes for third-party OCPs for each number range are calculated by splitting out BT-originated traffic from non-BT originated traffic. Total reported termination revenues are weighted by the ratio of non-BT originated termination traffic to total termination traffic to calculate BT's termination revenue received from third-party communications providers.

- Net termination revenues (after deducting payments to SPs) for BT are calculated where not provided by BT by applying the market average ratio of net termination revenue to gross termination revenue for each individual number range.

Some further assumptions related to BT data are discussed in the *Allocation between number ranges* section below.

Allocation between number ranges

Some communications providers' systems have not been able to split revenues, costs and volumes between certain number ranges, requiring us to make allocation assumptions.

For example, BT provided wholesale figures which could not be fully allocated across each number range. For common volumes of minutes and revenues, we allocated across number ranges on the basis of the average split of volumes and revenues respectively across the whole retail market. The results were cross-checked against figures provided by other wholesale origination providers.

Similarly, any of BT's costs paid to third-party TCPs which were common across certain number ranges were allocated on the basis of the respective origination volumes weighted by the average per-minute termination rate for each number range across the whole termination market.

BT's net transit revenues (after deducting termination payments to third parties) are allocated between number ranges on the basis of the volumes of minutes in each number range transited by BT.

Transit volumes

C&W provided data indicating that it only sells transit services to third-party communications providers for the 118 number range. This was somewhat surprising to us, but we have used this data as provided.

Notional revenue retention

When more than one function in the value chain is performed by the same communications provider, we have assumed notional revenues for the purposes of illustrating the flow of revenues. For example, if a single communications provider offers transit and termination, then it is assumed to retain a small proportion of the gross revenue received at the transit level, in line with the proportion of net-to-gross revenues of transit providers more generally. In the case where a single operator carries out origination, transit and termination, a calculation of the notional retention at the termination level equivalent to the market average (per minute) rate for each individual number range is also carried out. The balance of revenue (which is retained by the integrated provider and not passed to the SP) is then considered to be retained at the origination level.

Treatment of Three

We have not been provided with a response to Ofcom's data request from Three. In order to draw more accurate conclusions on the significance of non-geographic number ranges to the mobile market as a whole, we have explicitly included Three in our flow of funds model. To do this, we have used the average of figures provided by O2, Orange, T-Mobile and Vodafone on a per-subscriber basis for call volumes, call revenues and interconnection costs for each number range. We have then applied these per-subscriber figures to Three's 2009 subscriber base to calculate the corresponding values for Three.

Assumptions regarding the remainder of the market

Ofcom's data request provided us with responses from OCPs accounting for the majority, but not the entirety, of the market for non-geographic calls. Similarly, we have not received data from the entire TCP market. This can lead to minor inconsistencies in the model outputs whereby, for example, the sum of OCP costs on a particular number range exceeds reported TCP gross revenues. In this example, we have added revenue into an "Other TCPs" category reflecting the TCPs that we have not included data from directly.

Conversely, we have examples where TCPs have provided data to show a higher volume of minutes being terminated than the sum of origination volumes from all OCPs. In this case, we have included the additional OCP volumes required for consistency in an "Other OCPs" category.

Bundled calls

In responding to Ofcom's data request, OCPs have provided volumes of retail originated calls retailed in and out of bundle for each number range. Where calls have originated in bundle, they do not generate incremental revenue for the OCP. It could be argued that some portion of the bundle revenue should be assigned to the non-geographic calls. However, we have elected to model on an incremental revenue basis and therefore do not consider any such notional retail revenues.

Origination revenues for VNOs

We have received data on wholesale origination volumes and revenues from various fixed and mobile network operators. However, we have received responses to Ofcom's data request from very few VNOs. As a result, to estimate the retail origination revenues from VNOs and VNO revenue retention we have assumed that the same average retail price per minute is charged as for network operators responding to the data request. We have calculated VNO revenue retention as the difference between this figure and the known wholesale origination revenues.

Incomplete data sets

We have received weak responses to numerous questions from some communications providers at each level of the value chain resulting in the need to make various important assumptions. In general, where data has not been provided we have derived estimates based on market averages.

Inconsistent data sets

We have tried to adopt a common sense approach to the modelling exercise where data is inconsistent. For example, one provider answered a question on how many minutes they originate and terminate with an answer greater than their total origination volumes. In this case, we have used the total origination volume as the amount which is also terminated.

Low level flows

The Ofcom data request was designed to understand flows of funds at a high level and therefore it is not possible to clearly identify which providers receive payments from which other providers at an individual communications provider level.