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Zero-rating practices in broadband markets

Report by

dot·econ


aetha

Oswell & Vahida

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E-mail: comp-publications@ec.europa.eu

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Zero-rating practices in broadband markets

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Prepared by:

DotEcon Ltd
17 Welbeck Street
London W1G 9XJ
www.dotecon.com

dot·econ

aetha

Oswell  Vahida

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Executive Summary

Zero-rating – the practice of excluding some traffic from overall data caps – has received a considerable amount of attention in the debate about net neutrality. Applying different charges depending on the type of traffic may be considered as incompatible with the principle of treating all data the same, and therefore with the net neutrality principle. However, others have pointed out the potential benefits associated with zero-rating, such as promoting broadband access and access to services through lowering costs and enabling product and price differentiation. European net neutrality rules permit zero-rating (under certain conditions), and data plans including zero-rated offers are available in most Member States, mostly in the mobile market. In this report, we present the results of research undertaken on current and historic zero-rated offers in Europe, including a survey of national regulatory and competition authorities.

As zero-rating is capable of affecting end users' inter-related choices of internet service provider and the content they access, it can have an impact on competition between internet service providers (ISPs) and content and application providers (CAPs). Based on the findings from our research, and on a review of the economic and legal literature on zero-rating, we also set out an initial framework for the competition assessment of zero-rating practices.

Zero-rating may affect choice of ISP and choice of content

At the most basic level, zero-rating will reduce the cost of accessing particular types of content via a particular ISP. Zero-rating affects the traffic-related cost of using a service. The effective discount offered by zero-rating depends on the importance of traffic-related costs relative to the total cost faced by the user for accessing the content. It should be expected to affect:

- the decision whether or not to obtain access;
- the choice of access provider; and
- the choice of content and the amount of data consumption overall.

The impact on user choice depends on several factors, including consumer patterns and the magnitude of the effective discount relative to the difference in value the user places on different types of services.

Though the actual impact that zero-rating has on user choices, and the factors that determine the magnitude of any such effect, are crucial for an assessment of the costs and benefits of zero-rating, there is little information about the strength of the different effects and their impact on market outcomes.

Zero-rating is more common in mobile markets, and is growing from an initially low level

Our research of zero-rating in Europe shows that the practice tends to be much more prominent in the case of mobile than fixed broadband services. In fact, we are only aware of one zero-rated offer by a fixed operator across Europe – BT zero-rating its BT TV service in the UK. This is simply because most fixed broadband plans are uncapped, which means that all traffic is effectively zero-rated, whilst mobile broadband plans typically have data caps.

Zero-rating in mobile markets is becoming more prevalent across Europe as well as the USA. There was little zero-rating prior to 2012, but it is now increasingly common, perhaps as a result of the greater clarity about permitted practices flowing from the Telecoms Single Market (TSM) regulations¹ and the BEREC guidelines on the implementation of net neutrality principles.²

The number of zero-rated offers varies significantly between European countries, and there does not appear to be any geographical or economic patterns in the use of zero-rating. Evidence from our detailed case studies partially supports the hypothesis that zero-rating should be more common in countries where data caps are tighter – the case study countries with the lowest data caps, Portugal and Bulgaria, both have a large number of zero-rated tariffs. However, there are also exceptions, such as Sweden, where mobile plans have very high data allowances, but we still find instances of zero-rated offers.

Social media, audio and video streaming are the applications most commonly zero-rated

The content categories that are most commonly zero-rated are social media, audio streaming, video streaming and communication (text). Data-light applications are more commonly zero-rated than data-intensive applications. In most content categories, there are more instances of zero-rating of third-party content than of operator-owned content, though this may simply reflect that there are fewer operator-owned applications in these categories.

Zero-rating practices vary substantially across countries, showing no clear pattern

The nature of the zero-rated offers differs dramatically between countries. In some countries, it is more common for mobile operators to zero-rate one or two specific services, such as Facebook (e.g. in Bulgaria and Germany), whilst in others mobile operators tend to zero-rate a wide range of services within a category (e.g. a group of audio streaming applications rather than

¹ Regulation (EU) 2015/2120 of the European Parliament and of the Council of 25 November 2015 laying down measures concerning open internet access and amending Directive 2002/22/EC on universal service and users' rights relating to electronic communications networks and services and Regulation (EU) No 531/2012 on roaming on public mobile communications networks within the Union, OJ L 310, 26.11.2015

² BEREC Guidelines on the Implementation by National Regulators of European Net Neutrality Rules, BoR (16) 127, August 2016

only Spotify, as in Portugal and Sweden). In most countries, zero-rated offers are bundled with mobile tariffs; whilst in some countries (e.g. Bulgaria) there are a large number of add-on zero-rated offers, where consumers can pay an additional fee for an incremental data allowance for particular applications. Mobile network operators (MNOs) practice zero-rating much more frequently than mobile virtual network operators (MVNOs), and multi-state MNOs vary in their propensity to zero-rate across the EU. For example, Telefónica zero-rates in all three of its European markets, although its zero-rated offers are different in each country. In contrast Telia practices very little zero-rating.

There appears to be little pattern in the extent to which major applications are zero-rated across markets. For example, Spotify is zero-rated in some of the case study countries but not others. Facebook-owned services are zero-rated in different combinations in different countries. For example in Germany only Facebook Zero and WhatsApp are zero-rated, whereas in Sweden Facebook, Facebook Messenger, Instagram and WhatsApp are all zero-rated. This suggests that either CAPs have little influence over whether their applications are zero-rated and the decision is instead made by the ISPs, or that CAPs do not take a multi-country approach to the applications they wish to be zero-rated.

In most but not all cases it is clear from the operator's website and/or terms and conditions whether an application is zero-rated. However, it is often not possible to ascertain what happens to the zero-rated application once a user exceeds the general data allowance (i.e. whether the application continues to be zero-rated or is rated, throttled, blocked, etc.), though non-discriminatory treatment of zero-rated and non-zero-rated traffic is a critical factor under the BEREC guidelines.³

There is little evidence of commercial arrangements between CAPs and ISPs, and there have been few complaints

We have found little evidence of exclusivity/commercial arrangements between ISPs and CAPs regarding zero-rating. Although some press reports have indicated that certain zero-rating deals were 'exclusive' (e.g. between Deutsche Telekom and Spotify in Germany), the exact nature of this exclusivity is unclear, and the operators we spoke to have told us that they do not have such exclusive arrangements. Where zero-rating is 'exclusive' to one operator, this is often because the application itself is exclusive to that operator or operator-owned (e.g. MobileTV is owned by Deutsche Telekom and is exclusive to Deutsche Telekom customers).

³ See paragraph 55 of the BEREC guidelines.,

Few regulatory authorities have received complaints regarding zero-rated offers. The complaints that were reported were typically informal.

Information about the market impact of zero-rating is extremely limited, but one might reasonably assume that the zero-rating of data-light applications (for example social media and messaging applications) in high-data-allowance markets such as Sweden is unlikely to affect the choice of either ISP or CAP, though in low-data-allowance markets there may be more of an impact (e.g. Bulgaria). One might equally expect the single zero-rated video streaming offer in Germany (Deutsche Telekom's MobileTV) to have a larger impact than the numerous video streaming zero-rated offers found in Portugal.

Economic and legal literature sees zero-rating predominantly in the context of net neutrality rather than as a competition issue, though the impact on competition is crucial for the assessment of costs and benefits

The economic and legal literature on zero-rating consists largely of regulatory advocacy submissions relating to legislative initiatives in the US and EU, which are likely to be biased and need to be interpreted with some caution. Scholarly articles generally tend to assess zero-rating as a net neutrality issue rather than a potential competition law concern, and this is reflected in the case law. Thus, in the case of both the Netherlands and Slovenia, the only two EU countries with reported decisions⁴ against zero-rating (one of which – in Slovenia – was subsequently overturned), the prohibition was based exclusively on the national telecommunications law's net neutrality obligations. In the case of Slovenia, in particular, the national competition authority had actually expressed its (legally non-binding) reservations against the prohibition, from an antitrust perspective.⁵

However, much of the literature recognises that the effects of zero-rating arise from its impact on competition amongst ISPs and content providers, and therefore antitrust authorities may need to address zero-rating practices.

⁴ We note that the NMHH in Hungary has recently ordered Magyar Telekom to cease zero-rating selected video services for its mobile users, but have not seen further details on this case. The NMHH is reported to have made this order under the net neutrality rules. (see <https://www.telegeography.com/products/commsupdate/articles/2016/12/06/hungarian-regulator-hits-telekom-with-net-neutrality-ruling>).

The recent decision issued by PTS in Sweden requiring Telia to cease providing its zero-rated offers is based on the fact that zero-rated services and other services are treated differently once the user reaches its data cap, which is in violation of the net neutrality rules (see <http://www.pts.se/sv/Nyheter/Internet/2017/PTS-forelagger-Telia-att-behandla-internettrafik-likvardigt/>).

⁵ For more details, see Annex B, sections B.5 and B.6.

Co-existence of net neutrality regulation and competition assessments needs to be taken into account

Such assessments will take place in parallel to the regulatory constraints on zero-rating practices that arise from net neutrality regulation. In accordance with the BEREC guidelines, all zero-rating arrangements will have to provide for equal treatment of zero-rated traffic and non-zero-rated traffic once a data cap has been reached. In order to minimise the impact on end user choice, they are perhaps also more likely to include a range of services rather than apply to a single service.

The platform function of the ISP matters when assessing zero-rating practices

When assessing zero-rating practices it is important to recognise that ISPs provide a platform that allows users and content providers to interact, and that demand for internet access is derived from demand for applications. This should imply that ISPs will have to take account of the impact that their zero-rating strategy has on the value that their subscribers obtain from signing up. Zero-rating reduces the data-related cost of accessing the content covered by the practice, (which under a data cap will reflect the value of displaced content at the margin). The total cost of accessing content includes any direct costs charged by the content provider (and/or by the ISPs on the content provider's behalf, as in the case of subscriptions to music streaming services bundled with internet access) and the cost of traffic (either direct charges or the shadow price of traffic measured by the value of displaced content). There is little, if any evidence on the share of the overall costs of accessing content that is affected by zero-rating, and the importance of cost differences on consumer choice, which depends very much on the nature of the zero-rated content and on consumers' awareness of the actual data consumption of each specific applications.

The fact that ISPs generally have an incentive to reduce the cost of access to content that prospective subscribers value highly appears to be ignored by those who claim that zero-rating interferes with content competing on its merits, as ISPs rather than end users pick winners. Similarly, claims that zero-rating has a strong impact on content choice ignore that cost differences need to be compared with value differences, and that it is not obvious that content that would otherwise be unattractive could succeed over more attractive content because it is being zero-rated by ISPs. Rather, ISPs that decide to zero-rate non-attractive content should be expected not to gain many subscribers (and they might in fact lose customers to other ISPs that zero-rate more attractive content).

This would suggest that zero-rating may have a greater impact on the choice of content that has very similar characteristics (and therefore similar value for the user), and in cases where there are no direct costs. However, even in these cases it will have to be carefully assessed whether this impact should be of concern from a competition perspective.

Competition concerns about zero-rating would seem to be limited to cases where ISPs or content providers enjoy market power, and there is some form of exclusivity

Overall, competition concerns about zero-rating may arise when there is reason to believe that competition amongst ISPs or amongst content providers is ineffective. In this case zero-rating might be considered to have potential exploitative or foreclosure effects. Foreclosure effects could stem from some form of exclusivity, either as a result of an agreement between the ISP and the content provider, or because the ISP is also the content owner.

Arrangements under which the ISP enjoys exclusivity in terms of zero-rating access to particular content would seem to be difficult to put in place for content that is available over the general internet, and in particular content that is free at the point of use. Zero-rating access to particular applications that are available on the open internet is easily replicable and does not require any consent from the content provider. This means that any advantage that the ISP might enjoy would be limited to being able to use the content provider's trademark or brand in its marketing. In relation to paid-for content, the ISP might also be able to offer preferential terms for access to its customers, passing on any preferential terms obtained through an exclusive agreement with the content provider.⁶ Operator-owned content is different in the sense that it may be available exclusively to the customers of a particular ISP, and that even where it is available to all potential customers competing ISPs could zero-rate access, but would not reap the same benefits from doing so as the content owner.

Arrangements under which an ISP guarantees exclusivity to a content provider (e.g. an arrangement under which the ISP undertakes not to zero-rate access to other services) would seem to require that content providers possess substantive market power and use it to foreclose competitors by imposing requirements on ISPs that potentially run against the ISPs' interests. If such a strategy were to be used to discourage users from accessing competing applications, it would have to cover a sufficiently large number of end users, which in turn would seem to require similar exclusive arrangements with a number of ISPs. Our research has not found a situation in which all operators zero-rate only the same particular application(s), nor have we found any evidence for arrangements that would give exclusivity to a certain ISP or a specific content provider. Therefore these concerns may – at least at present, and on the basis of the limited evidence available – be of limited relevance in practice.

In summary, and acknowledging that information on the effective impact of zero-rating practices on the market is very limited, there

⁶ It is worth noting that such preferential or exclusive access to particular types of content could cause competition concerns, regardless of whether it is combined with zero-rating.

appears to be little reason to believe that zero-rating gives rise to competition concerns. Detrimental effects from zero-rating would typically require there to be market power at some level, or an agreement or concerted practice that creates a network of agreements, and competitors being unable to replicate the underlying arrangement. Replicability may be more difficult in the case of operator-owned content⁷, which may become more prevalent as a result of mergers between broadband providers and application providers. In this case zero-rating may be used as a discriminatory tool.

⁷ Note, however, that rather than being delivered over an internet access service, operator-owned content may be offered as a 'specialised service' as defined in the BEREC guidelines, i.e. as a services optimised for specific content, applications or services where optimisation is necessary to meet the service requirements (referencing Article 3(5) of the TSM regulations). In this case, the service would not be subject to data caps that may apply to the internet access services, and the issue of zero-rating would not arise.

1 Introduction

This study has been conducted by DotEcon, Aetha Consulting and Oswell and Vahida on behalf of the European Commission, DG Competition. The objectives of the study are

- to understand the extent and nature of zero-rating practices across Europe;
- review the available economic and legal literature regarding zero-rating, focusing on the potential benefits and competition effects of zero-rating; and
- develop an initial framework for the assessment of zero-rating practices on competition and efficiency.

Net neutrality regulation in Europe (specifically the Telecoms Single Market (TSM) regulation⁸ in combination with the BEREC Guidelines on the Implementation by National Regulators of European Net Neutrality Rules⁹) permits zero-rating (under certain conditions). Therefore, these regulatory constraints impose a first screen and potentially affect the type of zero-rating practices in the market place. Competition law runs in parallel with these regulations and competition authorities can assess zero-rating practices under competition law. The competition aspects rather than net neutrality principles are the focus of this study.

What is zero-rating?

Zero-rating is a practice that exempts internet traffic generated through certain applications or access to certain websites from usage charges. By definition zero-rating implies the presence of usage-based pricing with direct charges, or data caps, where using up data has an opportunity cost (determined by the value of the content that is displaced when the overall limit is exhausted).¹⁰ Consequently the marginal data cost associated with using applications or accessing content covered by zero-rating is zero. All

⁸ Regulation (EU) 2015/2120 of the European Parliament and of the Council of 25 November 2015 laying down measures concerning open internet access and amending Directive 2002/22/EC on universal service and users' rights relating to electronic communications networks and services and Regulation (EU) No 531/2012 on roaming on public mobile communications networks within the Union, OJ L 310, 26.11.2015

⁹ BEREC Guidelines on the Implementation by National Regulators of European Net Neutrality Rules, BoR (16) 127, August 2016

¹⁰ In exceptional cases, zero-rating refers to allowing users to access content without having subscribed to a data plan at all (i.e. where the user cannot access any content other than the zero-rated one). For example, Internet.org allowed users to access selected services without a data subscription, so the only requirement was for the user to have an active SIM card and a compatible phone.

other things being equal, the effective discount obtained through zero-rating depends on:

- what happens when the data cap is reached – whether the content is blocked, throttled or incurs extra charges; and
- the value that users place on non-zero-rated content that would be replaced or degraded under their current data caps.

The effective discount on the cost of accessing content that follows from zero-rating should be expected to affect:

- the decision whether or not to obtain access;
- the choice of access provider; and
- the choice of content and the amount of data consumption overall.

It is therefore clear that zero-rating, irrespective of how the practice is to be assessed from a net neutrality perspective, is capable of affecting competition amongst ISPs and CAPs.

Assessing the strength of these effects is however far from straightforward. Effective discounts need to be considered relative to the difference in the value that users place on different content, and data-related costs may often only account for a proportion of the total cost faced by the user. There are cases where ISPs offer service bundles that include access to otherwise paid-for content (e.g. a promotional offer giving a limited period of free access to the premium version of Spotify) or where the subscription is included in the ISP's plan, who then zero-rate traffic generated in the course of accessing that content. Such bundling – which is not relevant for net neutrality considerations¹¹ – may have competition effects that go beyond any impact that zero-rating may have.

Types of zero-rating models

Zero-rating is a relatively new practice. There was limited zero-rating in Europe prior to 2012, but it is now becoming increasingly common. This is perhaps as a result of the greater clarity about permitted practices flowing from TSM regulation and the BEREC Guidelines, which were published in their final form in August 2016.¹²

¹¹ The BEREC guidelines (at paragraph 36) explicitly state that “[w]here the traffic associated with this application is not subject to any preferential traffic management practice, and is not priced differently than the transmission of the rest of the traffic, such commercial practices are deemed not to limit the exercise of the end-users’ rights granted under Article 3(1)” of the TSM regulations, i.e. do not raise net neutrality concerns.

¹² BEREC Guidelines on the Implementation by National Regulators of European Net Neutrality Rules, BoR (16) 127, August 2016

Zero-rating models can be implemented in a number of ways, and both ISPs and CAPs are experimenting with new ways to attract users. Zero-rated offers differ substantially in terms of the type of content that is zero-rated, whether the zero-rating applies to individual or groups of applications and the extent to which customers can choose which applications are zero-rated.

In general terms, it is worth emphasising that the models of zero-rating we have found in our review of practices across Europe differ from those discussed in the literature. For example, Carrillo (2016) defines four different models of zero-rating practices, namely:

- single-site or service zero-rating, where a CAP contracts with one or more ISPs to provide users with free access to a version of its particular site or service free of charge;
- sponsored data, where CAPs contract with and pay a telecom service provider to offer a range of information or services to users at no cost to them (e.g. T-Mobile's Music Freedom);
- compound zero-rating, where a sponsoring company (or companies) partners with an ISP to grant subscribers access to a bundle of selected sites and services with ISPs potentially foregoing fees in exchange for enhanced offerings to their customers; and
- false (or non-selective) zero-rating, where a CAP partners with one or more ISPs to offer limited amounts of free data to users in exchange for meeting certain conditions, such as viewing an advertisement or downloading an application.

Our research has shown that zero-rating typically applies across 'families' of tariffs rather than single tariffs, and may involve the bundling of subscriptions to particular applications or services whose data consumption is then zero-rated. Zero-rating options may also be available as 'add-ons' to particular tariffs (see Section 2.1.1 for more detail). The most common approach is zero-rating of one or more services, driven by the ISP and without any clear evidence of contractual arrangements or explicit compensation by the CAP.

As limits on data allowances are more common for mobile than for fixed broadband packages¹³, most instances of zero-rating can be found in the context of mobile broadband plans. Nevertheless, this study covers both fixed and mobile markets.

¹³ This is said to be because in mobile networks capacity is shared even at the level of individual access and an explosion in data traffic has resulted in spectrum constraints (e.g. Brake, 2016 or Saenz, 2016; for a more critical view see Odlyzko et al. 2012).

Limitations of the study

The research conducted during the study, on which the competition analysis is based, has largely come from publicly available sources. Where possible we have supplemented this information with interviews with operators and CAPs. This has resulted in an extensive overview of zero-rated offers across Europe. However, certain details of zero-rated offers, especially those that are commercially sensitive, such as the arrangements between ISPs and CAPs, are generally not available.

Equally, the impact of zero-rating on user behaviour would seem to be important for the assessment of zero-rating practices – both in terms of potential costs and benefits – but again there is little reliable evidence on the strength of these impacts.

Structure of this report

The remainder of this paper is structured as follows:

- in Section 2 we summarise the results from the research programme into zero-rating practices across Europe
- in Section 3 we include in-depth case studies regarding zero-rating practices in five selected European countries and one non-European country (USA)
- in Section 4 we summarise the key findings from the research programme and our six case studies
- in Section 5 we provide an overview of the economic and legal literature in light of our research programme into zero-rating practices
- in Section 6 we provide the initial framework for competition assessment.

Annex A contains summaries of the main economic and legal papers reviewed, Annex B gives a brief overview of the national laws and the relevant cases for a number of jurisdictions and Annex C provides a full reference list for the papers reviewed during the course of the study.

2 Research into zero-rating practices in Europe

This section summarises our detailed research regarding zero-rated offers across the EU and selected other countries. A deeper level of analysis for a smaller number of case study countries is provided in Section 3.

Scope

The geographical scope of the research comprised the ‘Europe 37’ countries, including all 28 EU Member States as well as selected EU candidates, potential candidates, single market members and other European countries. The USA has also been researched as a non-European example country, which can be compared to the Europe 37. The countries studied are listed below.

Figure 1: Countries studied during the research process

Countries studied			
Europe 37	<i>EU Member States</i>	Austria	Italy
		Belgium	Latvia
		Bulgaria	Lithuania
		Croatia	Luxembourg
		Cyprus	Malta
		Czech Republic	Netherlands
		Denmark	Poland
		Estonia	Portugal
		Finland	Romania
		France	Slovakia
		Germany	Slovenia
		Greece	Spain
		Hungary	Sweden
		Ireland	United Kingdom
			<i>Single market countries</i>
	<i>EU (potential) candidate countries</i>	Albania	Montenegro
		Bosnia and Herzegovina	Macedonia
			Serbia
	<i>Non-EU countries</i>	Moldova	Ukraine
Non-European		USA	

For each researched zero-rated offer, we have gathered (where possible) information on:

- the type of content being zero-rated (video streaming, social media etc.)

- the ownership of the content being zero-rated (operator-owned- or third-party-owned)
- details of the data plan to which the zero-rated offer applies, including what happens when a data allowance limit is reached (blocking, throttling etc.)
- the type of agreement between CAPs and ISPs, including details of any exclusivity involved.

For the purposes of this research, some zero-rating practices were excluded:

- where an operator's help site or online store is zero-rated – as these sites are necessary for consumers to purchase further data packages or to gain technical support.
- the zero-rating of charities' websites – we have instead focused on commercial zero-rating practices.

Zero-rating practices are relatively new and fast-changing in their presentation and application. Notably, since the publication of BEREC's Guidelines, a number of new zero-rated offers have appeared across Europe. Therefore, it is important to note that the results of our research should be viewed as a snapshot into the zero-rating situation in these markets at the time of the research (September 2016).

Approach

We have used three distinct research approaches in order to generate a comprehensive view of zero-rating practices.

Desk research has been used as the primary tool to compile details of zero-rating practices across the 38 countries researched. This has primarily involved visiting the websites of operators in each country studied, locating any zero-rated offers and recording the relevant information. We have also conducted press searches to garner additional information on zero-rated offers.

This has been supplemented by two further means:

- Firstly, on 8 September 2016, we sent questionnaires to the National Regulatory Authorities (NRAs) and National Competition Authorities (NCAs) of each EU Member State. The questionnaires were aimed at filling in any gaps in our research. The questionnaires also aimed to give us an understanding of the extent to which authorities have received complaints about zero-rating practices for competition (or other) reasons. Details of the findings of the questionnaires are provided in Section 2.2.
- Secondly, we have also carried out telephone interviews with some operators that have operations in the case study countries. These interviews included a group function from one multi-state operator, one UK operator, one Portuguese operator and one German operator. We have also spoken to a CAP whose applications are zero-rated in a number of European countries. These interviews were aimed again at

filling in any gaps in our initial research, particularly with focus to difficult-to-research issues such as exclusivity. Information provided from these interviews has been incorporated into our results. In addition, we have separately provided the Commission with a copy of the notes taken from each interview.

It is important to note that while we have endeavoured to be as thorough as possible in our research, it is difficult to be exhaustive or to guarantee complete accuracy. In some instances, for example, the information provided in operators' terms and conditions regarding zero-rated offers is unclear or ambiguous. In our case studies we have noted where this is the case.

Output

Our research generated two main outputs, namely:

- a list of zero-rated offers available; and
- more in-depth case studies of particular countries.

List of zero-rated offers

For mobile markets, we have gathered information on:

- European current zero-rated offers, for all 37 European countries researched
- European historic zero-rated offers, for the five case study countries plus selected others (Denmark, Poland, Romania, Spain)
- US combined current and historic offers.

For fixed markets, we have adopted a different approach to collating the data given that there are very few instances of countries with data usage limits, and even fewer instances of fixed zero-rated offers. We have therefore collected data on the size of fixed data allowances, where they exist, and detailed the few zero-rated offers found within the case studies. A summary of the findings from this research is provided in Section 2.1 below.

Case studies

The objective of carrying out case studies was to conduct a more in-depth investigation into zero-rating practices within five EU Member States, as well as one non-EU country. This level of detail was not possible for all 38 countries researched. In particular, the case studies have enabled us to research how zero-rating practices have evolved over the previous five years.

The case study countries – chosen to demonstrate the range of zero-rating practices across Europe – are Bulgaria, Germany, Portugal, Sweden, the UK and the USA. The detailed case studies are provided in Section 3.

2.1 Summary of results on current zero-rated offers

In this section we present the results of our research into current zero-rated offers in the 37 European countries studied. Results of our research in the USA are presented in Section 3.6.

2.1.1 Types of zero-rated offers

During the course of our research, it has become clear that ‘families’ of tariffs, all of which have some zero-rated offer attached, are significantly more common than individual tariffs with some zero-rated element. We have therefore conducted our analysis based on groups of tariffs.

Our research has shown that zero-rating practices can generally be divided into three main categories:

- ‘Bundled Free’ – The customer is offered zero-rating of applications that are generally free to access, with the charges for data usage bundled into a tariff; this includes cases where a subscription-only application is exempted from data charges, but the application’s subscription is not bundled into the tariff
- ‘Bundled Subscription’ – The customer is offered zero-rating of applications for which a subscription is typically required, with the subscription and data charges both bundled into a tariff
- ‘Add-on’ – For an additional fee, the customer is given the option of zero-rating certain applications;

In certain countries, notably Bulgaria, we have found a variant of the last category where operators offer add-ons that provide finite data packages. Strictly speaking, these offers are not a pure form of zero-rating, as there is a clear incremental cost for finite data packages. However, this appears an innovative approach and given that the incremental data can only be used for specific services, analysis of these ‘zero-rated’ add-ons is included within this report.

These zero-rating practices are all found in the mobile market in reasonable quantities. In the fixed market, however, possibly due to the very low number of zero-rated services, we have primarily found zero-rated offers of the ‘Bundled Free’ and ‘Bundled Subscription’ types, with no offers in the ‘Add-on’ format.

2.1.2 Zero-rating in mobile markets

In this section we present the results of our research into current zero-rating practices in mobile markets.

Prevalence and nature of data allowances

Limited data allowances are very common in mobile data plans across Europe, with some countries having no unlimited plans. We have collated tariff plans from the MNOs in each of our five case study countries to provide a cross-section of the sizes of data allowances available across Europe, shown below in Figure 2.¹⁴

Figure 2: Breakdown plans by data allowances, averaged across the five case study countries



The largest proportion of data allowances (21%) are for less than or equal to 500MB, with 58% of data allowances less than or equal to 4GB. The median data allowance is 3GB and the mean is 7.9GB. The mean data allowance of 3GB is equivalent to 500 hours of browsing social media websites, or 30 hours of video streaming.¹⁵ It should be noted that this represents the mean of the tariffs available, not weighted by the up-take of these tariffs by customers. Therefore, this metric should be viewed as a rough proxy for the mean data allowance across subscriptions.

It is also worth noting that this cross-section of 128 plans only contains 4 unlimited plans.

Prevalence of zero-rating across markets

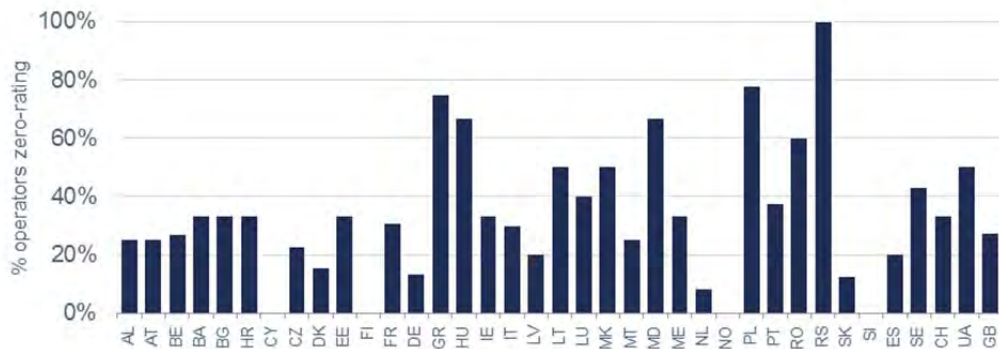
There does not appear to be any geographical or economic pattern in the use of zero-rating by market. Rather, zero-rating practices

¹⁴The figures shown are averages of the breakdown for each case study country. It is thus not unfairly weighted in favour of countries with a larger absolute number of tariffs.

¹⁵ AT&T Data Calculator. Available at: <https://www.att.com/att/datacalculator/> [Accessed 3 October 2016].

largely occur in country-specific contexts, as shown in Figure 3 below:

Figure 3: Proportion of operators zero-rating by country (including all MNOs and major MVNOs)¹⁶



Some countries have no zero-rating practices as a result of regulation or legislation, including for example Norway. However, there is a small number of other countries, such as Estonia and Finland, where zero-rating is permitted but not practiced by any operators.

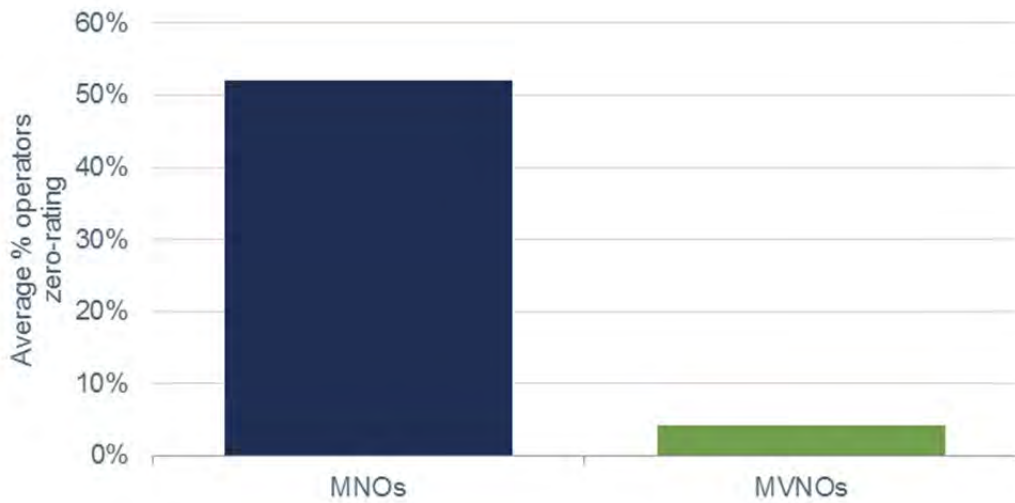
The countries where zero-rating by operators is most prevalent are Serbia (100% of operators), Poland (78%) and Greece (75%). While these all have GDP per capita lower than the EU average, the high proportion of operators zero-rating appears to be a function of specific circumstances in these markets.

Prevalence of zero-rating across operators

Mobile virtual network operators (MVNOs) practice zero-rating far less frequently than mobile network operators (MNOs), as illustrated below in Figure 4:

¹⁶ The proportion of operators zero-rating has been calculated by taking the number of operators that offer at least one product including zero-rating, and dividing this number by the total number of operators in the country. Other metrics may be possible, subject to the availability of data in the public domain – for example weighting by the number of customers to each operator or to zero-rated offers.

Figure 4: Proportion of MNOs and MVNOs zero-rating across the Europe 37¹⁷



On average across all 37 countries, the proportion of MNOs zero-rating is 52%, whereas the proportion of MVNOs zero-rating is 4%. We can break down this difference in behaviour by country, as displayed in Figure 5 below:

Figure 5: Proportion of MNOs and MVNOs zero-rating by country¹⁸



As illustrated above, either among MNOs or MVNOs, there are again no apparent geographical or economic patterns in zero-rating activity.

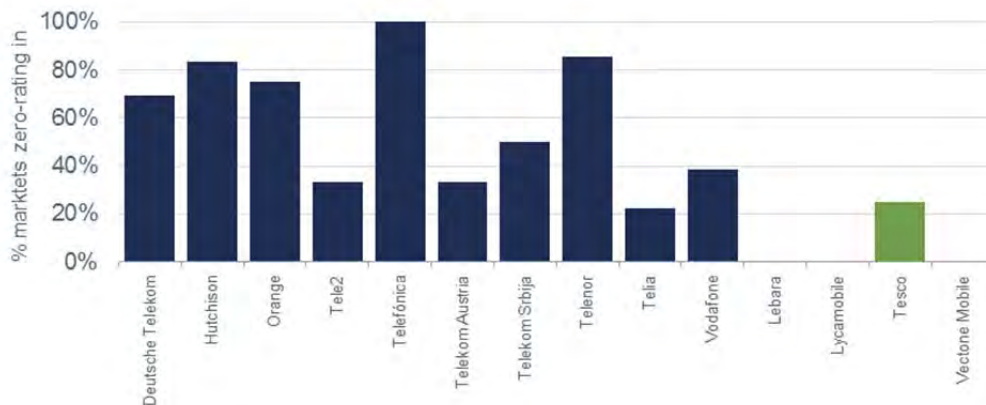
¹⁷ Sample includes 128 MNOs and 141 MVNOs. The figures shown are the averages of the % of MNOs/MVNOs zero-rating in country.

¹⁸ The proportion of MNOs and MVNOs zero-rating has been calculated by taking the number of MNOs/MVNOs that offer at least one product including zero-rating, and dividing this number by the total number of MNOs/MVNOs in the country. Other metrics may be possible, subject to the availability of data in the public domain – for example weighting by the number of customers to each operator or to zero-rated offers.

In Slovakia, we see that only MVNOs practice zero-rating. However, this case is an exception to the general pattern observed.

We have also considered zero-rating practices between mobile operator groups with operations across multiple European countries. As shown in Figure 6 below, zero-rating practices form a greater part of certain operator groups' business models than others:

Figure 6: Proportion of markets in which an operator zero-rates



MVNOs are shown in green, MNOs in blue. Only operators acting in three or more markets are displayed. If an operator has operations in one country as an MNO and in another as an MVNO, it is defined according to its largest market

The multi-state operators that zero-rate most frequently are Telefónica, Telenor and Hutchison. However, the zero-rated offers are different in each of the countries where the operators are present, for example Telefónica offers a zero-rated WhatsApp SIM in Germany, zero-rates an operator-owned VoIP application in Spain and multiple audio streaming services in the UK. Of the multi-state MNOs, Tele2, Telekom Austria and Telia zero-rate least frequently.

Many of the multi-state MVNOs (Lycamobile, Lebara, Vectone Mobile) appear not to practice any zero-rating. This could possibly be due to their focus on international communication, rather than a wider range of services – explaining why Tesco Mobile (MVNO) does practice some zero-rating.

Prevalence of zero-rating by content/application type

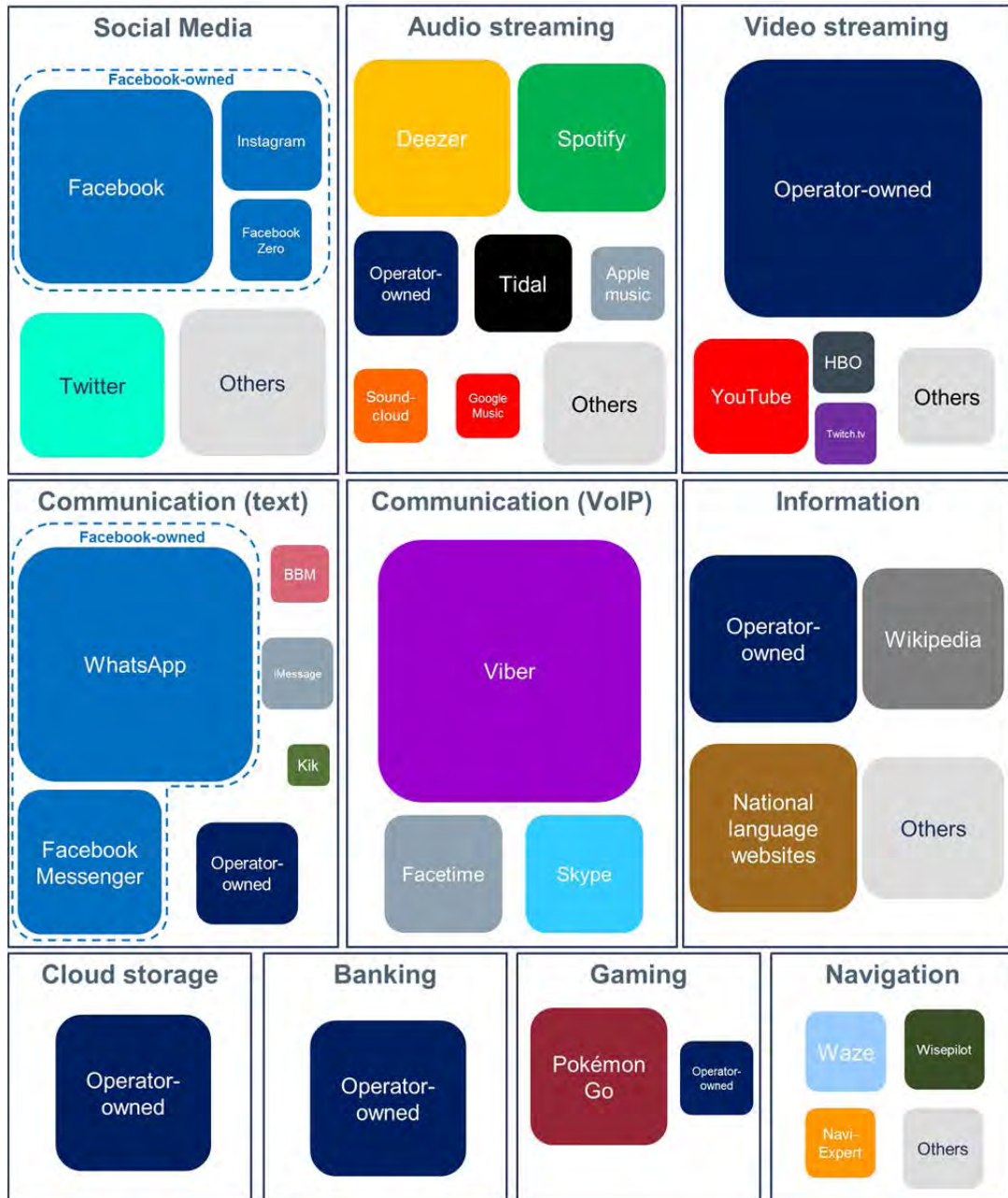
Over the course of the research, we have defined nine different categories of zero-rated content. These are shown in Figure 7 below.

Figure 7: The various categories of zero-rated content

Category	Description	Examples of zero-rated offers
Audio streaming	Music and other audio streaming services	Telefónica UK: Spotify, SoundCloud, Deezer, Apple Music, iTunes
Video streaming	Services which allow for streaming of live or on-demand video	Telenor Bulgaria: HBO Go; NOS Portugal: YouTube
Cloud storage	Services used for the transfer files in and out of the cloud	Vodafone Portugal: Vodafone Backup+
Communication (text)	Communications applications which are primarily used for text messaging	Telenor Serbia: WhatsApp; Virgin Mobile Poland: Facebook Messenger
Communication (VoIP)	Communications applications which are primarily used for voice/video-over-IP calling	MEO Portugal: Skype, FaceTime, Viber
Social media	Social media services	Orange Belgium: Facebook, Twitter
Navigation	Mapping and satellite navigation services	Deutsche Telekom Hungary: Waze, Apple Maps
Information	News or information services	Telia Moldova: Wikipedia
Banking	Service used for transferring money and checking bank account balances	Vodafone Portugal: MB Phone
Gaming	Gaming applications which require online connectivity	Eir Ireland: Pokémon Go

The most commonly zero-rated applications within each category are displayed below in Figure 8.

Figure 8: Most commonly zero-rated applications by category, for the Europe 37



The sizes of the icons represent the relative prevalence index scores of the application being zero-rated within each category

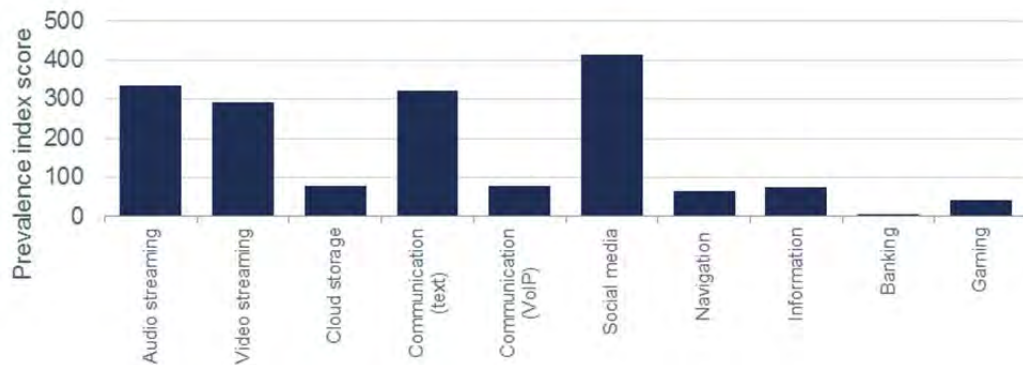
In order to extract further insights from the data collected, we have developed an index, the *prevalence index*, to analyse the degree to which different categories of content are zero-rated. The prevalence index is calculated by determining how frequently each category of application is included in the set of zero-rated offers available, before being adjusted by a weighting factor.

For example, if social media applications are zero-rated in three of the five zero-rated tariffs available in a particular country, then the

prevalence index for social media content in that country would be 0.6 multiplied by the weighting factor for the country.

The prevalence index scores for each type of content, calculated by country, are displayed below in Figure 9. Each country's contribution to the total prevalence index score is weighted by a factor of mobile subscribers multiplied by the percentage of MNOs zero-rating, to give an approximate weighting by number of subscribers who have access to zero-rated offers.

Figure 9: Prevalence index scores for categories of zero-rated content for the Europe 37



The highest-scoring category of zero-rated content is social media, with audio streaming, video streaming and communication (text) also having high prevalence index scores.

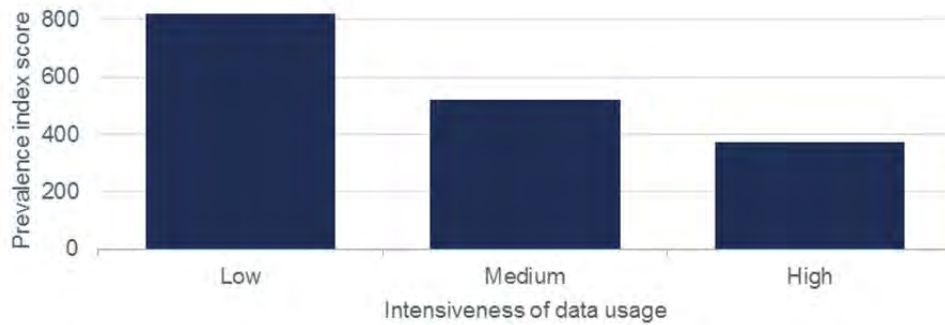
We can also categorise different types of zero-rating content by whether they use low, medium or high volumes of data, categorised using AT&T's data calculator¹⁹:

- Low data-intensiveness – includes communication (text), social media and information categories
- Medium data-intensiveness – includes audio streaming, communication (VoIP), navigation and gaming categories
- High data-intensiveness – includes video streaming and cloud storage categories

The prevalence index scores for each band of data-intensiveness are displayed below in Figure 10:

¹⁹ AT&T Data Calculator. Available at: <https://www.att.com/att/datacalculator/> [Accessed 3 October 2016].

Figure 10: Prevalence index scores for bands of data-intensiveness for the Europe 37

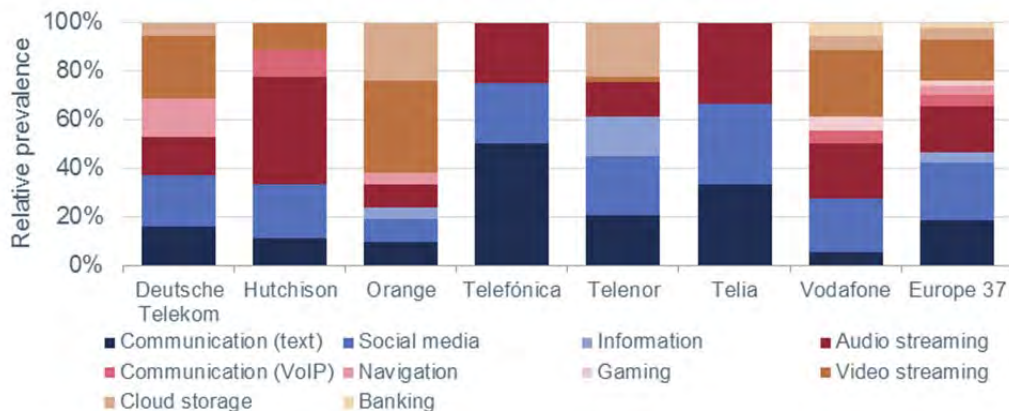


The same weighting factor per country is used here as in Figure 9

Data-light applications are the most commonly zero-rated. This is possibly due to the lower cost to the mobile operator of zero-rating these services compared to higher data usage applications.

These conclusions are fairly clear having analysed zero-rated content by country. We have adopted a similar approach by operator to see, whether the most common categories of zero-rated content are the same for selected multi-state operators as for Europe as a whole:

Figure 11: Relative prevalence of types of zero-rated content by operator



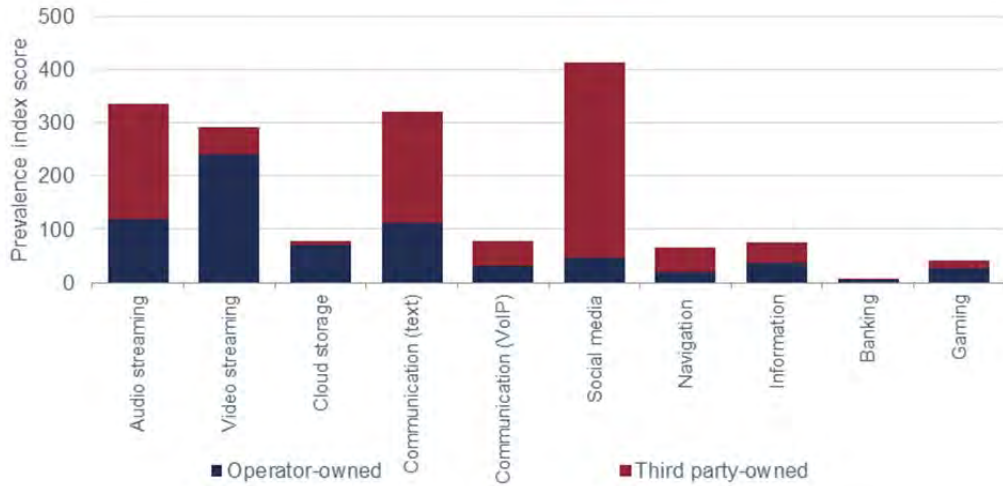
Overall, the categories of social media, audio streaming, video streaming and communication (text) applications are those most commonly zero-rated by operators.

However, it is worth noting a few exceptions. For example, Orange zero-rates video streaming in an unusually large proportion of its zero-rated offers. Likewise Telenor offers zero-rated cloud storage services in a significant proportion of its offers.

We have also considered the ownership of the content being zero-rated – whether an operator is zero-rating their own services (e.g. Deutsche Telekom zero-rating its Mobile TV product) or whether the zero-rated service is owned by a third-party (e.g. cases where Spotify or WhatsApp are zero-rated). The proportions of operator-

owned content, by content category are displayed below in Figure 11.

Figure 12: Prevalence index scores for categories of zero-rated content for the Europe 37, divided by ownership



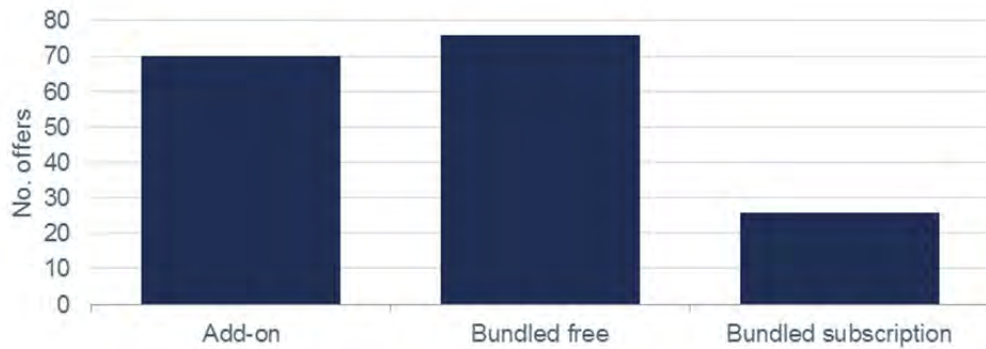
Weighting factor as in Figure 9.

In most categories the majority of zero-rated content is third-party-owned, although we note that there are more than third-party owned applications in the market place. In particular few operator-owned applications are zero-rated in the communication (text) and social media categories – although this is somewhat unsurprising given the strength of Facebook and WhatsApp in these categories.

However, in the data-intensive categories of video streaming and cloud storage, operator-owned content is much more prevalent than third-party-owned content. This suggests that operators are willing to take the (higher) cost of zero-rating certain services in order to support or promote other areas of their business (or do not want to discourage customers from using their services because of data charges).

As discussed above, we have also segmented zero-rated offers into three types: ‘Bundled Free’, ‘Bundled Subscription’ and ‘Add-on’. The distribution of these categories is displayed below in Figure 13:

Figure 13: Number of offers of each type of zero-rating practice for the Europe 37



The 'Bundled free' and 'Add-on' practices have the highest number of zero-rated offers, though it is worth noting that typically these types of offers appear at a greater rate because of the greater flexibility associated with this method of zero-rating. For example, we could have add-on or bundled free offers for Facebook, Twitter, Instagram and for various combinations of these applications, each of which is recorded as a separate offer.

Prevalence of zero-rating for major CAPs

Facebook-owned applications are the most commonly zero-rated in Europe. This group is made up of the following applications: Facebook, Facebook Messenger, WhatsApp, Instagram and Facebook Zero. A total of 57 zero-rated offers (33% of total zero-rated offers) across the Europe 37 include one or more of these services. Figure 14 on the next page shows the distribution of Facebook-owned zero-rated offers by MNO in the Europe 37 countries. MVNOs have not been included as they do not tend to practice zero-rating and this would skew the results in countries with a high proportion of MVNOs.

There does not seem to be a particular pattern across countries as to which of the Facebook-owned services are zero-rated. In some countries, such as Albania and Denmark, only one of the services is zero-rated, whereas in Poland all except Facebook Messenger are zero-rated.

WhatsApp and the Facebook social media application are zero-rated most often – across 18 and 19 countries respectively, and again there is no discernible pattern as to whether one, both or neither is zero-rated.

There is little evidence of exclusivity agreements between Facebook and the MNOs, as for example in Portugal all of the MNOs zero-rate the same four applications, and in other countries such as Hungary, different MNOs zero-rate different Facebook-owned services.

Figure 14: Percentage of MNOs currently offering zero-rated Facebook-owned services in Europe 37

Country	Facebook	WhatsApp	Facebook Messenger	Instagram	Facebook Zero
Albania	-	-	-	-	25%
Austria	-	-	-	-	-
Belgium	33%	-	-	-	-
Bosnia and Herzegovina	-	-	-	-	-
Bulgaria	40%	20%	-	-	-
Croatia	33%	-	-	-	-
Cyprus	-	-	-	-	-
Czech Republic	-	-	-	-	-
Denmark	20%	-	-	-	-
Estonia	-	-	-	-	-
Finland	-	-	-	-	-
France	-	-	-	-	25%
Germany	-	33%	-	-	33%
Greece	-	33%	-	-	100%
Hungary	67%	33%	33%	67%	-
Ireland	33%	33%	-	33%	-
Italy	25%	-	-	25%	-
Latvia	33%	33%	-	-	-
Lithuania	33%	33%	33%	-	-
Luxembourg	25%	25%	-	25%	-
Macedonia	-	-	-	-	-
Malta	-	-	-	-	-
Moldova	-	-	-	-	-
Montenegro	33%	33%	-	-	-
Netherlands	-	-	-	-	-
Norway	-	-	-	-	-
Poland	50%	25%	-	25%	25%
Portugal	100%	100%	100%	100%	-
Romania	-	25%	-	-	-
Serbia	100%	67%	-	33%	-
Slovakia	-	-	-	-	-
Slovenia	-	-	-	-	-
Spain	25%	-	-	-	-
Sweden	25%	25%	25%	25%	-
Switzerland	-	33%	-	-	-
Ukraine	60%	40%	20%	-	-
United Kingdom	-	-	-	-	25%

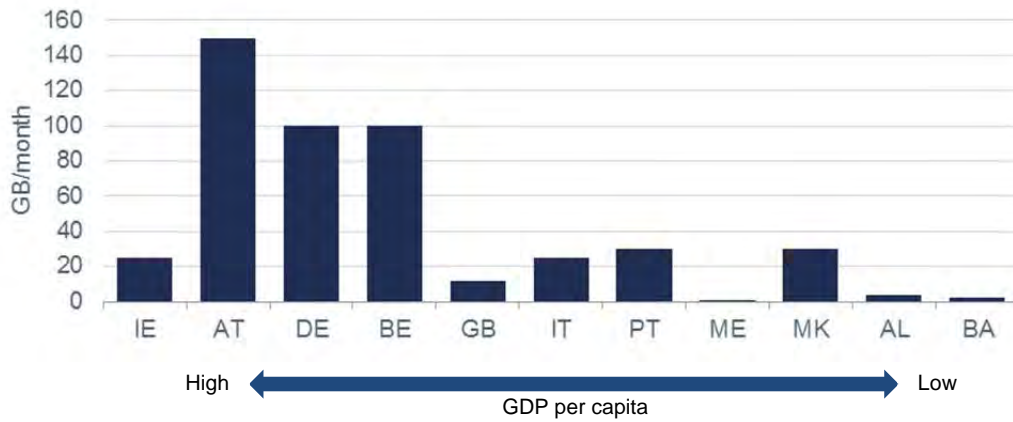
2.1.3 Zero-rating in fixed markets

In this section we present the results of our research into current zero-rating practices in European fixed broadband markets.

Prevalence and nature of data allowances

Of the 37 European countries researched, we have found only 11 with any fixed plans that have limited data allowances, as shown below:

Figure 15: Smallest monthly data allowance available for countries where limited data allowance plans exist²⁰



It is worth noting that Portugal has an unusual data allowance system in which the ADSL and landline plans available from MEO (former incumbent Portugal Telecom) are limited to 30GB or 50GB unless the consumer pays by direct debit and signs up for electronic bills.

It appears that the higher income nations (as measured by GDP per capita) tend to have higher data allowance limits. Of the six higher income nations, three have allowances less than or equal to 100GB and three have allowances less than or equal to 25GB. Of the four lower income nations, only Macedonia does not have a limit less than 5GB.

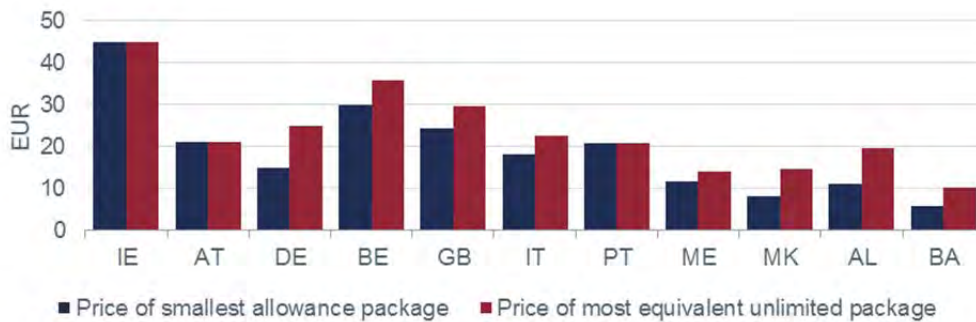
However, in spite of this trend, many lower income countries (such as Ukraine and Moldova) have only unlimited fixed data plans. It is also worth noting that the cost of the smallest data allowance plans is typically not significantly different to that of an equivalent unlimited plan, as shown below in Figure 16²¹:

²⁰ The operator that offers limited data allowances in Austria is a small operator with approximately 3% market share of subscribers. We did not find fixed plans with limited data allowances from any of the major Austrian fixed operators.

²¹ Ireland: the operator had an offer on its unlimited package bringing its average monthly price over the course of the minimum contract length down to the same price as the limited package.

Austria: the operator offering the limited package in question did not offer an unlimited package. In this case, the package is compared to the most equivalent unlimited package from a different operator.

Figure 16: Prices of smallest data allowance compared to the most equivalent unlimited plan



Instances of zero-rating

We have only found one instance of a fixed operator practicing zero-rating, BT in the UK. BT has three zero-rated offers, in which it zero-rates its IPTV television service BT TV, other IPTV service YouView and its premium BT Sport content. This practice is discussed in more depth in the UK case study, in section 3.5.

The lack of zero-rated offers may be related to the comparatively high data allowances in fixed markets compared to mobile markets: with a data allowance of >100GB, zero-rating of most services essentially becomes unnecessary.

2.2 Survey of regulators and competition authorities

To gather insights and comments, questionnaires were sent out to national telecommunication regulatory authorities (NRAs) and national competition authorities (NCAs) from all 28 European Union member states and, in addition, to the NRAs of Norway and Switzerland. The questionnaires were sent on 8 September 2016.

The questionnaires sent to NRAs and NCAs were slightly different, to reflect the respective responsibilities typical of these two regulatory agencies. NCAs were asked:

- to summarise zero-rating practices in the country;
- whether they have produced, or know of, any studies into zero-rating in the country;
- whether they have received any complaints from CAPs or consumers regarding zero-rating in the country; and
- whether they have conducted any formal investigations into zero-rating practices in the country.

NRAs were asked:

- to summarise zero-rating practices in the country;
- whether they have produced, or know of, any studies into zero-rating in the country;

- whether they have received any complaints from CAPs or consumers regarding zero-rating in the country;
- whether they maintain a list of tariffs offered by mobile operators in the country, including whether these tariffs include zero-rated content; and
- if there is little or no zero-rating in the country, to suggest reasons for that absence (e.g. prohibitive legislation).

Questionnaire responses were received from 28 telecommunications regulators²² and 18 separate competition authorities. At least one response has been received from 29 of the 30 countries to whom questionnaires were sent.

Where the respondents provided details of zero-rated offers in their national markets, we cross-referenced these details with the information gathered during our own research and integrated them into the analysis presented above.

The following sections summarise the responses received to the questions regarding complaints received, national research studies that have been conducted and details of any intervention/legislation that has occurred regarding zero-rating.

2.2.1 Complaints

The questionnaires asked both NCAs and NRAs whether they had received complaints from CAPs or consumers regarding zero-rating.

The majority of regulators responded that they had received no complaints regarding zero-rated offers. In some countries this may have been because there are no or few zero-rated offers in the market (e.g. Finland). In a small number of countries regulators reported that they do not register or record complaints (e.g. CTU in the Czech Republic). However the questionnaire responses suggest that in most countries CAPs and consumers have not complained to regulators about zero-rating.

The complaints that were reported were typically informal. Germany's BNetzA was able to identify two complaints. Regulators from both France and Switzerland reported that participants in public consultations had argued against zero-rating on the grounds that it undermined competition, although strictly speaking these are not formal 'complaints'. These responses are clarified below.

²² This also includes a number of telecoms regulators that also have competition authority.

Figure 17: Complaints about zero-rating reported by NRAs

Country	Regulator	Complaints/Consultation feedback reported
France	Regulatory Authority for Electronic Communications and Postal Services (ARCEP)	During the public consultation for BEREC's Net Neutrality Guidelines in the summer of 2016, both consumer associations and CAPs argued that zero-rating undermined competition in the market for CAP services. The main arguments were the possibility that ISPs might pick winners and losers on a given content and application market. Smaller CAPs were especially concerned that ISPs might partner up with bigger CAPs, which would enhance their market power and inhibit smaller CAPs from entering the market. Some larger CAPs did not consider zero-rating as a viable option because they feared that possible partnerships with ISPs were to be paid by CAPs.
Germany	Federal Network Agency (BNetzA)	An informal complaint received from a mobile analytics company saying that Deutsche Telekom's Mobile TV offer violates EU net-neutrality rules. ²³ An informal complaint received from a consumer saying that Deutsche Telekom's Spotify offer violates net-neutrality as enshrined in Regulation (EU) 2015/2120.
Sweden	Post and Telecom Agency (PTS)	A group of publishers complained by issuing a joint statement calling for zero-rating to be prohibited, specifically with regard to Telia's Facebook offer. ²⁴ These complaints were primarily based on net neutrality concerns, but also included some competition concerns. Specifically, that a dominant player in the media industry (Facebook) was making a deal with a dominant player in the telecom industry (Telia), giving Facebook an advantage over other CAPs, while giving Telia an advantage over other operators.
Switzerland	Federal Communications Office (Bakom)	Some participants complained about zero-rating in a recent public consultation on planned revisions to the Telecommunications Act.

2.2.2 National research studies

NCA and NRA were asked to identify studies into zero-rating in their country. The majority reported that they had not produced, nor were aware of, any research studies of that kind. A small

²³ Twitter, 30 Aug 2016. Available at: <https://twitter.com/DFMonitor/status/770674819499192321>

²⁴ Joint statement from Swedish publishers, 'Telia's zero rating agreement with Facebook a blow to Swedish media companies', 3 May 2016

number of regulators did report the existence of such studies, and we summarise those studies below.

Germany

In March 2016, the Bavarian Regulatory Authority for New Media produced a study on zero-rating in Germany.²⁵ The study looks at two markets in which zero-rating offers are present; Germany (with a focus on Deutsche Telekom's Spotify offer) and the U.S.A. (with a focus on T-Mobile's 'Binge On' offer). The study considers the impact of these offers on the market for CAP services. It notes that there has been criticism of Deutsche Telekom's Spotify offer for unfairly advantaging Spotify in the market for audio streaming services. Between 2013 and 2016, during which time the Spotify offer was available, Spotify grew to become the most popular online streaming service in Germany. Although the paper notes that Spotify also become the most popular audio streaming service in several other European markets during this period. The study also references van Schewick's 2016 paper on T-Mobile's 'Binge On' offer (discussed in Annex A.2 of this report), which argues that the offer discriminates against those video streaming services which are not zero-rated.

The study goes on to review the current state of legislation regarding zero-rating, both at a national and European Union level. The point is made that zero-rating may violate two distinct areas of law, one being net-neutrality requirements (the requirement not to discriminate against certain types of data traffic) and the second being the requirement for 'broadcasters' to support a diversity of content.

Hungary

In January 2015, Hungary's National Media and Infocommunications Authority (NMHH) held a consultation on over-the-top (i.e. CAP) services. The consultation did not specifically solicit responses on the question of zero-rating, but did ask more generally about net neutrality concerns.

²⁵ Bayerischen Landeszentrale für neue Medien, 'Marktstudie Zero-Rating', 31 March 2016. Available at: <https://www.blm.de/files/pdf1/goldmedia-marktstudie-zero-rating-2016-3.pdf> [Accessed 21 October 2016]

A summary of the responses to the consultation was published in June 2015.²⁶ The consultation found that ISPs saw no need for further regulation regarding net neutrality. CAPs on the other hand responded that additional regulation was required to ensure a competitive market for content services. These respondents argued that the regulation should ensure a competitive playing field for content providers, in which consumers – not ISPs – decide which CAPs succeed in the market. It was stated that an open internet is critical to stimulating innovation and promoting a strong economy. The CAPs requested that, in the event that EU regulation did not go far enough to protect net neutrality, regulation should be introduced at a national level.

Portugal

The Portuguese regulator, ANACOM, commissioned a study of OTT applications and content services that was carried out by Qmetrics and published in January 2016.²⁷ The study evaluates OTT services from a business and economic standpoint, the potential for development in the sector and the impact this may have on the telecommunications industry in Portugal.

The study also contains an assessment of zero-rating, which includes a comprehensive review of the available literature and an overview of current EU regulation and policies as well as a comparison of responses from different NRAs in Europe to zero-rating. There is also an evaluation of the benefits and disadvantages of zero-rating for mobile operators as a strategy to increase data usage among their customer base, reduce churn and attract new customers. Interestingly, based on an interview with one of the operators, the authors of the study claim that there are no commercial agreements between operators and CAPs in Portugal, and that CAPs simply have rules in place regarding the use of their logos for marketing. The study concludes that consumers strongly prefer unlimited data caps, but if limits are the only option available to them, they prefer a tariff including zero-rating, and that zero-rating could potentially be seen as an issue with regards to net-

²⁶ NMHH, 'Az over-the-top tartalomszolgáltatások hatása a médiarendszerre', 19 June 2015. Available at: http://nmhh.hu/dokumentum/167077/OTT_nyilvanos_konzultacio_osszefoglalo_fi_n.pdf [Accessed 21 October 2016]

²⁷ Anacom, 'Estudo sobre Serviços de Aplicações e Conteúdos (Over-The-Top-OTT)', 22 January 2016. Available at: http://www.anacom.pt/streaming/RelatorioIntegrado_VersaoPublica_20160122.pdf?contentId=1378519&field=ATTACHED_FILE [Accessed 21 October 2016]

neutrality as it is in effect giving priority to certain types of data traffic.

Norway

In April 2015 NKOM published a comparison of the net neutrality regimes in Europe and the US.²⁸ This report acknowledges that the question of zero-rating has not been resolved on either side of the Atlantic, although the US has indicated that it will deal with zero-rating issues on a case-by-case basis.

2.2.3 National intervention/legislation

A number of questionnaire responses discussed the impact of national intervention and legislation on zero-rated offers in the country. We summarise these comments in this section.

The regulations discussed were typically introduced prior to the Regulation of the European Parliament and of the Council No. (EU) 2015/2120. Note that the cases discussed below do not represent a complete account of past zero-rating regulation in Europe, but summarise regulators questionnaire replies on that topic.

Czech Republic

The Czech Telecommunication Office's (CTU) response referenced recommendations that they had issued in December 2013 on the management of data traffic in the Czech Republic.²⁹ The recommendations prohibit operators from discriminating between data for different services or from different sources, by blocking, slowing or reducing the quality of that data. However the recommendations do not explicitly prohibit zero-rated offers. The CTU advised that these recommendations were superseded by Regulation No. (EU) 2015/2120 of the European Parliament.

²⁸ NKOM, 'A comparison between European and US approaches to net neutrality', 23 April 2015. Available at: <http://eng.nkom.no/topical-issues/news/a-comparison-between-european-and-us-approaches-to-net-neutrality> [Accessed 21 October 2016]

²⁹ CTU, 'Stanovení základních parametrů a měření kvality služby přístupu k síti internet', 19 December 2013. Available at: https://www.ctu.eu/cs/download/datovy_provoz/rizeni_datoveho_provozu_stanoveni_zakladnich_parametru_18_12_2014.pdf [Accessed 12 October 2016]

Netherlands

Both the Dutch Authority for Consumers & Markets (ACM) and the Netherlands Radiocommunications Agency (NRA) cited the Telecommunications Act (2012) as the reason for the absence of zero-rated offers in the country.³⁰ This legislation prohibits ISPs from differentiating access tariffs based on the service that is being accessed, including 'zero-rated' offers.

We note that this response was received before T-Mobile launched a range of zero-rated audio streaming offers on 11 October 2016.³¹ T-Mobile has argued that the Dutch net neutrality legislation is contrary to existing European legislation and to BEREC's guidelines.

Norway

NKOM published guidelines on net neutrality in February 2009.³² The guidelines do not address the question of zero-rating. Instead they prohibit traffic management practices by internet service providers that discriminate between specific services or sources of traffic. However NKOM's questionnaire response clarified that they regard zero-rated offers as a breach of these national guidelines.

NKOM's response advised that the 2009 national guidelines will be phased out in 2016. New regulation will be developed, based on the TSM Regulation and in accordance with Norwegian net neutrality policy.

Slovenia

Both the Slovenian Competition Protection Agency (CPA) and the Agency for Communication Networks and Services (AKOS) cited the regulatory actions of AKOS as the reason for the absence of zero-rated tariffs in Slovenia.

The Slovenian Electronic Communication Act of 2012 introduced strict rules on any restriction to internet neutrality and prohibits all

³⁰ Government of the Netherlands, 'Dutch Telecommunications Act', June 2012. Available at: <https://www.government.nl/documents/policy-notes/2012/06/07/dutch-telecommunications-act> [Accessed 21 October 2016]

³¹ T-Mobile, 'Datavrije Muziek'. Available at: <https://www.t-mobile.nl/datavrije-muziek> [Accessed 21 October 2016]

³² NKOM, 'Network neutrality: Guidelines for Internet neutrality', 24 February 2009. Available at: http://eng.nkom.no/technical/internet/net-neutrality/net-neutrality/_attachment/9222?_ts=1409aa375c1 [Accessed 21 October 2016]

unequal treatment of internet traffic. In 2015, AKOS issued decisions against Telekom Slovenije and Simobil, arguing that their zero-rated offers infringed these net neutrality laws. Interestingly, the CPA considered that the prohibition of zero-rated services may have been detrimental rather than beneficial for consumers. In the summer of 2016, AKOS's decisions were appealed by the mobile operators and annulled at the Administrative court.

3 Case studies

In this section we present the results from our five EU case studies and the USA case study.

Objectives of the case studies

The case studies enable a more in-depth investigation of zero-rating practices in six selected countries. Specifically, the case studies contain:

- an overview of the fixed, mobile and CAP markets in each country, including noting the significance of any quad-play operators;
- a detailed account of the various fixed and mobile zero-rated offers, set in their national context (including an account of historical offers); and
- an analysis of the influence these zero-rating practices might have on consumer choice and behaviour, with reference to the type and data-intensiveness of content being zero-rated, ownership of this content, and various market factors.

Choice of case study countries

In choosing the case study countries, we considered four broad objectives, to:

- capture a range of zero-rating programmes across Europe;
- select countries that were broadly representative of the Europe 37 countries;
- highlight interesting and innovative zero-rating practices; and
- capture some instances where zero-rating practices may be of more concern from a competition perspective, e.g. strong ISPs practicing zero-rating, particularly of their own content.

Using the above criteria, we have selected Bulgaria, Germany, Portugal, Sweden and the United Kingdom as EU case study countries. In addition, we have chosen the USA to be our non-EU case study as it offers a good comparison to the European situation.

Case studies represent a snapshot as of September 2016

Zero-rating practices are relatively new and fast-changing in their presentation and application. The case studies contained within this section provide a snapshot into the zero-rating practices as of the time of the research - September 2016.

3.1 Bulgaria

3.1.1 Background

Bulgaria has three major players in the fixed and mobile markets – Mtel (Telekom Austria), Telenor and Vivacom (BTC).

On the mobile side, Mtel has 39% retail market share, Telenor has 33% retail market share and Vivacom 28%, leading to a combined retail share of more than 99%. Max Telecom, which focuses mainly on mobile broadband, has a modest mobile market share (<1%). There are no independent MVNOs.

Figure 18: Major telecom providers in Bulgaria

Operator	Mtel	Telenor	Vivacom	Max Telecom	Bulsatcom
Mobile	✓	✓	✓	✓	
Fixed voice / broadband	✓	✓	✓		✓
TV content	✓		✓		✓

The fixed market is significantly less concentrated due to the presence of a large number of regional players. Vivacom, Mtel and Bulsatcom are the three big players, having a combined market share of 61%. Vivacom is the incumbent fixed operator but Mtel currently has the highest market share following its acquisitions of Blizoo (September 2015), Megalan (September 2010) and Spectrum Net (September 2010).

Two of the three big players – Mtel and Vivacom offer pay TV content and as such are the only players to offer quad-play services. Telenor offers triple-play services – mobile, fixed voice and fixed broadband. Bulsatcom, Vivacom and Mtel also offer satellite pay TV, a close substitute to cable pay TV offerings. Free-to-view TV is available but in the presence of relatively low pay TV offers, most consumers are subscribed to a form of pay TV.

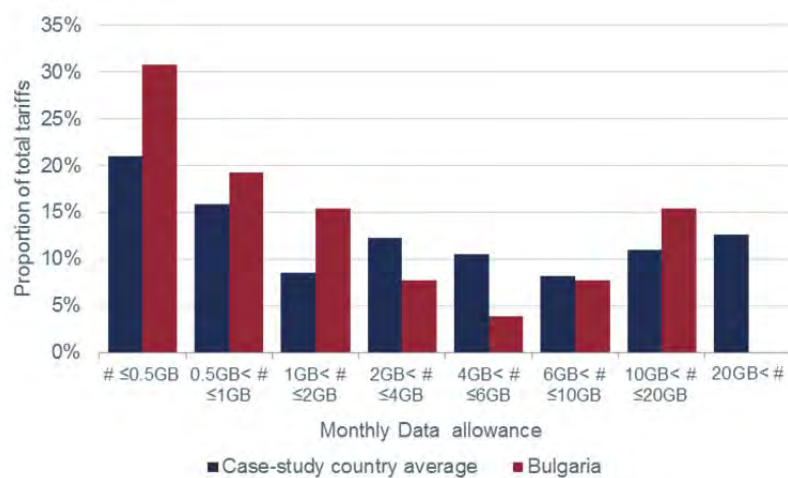
The Bulgarian market is not atypical with regard to social media and communication CAPs, with major global CAPs (e.g. Facebook, WhatsApp, Viber, Twitter) all having a strong presence. In contrast, the audio streaming market is smaller than in other European countries, with only Spotify having a modest presence in the market.

3.1.2 The mobile market

Mobile data allowances

Bulgaria has a high number of offers (>65%) with lower than 2GB per month data allowances and as such could be characterized as a country with low data allowances. The average data allowance in Bulgaria is 4.1GB per month, compared to our case study average of 7.9GB.

Figure 19: Distribution of monthly data allowances by tariff



Evolution of zero-rated offers

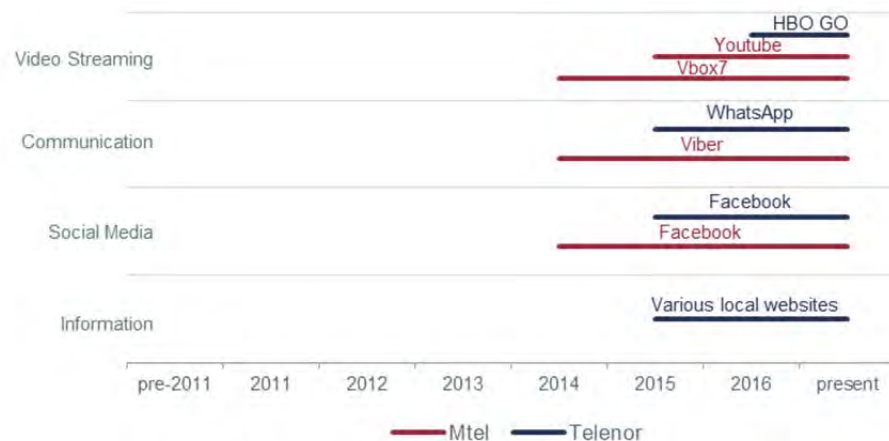
Zero-rating services on mobile networks is a relatively recent practice in Bulgaria. We are not aware of any zero-rated offers prior to December 2014. Two of the three major mobile operators – Mtel and Telenor have practiced zero-rating.

There have been two types of zero-rating practices in Bulgaria:

- In-bundle zero-rating, which includes unlimited access to services (e.g. Facebook, WhatsApp) at no incremental cost.
- Zero-rating in the form of add-ons, which give customers an additional data allowance for specific services at some incremental cost (e.g. 3GB of Facebook for EUR2.51 per month).

As discussed previously, given that these 'zero-rated' add-ons provide finite data packages for an incremental cost, they could be considered as not being a pure form of zero-rating.

Figure 20: Timeline of zero-rated offers in Bulgaria



The first 'zero-rated' add-on offers were introduced in December 2014 when Mtel started zero-rating Viber, Facebook and Vbox7³³ as add-ons. The allowance was 2GB for all three add-ons at an incremental cost of EUR1.5 per month. In June 2015 Mtel added YouTube to its video package alongside Vbox7. Later, Mtel increased the prices (see Figure 21 below) and the allowance for each of these services, currently offering as add-ons 3GB of Viber, 3GB of Facebook and 10GB of YouTube and Vbox7.

This was followed by Telenor, which introduced a 'zero-rated' add-on for Facebook and WhatsApp in September 2015. In December 2015, Telenor included an 'Information' add-on, which adds 2.5GB for various information websites to the plan. In February 2016, Telenor added HBO GO to its add-on offers.

Telenor is the only operator to have offered in-bundle zero-rating services. It has offered in-bundle zero-rating of Facebook and WhatsApp on some of its plans since July 2015.

Current zero-rated offers

There is currently a high prevalence of zero-rated offers with two of the three major players in the mobile market – Mtel and Telenor – offering some form of zero-rating. We are not aware of Vivacom or Max Telekom practising zero-rating.

³³ Vbox7 is a Bulgarian video streaming service, similar to YouTube

Figure 21: Current zero-rated offers in Bulgaria's mobile market

Operator	Packages	Services	Data allowance for ZR service	Incremental cost (EUR)
In bundle zero-rating				
Telenor	Standard	Facebook and WhatsApp	Unlimited	-
Telenor	Non-stop	Facebook and WhatsApp	Unlimited	-
Add-ons to mobile plans				
Telenor	All with data	HBO GO	1GB	4.10
Telenor	All with data	Facebook, WhatsApp	2.5GB	1.53
Telenor	All with data	Information websites	2.5GB	1.53
Telenor	All without data	HBO GO	1GB+100MB to all services	4.10
Telenor	All without data	Facebook, WhatsApp	2GB+100MB to all services	1.53
Telenor	All without data	Information websites	2GB+100MB to all services	1.53
Telenor	Prepaid	Facebook, WhatsApp	50MB+50MB to all services	1.02
Telenor	Prepaid	Facebook, WhatsApp	10MB+250MB to all services	1.53
Telenor	Prepaid	Information websites	10MB+250MB to all services	1.53
Mtel	All	Viber	3GB+100MB to all services	2.00
Mtel	All	Facebook	3GB+200MB to all services	2.51
Mtel	All	YouTube, Vbox7	10GB+300MB to all services	4.05

In all post-paid plans across all operators, the data is throttled after the core data allowance is exhausted. From the information available on the operators' websites, it is not possible to understand whether in-bundle zero-rating services are also throttled when the core data allowance is exhausted. Additional data add-ons can be purchased from all operators.

Telenor, the second largest operator, offers unlimited WhatsApp and Facebook across its 'Standard' and 'NonStop' plans. Telenor's 'Standard' plans range from EUR8.2 to EUR13.3 (BGN16.0-BGN26.0), offering data allowances in the range of 500MB-2GB. Its 'NonStop' plans range from 8GB to 15GB for prices ranging from EUR11.3 to EUR21.0 (BGN22.0-BGN41.0)³⁴. It should be noted that these two plans are Telenor's most clearly advertised packages. As such, we expect that a substantial number of Telenor's customers are subscribed to them.

Mtel and Telenor offer a number of 'zero-rated' add-ons that a subscriber can add to its current package. Mtel offers 3GB of Viber data usage for an extra EUR2.0 (BGN3.9), 3GB of Facebook usage for EUR2.5 (BGN4.9) and 10GB³⁵ of Vbox7 and YouTube usage for

³⁴ Postpaid plans | Telenor. Available at: <http://www.telenor.bg/en/plans/postpaid-plans> [Accessed 3 October 2016].

³⁵ An additional 300MB to be used for any service are included in the add-on

EUR4.1 (BGN7.9)³⁶. For its post-paid plans, Telenor offers 1GB of data for HBO GO for an additional EUR4.1 (BGN7.99) including service subscription fee³⁷, 2.5GB of data for Facebook and WhatsApp for EUR1.53 (BGN2.99)³⁸ and 2.5GB of data for various information websites for EUR1.53 (BGN2.99)³⁹. All add-ons expire within one month.

It is worth noting that both Mtel and Telenor offer a variety of further add-ons. Sometimes, as described above, the add-ons offer additional data for specific services. In others, the subscriber also receives an allowance of data that can be used for any service.

Mtel also offers a general data add-on of 1.5GB⁴⁰ at a cost of EUR2.05 (BGN4.0)⁴¹. This results in a price of EUR1.37 per GB (BGN2.7). This is more expensive compared to the price per GB of Mtel's Viber, Facebook and YouTube add-ons (EUR0.65/GB, EUR0.78/GB and EUR0.39/GB respectively). Telenor and Vivacom also offer general data add-ons, e.g. Telenor – 1.5GB for EUR5.12 (BGN9.99) and Vivacom – 1.5GB for EUR8.08 (BGN15.80)⁴². Both of these add-ons, and especially Vivacom's, are more expensive than Mtel's general data add-on.

The deal signed in December 2014 between Mtel and Viber has been described by the Bulgarian media as "exclusive" – although the exact nature of this exclusivity is unclear (in particular whether Mtel is permitted to zero-rate other communications applications or whether it somehow prevents other MNOs from zero-rating Viber traffic)⁴³. This is consistent with the fact that none of Mtel's

³⁶ Mtel – Extras. Available at: <http://www.mtel.bg/ekstri-za-tarifen-plan> [Accessed 3 October 2016]

³⁷ Price includes HBO GO subscription.

³⁸ 'NonStop' and 'Standard', which are Telenor's most popular plans include unlimited Facebook and WhatsApp and as such this add-on is not suitable for these two plans

³⁹ Add-ons for postpaid plans | Telenor. Available at: <http://www.telenor.bg/en/plans/postpaid-plans/add-ons> [Accessed 3 October 2016].

⁴⁰ Mtel – Extras. Available at: <http://www.mtel.bg/ekstri-za-tarifen-plan> [Accessed 3 October 2016]

⁴¹ With a two year contract for the add-on, standard price is BGN9.99

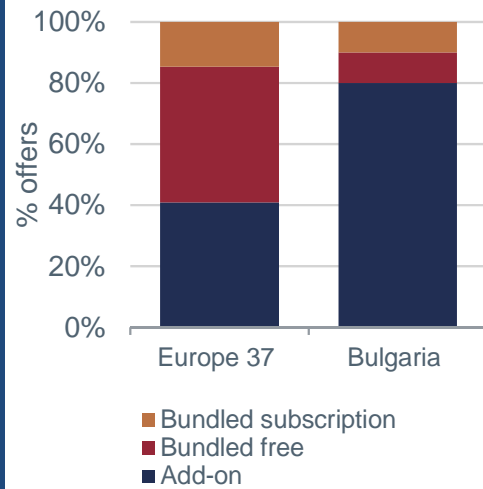
⁴² +Data - VIVACOM. [online] Available at: <http://www.vivacom.bg/bg/residential/ceni-i-uslugi/mobilni-uslugi/abonamenten-plan/data> [Accessed 21 October 2016].

⁴³ "Мобилтел" и Viber разширяват сътрудничеството си, Капитал, 27 October 2015, Available at: http://www.capital.bg/biznes/kompanii/2015/10/27/2637761_mobiltel_i_viber_razshirivat_sutrudnichestvoto_si/ [Accessed 21 October 2016].

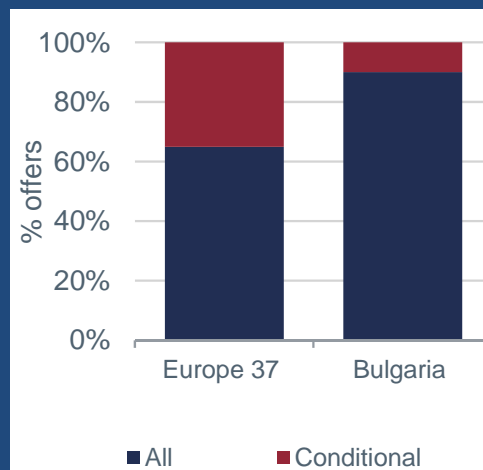
competitors zero-rate Viber and Mtel does not zero-rate Viber's main competitor – WhatsApp. This suggests that the deal may be exclusive to some extent. Similarly, but less obviously, it is possible that there was a counter deal between Telenor and WhatsApp, who are Mtel's and Viber's main competitors. However, it has not been possible to confirm that these agreements, or indeed any other zero-rated agreements between CAPs and MNOs in Bulgaria, are exclusive.

Box 1: Summary of mobile zero-rated offers in Bulgaria

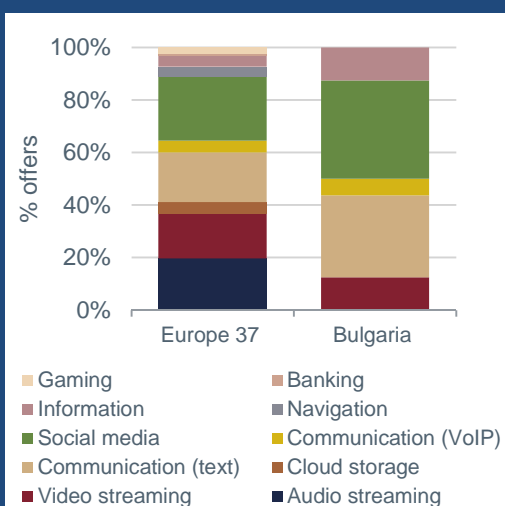
Zero-rated offers are predominately add-ons in contrast to the almost even split across the rest of Europe.



Only one of the zero-rated offers has conditions attached (i.e. offer applies to some but not all of a tariff family)



The distribution of zero-rated offers is similar to the rest of Europe. The main difference is there is no zero-rating of audio streaming application in Bulgaria.



Potential impact of mobile zero-rating on consumer behaviour

As discussed above, there are two main types of zero-rated offers in Bulgaria: in-bundle zero-rating of Facebook and WhatsApp traffic by Telenor, and add-on offers by both Telenor and Mtel. The impacts of these are considered below in turn.

Firstly, considering Telenor's in-bundle zero-rated offers, Facebook and WhatsApp are zero-rated across all of Telenor's main plans, including its lowest data allowance plan (0.5GB for EUR8.2 per month). Despite neither being particularly data-intensive applications, 0.5GB would only be sufficient for approximately 25hours of Facebook usage per month⁴⁴ (assuming no other data usage). We expect that a good proportion of Facebook users would exceed this amount. Therefore, this zero-rated offer may well influence consumers' choice of MNOs at the budget end of the market.

That said, and as illustrated below, both Mtel and Vivacom offer 1GB and 3GB plans at the same/lower prices than Telenor's 0.5GB plan. These plans offer non-zero-rated alternatives to Telenor's zero-rating of Facebook/WhatsApp.

Figure 22: Selected packages from the three major mobile operators in Bulgaria

Operator	Price (EUR)	GB	Price/GB (EUR)	Zero-rating offers
Low range				
Telenor	8.2	0.5	16.4	Unlimited Facebook and WhatsApp
Mtel	8.2	1	10.3	Facebook, Viber, YouTube and Vbox7 add-ons available
Vivacom	7.2	3	2.4	Cloud services
Mid range				
Telenor	11.3	8	1.4	Unlimited Facebook and WhatsApp
Mtel	12.3	3	4.1	Facebook, Viber, YouTube and Vbox7 add-ons available
Vivacom	10.3	5	2.1	Cloud services
High range				
Telenor	15.9	15	1.1	Unlimited Facebook and WhatsApp
Mtel	17.4	16	1.1	Facebook, Viber, YouTube and Vbox7 add-ons available
Vivacom	35.9	20	1.8	Cloud services

Telenor's mid- to high-data-allowance plans provide in the order of 8-15GB. At this range of the market, customers' choice of MNO is much less likely to be influenced by Facebook/WhatsApp being zero-rated.

The impact of Telenor's in-bundle zero-rating of Facebook and WhatsApp could potentially however have a larger impact of

⁴⁴How much is 500MB, 1GB, 2GB of mobile internet data? - Confused.com. Available at: <http://www.confused.com/mobile-phones/mobile-data-calculator> [Accessed 3 October 2016].

consumers' choice of CAPs. Given the relatively low data allowances in Bulgaria, Telenor's customers may favour these applications over other social media and messaging applications.

Secondly, concerning the add-on zero-rated offers provided by both Telenor and Mtel, one issue when considering the potential competition concerns of these offers is the level of discount being gained by consumers through buying these add-ons rather than either subscribing to a plan with a larger data allowance or acquiring a general data add-on.

MTel offers 3GB of Facebook data (plus 200MB of general data) for EUR2.5 per month and 3GB of Viber data (plus 100MB of general data) for EUR2.0 per month. These equate to EUR0.78 per GB and EUR0.65 per GB respectively (assuming that the consumer uses all of the data provided). Alternatively, customers could acquire a 1.5GB general data add-on for EUR2.05 per month – equating to EUR1.37 per GB. Therefore, using this metric, the Facebook/Viber add-ons represent in the order of a 50% discount.

Alternatively, an Mtel customer could upgrade from a 1GB plan to a 3GB plan for an incremental EUR4.1 per month (EUR2.1 per GB), or from a 3GB plan to a 16GB plan for an incremental EUR5.1 per month (EUR0.39 per GB).

Mtel also offers zero-rated add-ons for video streaming services. It offers 10GB of YouTube/Vbox7 for EUR4.05 per month, which equates to EUR0.41/GB. This represents a 70% discount of the 1.5GB general data add-on, although this level of discount is similar to that achieved by moving from a 3 GB to a 16 GB plan.

Again, this analysis illustrates that Mtel's add-ons may represent a significant discount for customers on low-data-allowance plans, but less so for customers on mid- to high-data-allowance plans.

Telenor has similarly priced zero-rated add-ons for Facebook/WhatsApp and information websites. Telenor also offers an add-on for HBO Go, which is priced much higher than MTel's YouTube/Vbox7 offer (EUR4.1 per MB) but includes the subscription to the content.

The impact of these zero-rated add-ons on consumers' choice of CAPs should again be considered. Given the effective discounts that these add-ons provide, Mtel/Telenor's customers of low-data-allowance plans may well be attracted to Facebook/WhatsApp (both owned by Facebook), Viber, YouTube and Vbox7 at the expense of other non-zero-rated applications. However, with the possible exception of the video streaming zero-rated offers, these add-ons are unlikely to materially impact the choice of CAPs for customers on higher data allowance plans.

3.1.3 The fixed market

Bulgaria's fixed broadband market consists almost entirely of unlimited fixed broadband offers. None of the big players offer any limited data plans and price variations between plans reflect only differences in connection speeds. As such there is no zero-rating in the fixed market.

3.1.4 Key findings

The Bulgarian market is unique in the sense that mobile operators offer a large number of zero-rated add-ons.

- Mtel, the biggest operator, only zero-rates in the form of add-ons.
- Telenor offers a mixture of in-bundle zero-rating and add-ons. Only the most popular postpaid packages are included in the in-bundle zero-rated offers.
- There is no zero-rating of fixed broadband plans.

Potential effect on consumer behaviour

Given that the zero-rated offers in the market are for relatively data-light applications, we would not expect them to influence the choice of MNO for subscribers of mid- to high-data-allowance plans. However, their influence may be larger for subscribers of low-data-allowance plans (sub-1GB per month), and we note that there is a large proportion of such plans compared with other European markets. Yet, Vivacom does not practice zero-rating, and Mtel does not practice in-bundle zero-rating, which would suggest that zero-rating is not a strong driver of consumer choice of MNO. That said, zero-rating is relatively new to the Bulgarian mobile market, so it is possible that Vivacom will soon also practice zero-rating.

Customers may favour zero-rated applications over other applications. However, with the possible exception of the video streaming zero-rated offers, these add-ons are unlikely to materially impact the choice of applications for customers on med- or high-data-allowance plans.

Potential competition concerns

Regarding competition between mobile operators – it appears relatively easy for operators to replicate the zero-rated offers of their competitors by zero-rating the same applications. Both Mtel and Telenor zero-rate Facebook, and there appears no reason why Vivacom could not do the same.

Operators could also offer plans with larger, general data allowances. The fact that the zero-rated applications are generally data-light (with the exception of YouTube and HBO GO) makes the cost of such replication relatively small.

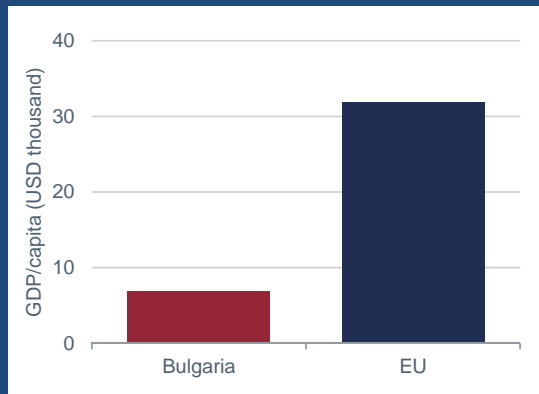
Regarding competition between CAPs, the low data intensity of the zero-rated applications suggests that the disadvantage faced by non-zero-rated CAPs is small. Also, the zero-rated applications seem

not to have very close substitutes, where the choice of content would be driven to a substantial extent by zero-rating.

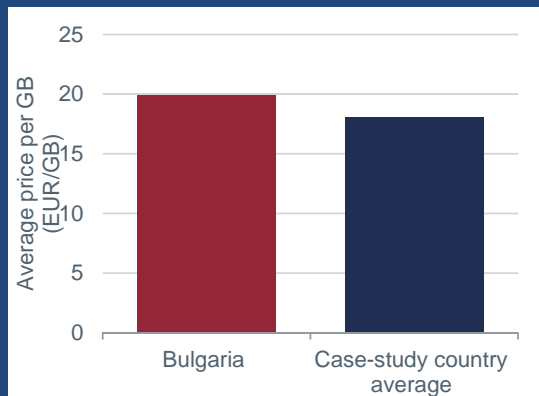
Finally, although there are claims of some sort of 'exclusive' arrangement between MTel and Viber, it is not clear that these arrangements would prevent another mobile operator from also zero-rating Viber. This arrangement could prevent MTel from zero-rating communications applications other than Viber. However, it appears that this would only give Viber a modest advantage over competitors, as MTel's customers could access competing applications on a non-zero-rated basis (which appears not to carry a substantial data cost) and subscribers of other MNOs would be entirely unaffected.

Box 2: Bulgaria key statistics

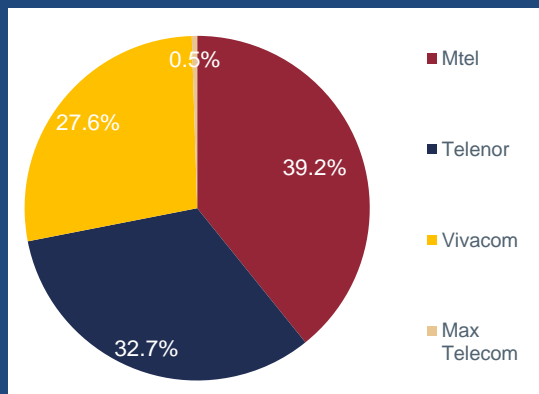
GDP per capita figures taken from World Bank 2015 data



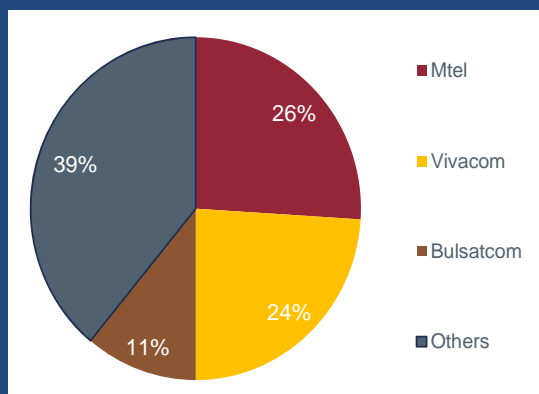
Note that average price per GB is compared to case study countries rather than EU



Retail mobile market shares taken from Capital.bg 2015 report



Q4 2015 fixed broadband market shares taken from Vivacom report



3.2 Germany

3.2.1 Background

Germany has three MNOs: O2/E-Plus (Telefónica), T-Mobile (Deutsche Telekom) and Vodafone. It is estimated that there are over a hundred active MVNOs⁴⁵, the largest of which is Drillisch.

Alongside the provision of mobile services, Germany's three MNOs are also active in the fixed market and sell fixed voice and broadband services. In addition, Tele2, 1&1 and Unity Media offer fixed services. In 2014, Deutsche Telekom had a 44% fixed broadband retail subscriber share.⁴⁶

Figure 23: Major telecom providers in Germany

Operator	Deutsche Telekom	Vodafone	1&1	Unity Media	O2/E-Plus (Telefonica)	Tele2	Drillisch
Mobile	✓	✓	MVNO	MVNO	✓	MVNO	MVNO
Fixed voice / broadband	✓	✓	✓	✓	✓	✓	
TV content	✓	✓	✓	✓			

As can be seen in Figure 23 above, there are four operators that offer quad-play services, with only two operators (Deutsche Telekom and Vodafone) having both fixed and mobile infrastructure.

There have been two recent major consolidations in the market. Firstly, in 2013, Vodafone acquired Kabel Deutschland, the largest cable TV operator in Germany at the time, for EUR7.7 billion. This provided Vodafone with access to the 8.5 million connected households and opened up their potential for offering quad-play services. Secondly, Telefónica purchased E-Plus for EUR8.6 billion in 2014. Whilst this merger did not increase Telefónica's ability to bundle, it did reduce the number of mobile operators down from four to three. Telefónica continues to offer services under both the O2 and E-Plus brands.

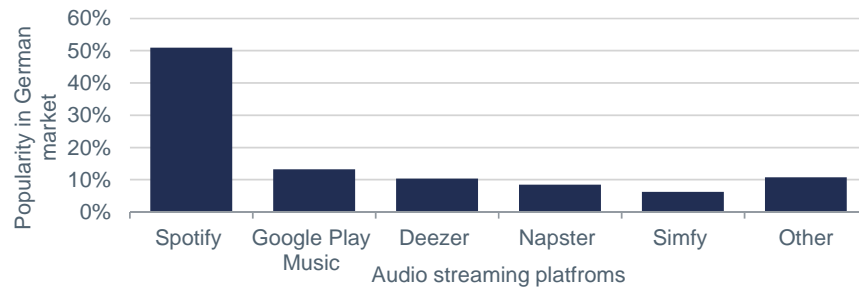
With regards to the CAP market, all of the main global social media (e.g. Facebook and Instagram), communications (e.g. Skype) and audio streaming (e.g. Spotify) providers have a major presence, and there are no major Germany-specific social media, communications

⁴⁵Report: Number of MVNOs exceeds 1,000 globally, FierceWireless, 2 September 2015. Available at: <http://www.fiercewireless.com/europe/report-number-mvno-exceeds-1-000-globally> [Accessed 21 October 2016].

⁴⁶Annual Report 2014, BNetzA, 1 April 2015.

or audio streaming platforms. Spotify is the most popular audio streaming platform, as illustrated in Figure 24 below (although note that this survey was carried out by PWC before the launch of Apple Music)⁴⁷:

Figure 24: Popularity of audio streaming platforms in Germany



The TV market in Germany is dominated by public and ad-funded free-to-view TV channels, and the pay TV segment is smaller compared to other countries⁴⁸. The most-watched sport in Germany is football. The rights to 93% of Bundesliga matches and all of the Champions League matches are owned by Sky Deutschland, but this content is also available on subscription-only service by all of the main TV content providers.

3.2.2 The mobile market

Mobile data allowances

The German mobile market has medium-level data allowances compared to the other case study countries. Figure 25 shows the distribution of tariffs currently offered by Germany's MNOs, relative to those in our other case-study countries. Notably, it has fewer small (<2GB) and large (>10GB) monthly data allowance packages, but a greater number of medium-sized packages. Excluding unlimited data offers, the average monthly data allowance in Germany's tariffs is 6.8GB, relative to our case study country average of 7.9GB.

⁴⁷ 2015 Media Trend Outlook, PWC, September 2015.

⁴⁸ International Communications Market Report 2015, OfCom, 10 December 2015.

Figure 25: Distribution of monthly data allowances by tariff

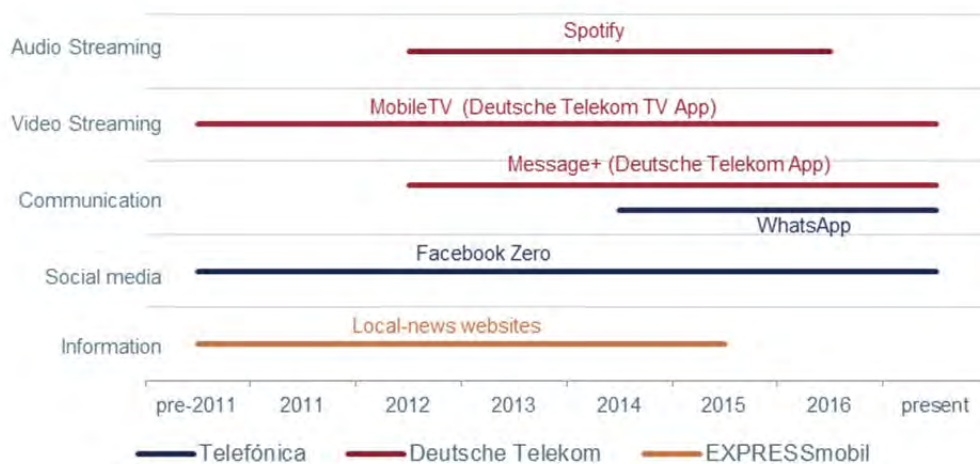


Evolution of zero-rated offers

Zero-rating in Germany started as early as 2009 by EXPRESSmobil, an MVNO operating on Telefónica's network, which zero-rated local news websites that it owned. However, in 2015 it discontinued this service.

Currently, zero-rating is only practiced by two of the three MNOs (Deutsche Telekom and Telefónica). Since 2012, MNOs have increased the range of zero-rated offers available, as can be seen in Figure 26 below.

Figure 26: Timeline of zero-rated offers in Germany



From 2012 to 2016, Spotify was zero-rated as an add-on option for existing and new subscribers of Deutsche Telekom, as part of an “exclusive” deal.⁴⁹ For EUR9.95 per month, one could purchase Spotify with zero-rating from Deutsche Telekom, whereas from Spotify (without zero-rating) it would cost EUR9.99 per month. The exact nature of this exclusivity is unclear (i.e. whether Deutsche Telekom was not permitted to partner with other music platforms or Spotify not permitted to partner with other MNOs, or both).

In April 2016, due to changes in net neutrality regulation (the European Commission’s Telecom Single Market Regulations coming into effect), Deutsche Telekom began to throttle Spotify once the generic data allowance was used up (prior to that, Spotify was zero-rated even once consumers had used up their data allowance). However, as of 2 August 2016, Deutsche Telekom stopped zero-rating Spotify for new customers. Deutsche Telekom has stated that this was due to a “fourfold increase in data volumes”.⁵⁰

Current zero-rated offers

Germany has four current zero-rated offers, all of which are provided by two MNOs (Telefónica and Deutsche Telekom), as shown in Figure 27 below. We are not aware of any MVNOs currently practicing zero-rating.

Figure 27: Current zero-rated offers in Germany’s mobile market

Operator	Packages	Services	Data allowance for ZR service	Incremental cost (EUR)
In bundle zero-rating				
E-Plus (Telefónica)	WhatsApp prepaid SIM	WhatsApp	Unlimited	-
E-Plus (Telefónica)	All	Facebook Zero	Unlimited	-
Deutsche Telekom	All	Message+ (operator-owned messaging platform)	Unlimited	-
Add-ons to mobile plans				
Deutsche Telekom	All	MobileTV (operator-owned OTT TV platform)	Unlimited	4.95 to 9.95 per month

Telefónica only zero-rates under its relatively more budget E-Plus brand. In 2014, E-Plus launched a branded WhatsApp prepaid-only SIM card (as can be seen in Figure 28 below), which provides free access to WhatsApp for a month with the purchase of the “WhatsAll240” and “WhatsAll 600” packages for EUR5 and EUR10

⁴⁹Spotify Datenvolumen | Telekom Hilfe. Available at: <https://www.telekom.de/hilfe/mobilfunk-mobiles-internet/mobiles-internet-e-mail/apps/spotify/datenvolumen-belastung> [Accessed 25 October 2016]

⁵⁰ Deutsche Telekom Blog. Available at: <https://telekomhilft.telekom.de/t5/Blog/Wichtige-Information-zur-Option-Music-Streaming-fuer-Neukunden/ba-p/2034561> [Accessed 8 June 2017]

per month respectively.⁵¹ After expiration of the data allowance, WhatsApp messages are not throttled, however, all other data is (including WhatsApp calls, pictures and videos). We understand that the proportion of Telefónica's customer base on this plan is very small.

Figure 28: Screenshot of WhatsApp SIM card offered by E-Plus

WhatsApp-branded SIM card from Telefónica

WhatsApp SIM

Die Prepaid-Karte für WhatsAppper!

Jetzt 30 Tage testen:

Starterpaket mit 600 MB/MIN/SMS + WhatsApp Flat für nur 10€*

- ✓ 600 Einheiten, flexibel für MB/MIN/SMS einsetzbar
- ✓ WhatsApp Flat - nach Verbrauch der Einheiten weiter whatsappen*
- ✓ Echtes Prepaid: Keine Laufzeit, volle Kostenkontrolle!
- ✓ Jetzt Starterpaket für 10€ sichern und WhatsApp SIM testen

+5 € Guthaben als Bonus

WhatsApp Sim bestellen

Gratis-Versand bei Bestellung

Keine Vertragslaufzeit jederzeit kündbar

Zwei Netze für besseren Empfang

25 € Wechselbonus bei Rufnummernmitnahme

Zero-rating is clearly stated on the website

E-Plus also zero-rates Facebook Zero on all of its tariffs.⁵²

Deutsche Telekom zero-rates its own communications application, Message+, on all its tariffs.⁵³ This service is free and is activated by downloading the application. It is only available to Deutsche Telekom mobile subscribers and includes messages, voice calls, video calls and file sharing.⁵⁴ However, our understanding is that

⁵¹WhatsApp SIM. Available at: <https://www.whatsappsim.de/> [Accessed 6 October 2016]

⁵²BKartA (German National Competition Authority) response to RFI. Received 19 September 2016.

⁵³Message+ by Telekom. Available at: <https://messageplus.telekom-dienste.de/> [Accessed 3 October 2016]

⁵⁴Telekom Message + (RCS) | Google Play Store. Available at: <https://play.google.com/store/apps/details?id=com.telekom.joyn&hl=de> [Accessed 7 October 2016]

Message+ is a niche application, and is much less popular than for example WhatsApp.

Deutsche Telekom has two mobile TV applications: EntertainTV and MobileTV.

The EntertainTV mobile application is available for free to subscribers of Deutsche Telekom's fixed TV service, EntertainTV. In addition to other services, the EntertainTV application allows for the live streaming of all channels purchased as part of the existing fixed TV subscription on mobile devices. EntertainTV is not zero-rated.

MobileTV is an application only available to Deutsche Telekom's mobile subscribers. It has similar content to EntertainTV, but is a separate service and is not bundled in with the EntertainTV fixed subscription. It is priced as follows⁵⁵:

- Basic package (>25 channels): EUR7.50 per month
- Sky Bundesliga matches: EUR9.95 per month
- Dortmund matches only: EUR4.95 per month
- HSV matches only: EUR4.95 per month

In contrast to the EntertainTV mobile application, MobileTV is zero-rated. If there is no data allowance remaining, the live video streaming is throttled. It is interesting to note that Deutsche Telekom claims to have stopped zero-rating Spotify due to the data it generated, but has continued with MobileTV, which one would expect is more data-intensive (although we expect has fewer users).

In summary, the mobile video streaming options available from Deutsche Telekom are:

- if you are an EntertainTV subscriber – the EntertainTV application – which is free in terms of subscription but not zero-rated.
- MobileTV – which requires a subscription fee – but is zero-rated.

In terms of exclusivity, it is reported that Deutsche Telekom's arrangement with Spotify was exclusive. However, this exclusivity is likely to have been related to Deutsche Telekom's ability to directly sell Spotify subscriptions. It is not clear whether this arrangement does or can prevent other MNOs from zero-rating Spotify.

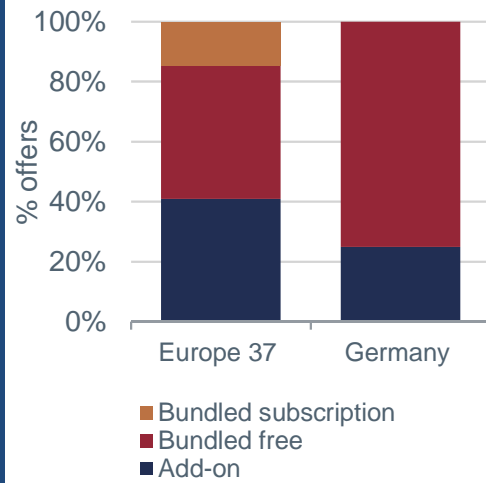
Clearly, Deutsche Telekom's zero-rating of Message+ and MobileTV is exclusive in the sense that these applications are not available on other mobile networks. We are not sure whether Telefónica's

⁵⁵Mobile TV: Fernsehen für unterwegs | Telekom. Available at: <https://www.telekom.de/unterwegs/apps-und-dienste/mobile-tv> [Accessed 7 October 2016]

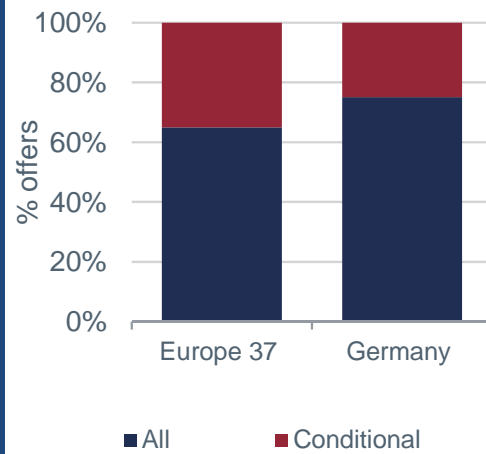
agreement with WhatsApp is exclusive or otherwise. It is possible, or even likely, that WhatsApp agreed not to launch a pre-paid SIM offer with other MNOs; however this may not prevent other MNOs zero-rating WhatsApp.

Box 3: Summary of mobile zero-rated offers in Germany

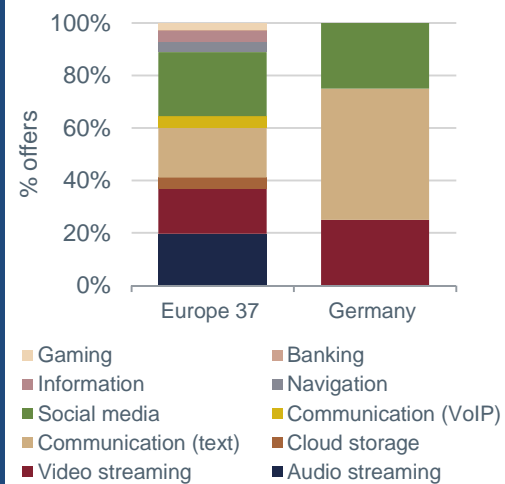
Majority of zero-rated offers in Germany are Bundled Free, whereas across Europe there is a greater variance.



Only one of the four zero-rated offers are with conditions attached (i.e. offer applies to some but not all of a tariff family), whereas the rest are only available to specific tariffs



The split of zero-rated offers in Germany is communication heavy, notably with no audio streaming (since Deutsche Telekom discontinued zero-rating of Spotify)



Potential impact of mobile zero-rating on consumer behaviour

In this section, we discuss the impact of mobile zero-rating on consumer behaviour with regards to both their choice of mobile operator and of CAPs.

Firstly, it is notable that Deutsche Telekom had 'exclusively' zero-rated Spotify as an add-on until earlier this year. We note that during the period of this agreement (2012-2016) Spotify established itself as the clear market leader in the audio streaming market. However, it is very difficult to attribute how much of this success was due to it being zero-rated by Deutsche Telekom. That said, given that this deal was discontinued, it could reasonably be assumed that it was not successful enough for Deutsche Telekom to justify the cost of the incremental traffic it created.

E-Plus (Telefónica) zero-rates WhatsApp on a branded prepaid SIM. However, WhatsApp is a relatively data-light service and therefore this offer could easily be replicated by other mobile operators, and it would be relatively cheap for customers to access WhatsApp on a non-zero-rated basis from other mobile operators. Therefore, it seems unlikely that this offer would have a major impact on consumer behaviour.

Telefónica also zero-rates Facebook Zero. Facebook Zero is a low-bandwidth text-only version of its mobile website. Due to its limited functionality, it is not popular in Germany. Therefore, this zero-rated offer probably has a limited impact on consumer behaviour.

Deutsche Telekom zero-rates its own messaging platform, Message+. However, again, we understand that it is not very popular.

Finally, Deutsche Telekom zero-rates its own video streaming application, MobileTV, which is only available to Deutsche Telekom's mobile subscribers.

The effective discount being received for zero-rated access to MobileTV is potentially substantial. Consider a subscriber that streams for example 20 minutes of SD video per day; he/she would use approximately 2.3GB additional data per month.⁵⁶ Without zero-rating, he/she could, for example, purchase the MagentaMobil L Plan (6GB data) for EUR44.96 per month; whereas with the zero-rated offer, he/she could gain access to the same content by

⁵⁶MobileTV does not provide HD content, but if they did, then this hypothetical subscriber would use an additional 9GB per month.

purchasing the MagentaMobil M Plan (3GB data) for EUR35.95 per month. This represents a saving of EUR9 per month.⁵⁷

It is of course possible for consumers to access similar content to MobileTV on a non-zero-rated basis, but given the likely data cost associated with such a service – perhaps a similar magnitude to the subscription cost – zero-rating may influence the consumer’s choice of both mobile operator and content provider.

However, we note that due to MobileTV being entirely separate to Telekom’s fixed EntertainTV service, there appears little incentive for an EntertainTV subscriber to also acquire MobileTV. Although they have to pay for the data associated with the EntertainTV mobile application, there is no subscription fee.

In the hypothetical situation that Deutsche Telekom were to zero-rate EntertainTV, this would have a much greater impact, since a Deutsche Telekom fixed TV subscriber would be able to watch live TV content on-the-go for no additional cost.

3.2.3 The fixed market

In Germany, there are six significant operators that offer fixed broadband: Deutsche Telekom, Vodafone, Tele2, 1&1, Telefónica and Unity Media. Of these operators, Deutsche Telekom, Vodafone, Tele2 and Unity Media only offer unlimited (i.e. no data cap) broadband packages; whereas, Tele2 offers one package that is capped at 100GB per month and Telefónica offers multiple capped broadband packages at 100 GB, 300 GB and 500 GB per month. However, to our knowledge, neither of these operators zero-rate any of their services.

3.2.4 Key findings

Our key findings are summarised below:

Potential effect on consumer behaviour

- There is currently relatively little zero-rating activity in Germany.
- Although zero-rating is currently practiced by two of the three MNOs, there are only four zero-rated offers; two of which are for unpopular applications (Facebook Zero and Message+), and a third is for a relatively low-data-usage application (WhatsApp).

⁵⁷Neue Smartphone-Tarife MagentaMobil | Telekom. Available at: https://www.t-mobile.de/telefonieren-und-surfen/0,21919,25250-_,00.html [Accessed 3 October 2016]

- Deutsche Telekom had an 'exclusive' deal with Spotify, but stopped this deal, reportedly because of the increase in data traffic. This suggests that the commercial benefits of zero-rating this application did not justify the associated traffic costs.
- Currently, Deutsche Telekom zero-rates its own MobileTV application. Due to its data-heavy nature, this offer represents a substantial discount for MobileTV subscribers. However, given that subscribers of Deutsche Telekom's fixed EntertainTV service can gain subscription-free (but not zero-rated) access to very similar content on their mobiles, there appears little incentive for EntertainTV subscribers to also acquire MobileTV.
- There are no examples of zero-rating in the fixed market.

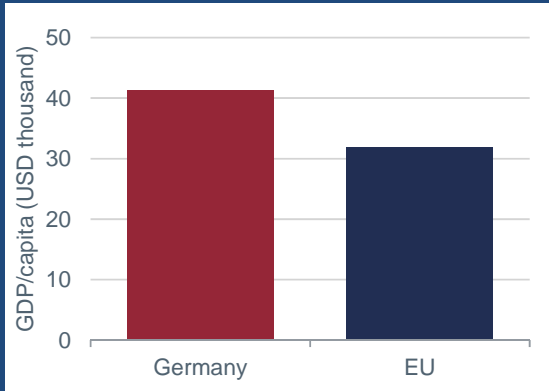
*Potential
competition
concerns*

It appears unlikely that the zero-rating practices in Germany creates material competition concerns:

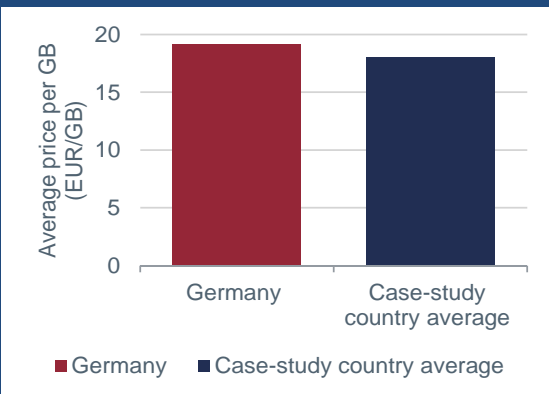
- Regarding competition between mobile operators – it appears relatively easy for competing operators to replicate Telefónica's Facebook Zero and WhatsApp offers, either by zero-rating the same applications or by offering plans with larger data allowances. Both of these applications are relatively data-light, which would make replication low-cost.
- Deutsche Telekom's zero-rating of Message+ and MobileTV cannot be directly replicated, as they are operator-owned, exclusively available to Deutsche Telekom customers. However, Message+ appears unlikely to create a competition concern because of its limited popularity and availability of third-party owned substitutes (e.g. WhatsApp). The largest concern arguably comes from the zero-rating of MobileTV, where the effective discount could potentially affect the choice of mobile operator and the choice of content.

Box 4: Germany key statistics

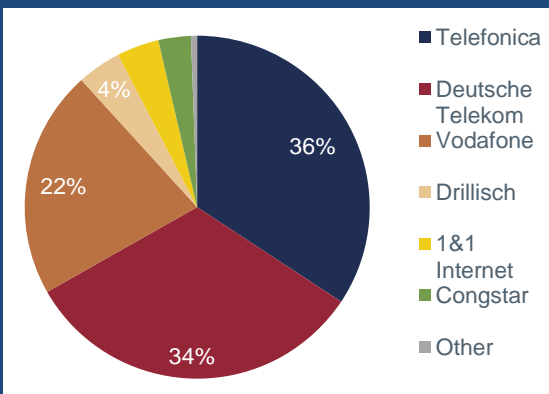
GDP per capita figures taken from World Bank 2015 data



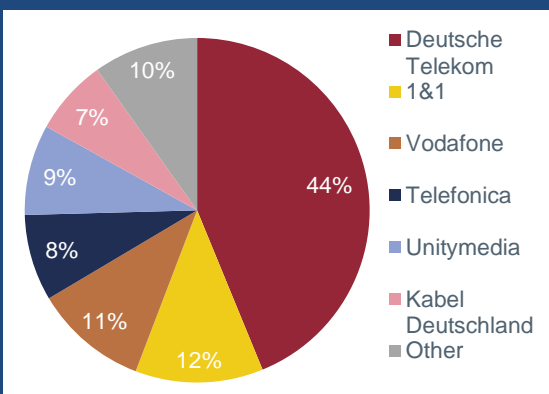
Note that average price per GB is compared to case study countries rather than EU



Retail mobile market shares taken from AT Kearney report, 2014 figures



Fixed market shares taken from BNetzA, 2013 figures. Kabel Deutschland and Vodafone are shown separately due to the merger not being fully completed



3.3 Portugal

3.3.1 Background

Portugal has four major players in the fixed and mobile markets – MEO (Altice), NOS, Vodafone and NOWO. On the fixed side, MEO, NOS and NOWO are the main players, with Vodafone having a smaller market share. MEO (previously Portugal Telecom) is the fixed incumbent and NOS is the major cable TV operator.

On the mobile side, three of these four major players make up Portugal's MNOs (MEO, NOS and Vodafone), with NOWO launching an MVNO in September 2016. In addition there are a number of other MVNOs, including Lycamobile and Vectone Mobile.

Figure 29: Major telecom providers in Portugal

Operator	MEO (Altice)	NOS	Vodafone	NOWO	Lycamobile	Vectone Mobile
Mobile	✓	✓	✓	MVNO	MVNO	MVNO
Fixed voice / broadband	✓	✓	✓	✓		
TV content	✓	✓	✓	✓		

The Portuguese market is not atypical with regards to CAPs, with the notable exception that WhatsApp does not have a particularly strong presence and Facebook Messenger is the most popular communications application for both VoIP and instant messaging. In the audio-visual CAP sector, Youtube and Spotify have clear leads over other video and audio streaming applications⁵⁸.

There are four major quad-play operators in Portugal (MEO, NOS, Vodafone and NOWO), all of whom are providers of video content. It is notable that the television packages offered by each of the operators are very similar, with all four offering add-on subscriptions to SPORT TV, the channel that owns the rights to key sports content – specifically the Portuguese Primeira Liga and Champions League. Other channels on offer are almost identical, with very few channels exclusive to any particular operator.

⁵⁸ Estudo sobre Serviços de Aplicações e Conteúdos (Over-The-Top – OTT) Relatório Integrado – Versão Pública Os serviços OTT em Portugal, Anacom, and Q Metrics, (2016). Available at: http://www.anacom.pt/render.jsp?contentId=1380573#.V_N2WygrluW [Accessed 4 October 2016].

It is also important to note that OTT provider Netflix launched in October 2015⁵⁹, and therefore has had less time to consolidate its presence than in other European countries where it typically has a stronger presence.

Another notable aspect of the Portuguese market is that the three MNOs have all launched sub-brands aimed exclusively at the under-25s market (over 25-year-olds are not allowed to subscribe to these services), and all offer very similar services, tariffs and data allowances.

3.3.2 The mobile market

Mobile data allowances

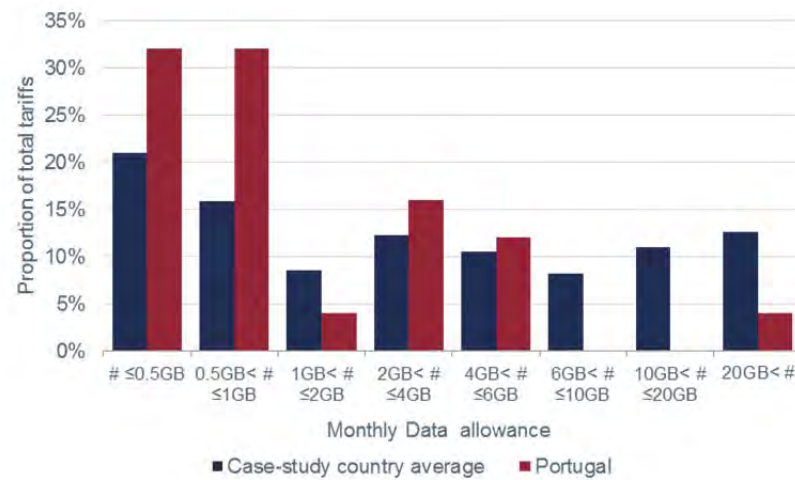
The Portuguese mobile market has low level of data allowances compared to the other case study countries, and it is notable that the only available offer with a monthly data allowance of more than 5GB is MEO's 30GB data plan.

The youth sub-brands do not have particularly low data allowances compared to the main brand tariffs – indeed the second highest data allowances of 5GB are all offered by the youth brands.

The average data allowance in Portugal is 2.8GB, which is low compared to our case study average of 7.9GB.

⁵⁹ Netflix : Top Investor Questions. Available at: <https://ir.netflix.com/faq.cfm> [Accessed 4 October 2016].

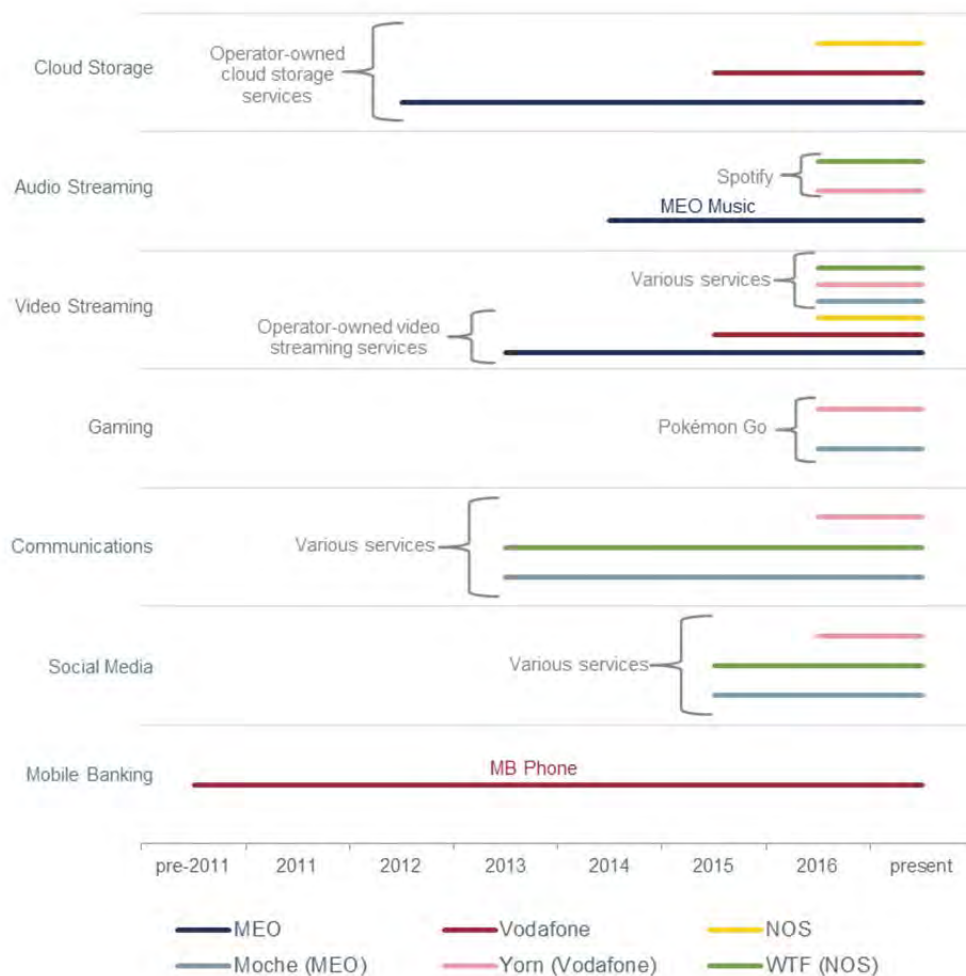
Figure 30: Distribution of monthly data allowances by tariff



Evolution of zero-rated offers

Zero-rating services in the mobile market has been a common practice in Portugal, especially since 2012, and it appears to be growing, with more operators starting to offer zero-rated services, or expanding their existing zero-rating practices to include more services.

Figure 31: Timeline of zero-rated offers in Portugal



The first instance of zero-rating started in 2009 when Vodafone launched the MB Phone mobile banking application, which was zero-rated for all Vodafone customers. However, the current trend for zero-rating was arguably initiated by MEO in 2012-2013 when it began zero-rating its cloud and TV-streaming applications. Since then all of the MNOs' main brands have gone on to zero-rate their own video streaming and cloud storage applications, with NOS starting most recently in 2016.

Moche (MEO's youth brand) and WTF (NOS's youth brand) started zero-rating Facebook Messenger in 2013 and have since gone on to expand their zero-rating across many other services. More recently, and following a re-branding in early 2016, Yorn (Vodafone's youth brand) has closely imitated the zero-rating practices offered by Moche and WTF. All of these zero-rated offers appear to have expanded in response to increasing popularity of applications and services. For example, in September 2016, Moche and WTF included Pokémon Go in their zero-rated offers, seemingly in response to the popularity of this gaming application.

Current zero-rated offers

There is a high prevalence of zero-rated offers in Portugal, with all three of the MNOs currently zero-rating. The large majority of these zero-rated offers are in-bundle, with only one add-on currently on offer (Vodafone's Mobile TV subscription service). We are not aware of any zero-rated offers by MVNOs.

Figure 32: Current zero-rated offers in Portugal's mobile market

Operator	Packages	Services	Data allowance for ZR service	Incremental cost (EUR)
In bundle zero-rating				
MEO	All	MEO Cloud, MEO Music	Unlimited	-
MEO	TV customers	MEO Go (TV streaming)	10GB	-
Moche (MEO)	All	WhatsApp, iMessage, Facebook Messenger, Facetime, Skype, Viber, Facebook, Instagram, Vine, Snapchat, Pokemon Go	15GB	-
Moche (MEO)	1GB and 5GB packages	Youtube and Twitch	5GB	-
Vodafone	All	Tv Vodafone app	2 hours/month	-
Vodafone	All	Vodafone backup+, MB Phone	Unlimited	-
Yorn (Vodafone)	All	Spotify Premium, Vodafone Message+ & Call+, WhatsApp, iMessage, Facebook Messenger, Facetime, Skype, Viber, Facebook, Instagram, Vine, Snapchat, Pokemon Go	10GB	-
Yorn (Vodafone)	1GB and 5GB packages	Youtube and Twitch	5GB	-
NOS	NOS4 Iris	NOS TV	10GB	-
NOS	NOS4 Uma, NOS 5 Uma	NOS TV, NOS Share	25GB	-
WTF (NOS)	All	WhatsApp, iMessage, Facebook Messenger, BBM, Facetime, Skype, Viber, Facebook, Instagram, Snapchat	Unlimited	-
WTF (NOS)	1GB and 5GB packages	Youtube and Spotify	5GB	-
Add-ons to mobile plans				
Vodafone	All	Mobile TV	Unlimited	From 2.24 per week

Current zero-rating in Portugal follows two distinct patterns. Firstly, all of the three MNOs zero-rate some of their own applications on their main brand. In particular they all zero-rate their own video streaming applications, which are linked to the TV content they each provide via their fixed networks. Secondly, the youth brands zero-rate a large number of communication and social media applications.

MEO zero-rates MEO Cloud⁶⁰ (its own cloud storage application) and MEO Music⁶¹ (its own audio streaming application) across all of

⁶⁰ MEO - Televisão, Internet, Telefone e Telemóvel. Available at: <https://www.meo.pt/telemovel/mais-servicos/apps> [Accessed 10 October 2016].

⁶¹ MEO Music FAQs. Available at: <https://music.meo.pt/perguntas-frequentes> [Accessed 10 October 2016].

its tariffs. Once a subscriber reaches its data allowance, data is throttled. However, we have been unable to confirm whether this also applies to the zero-rated services based on the information provided on MEO's website. MEO also zero-rates MEO Go, a video streaming application which gives access to MEO's fixed TV content, with a data allowance of 10GB per month for all of its customers (including Moche customers)⁶² who are also subscribed to one of their fixed or mobile TV packages.

Vodafone zero-rates three of its own-brand applications and service. The TV Vodafone application, which is only available to Vodafone's fixed TV service subscribers, carries a promotional offer of 2 hours of zero-rated streaming a month, after which the data has a price of EUR2 per hour⁶³, approximately EUR2 per 0.7GB⁶⁴. Vodafone Mobile TV (a subscription linear TV service) is zero-rated for customers that sign up for one of the weekly or monthly subscriptions to the service⁶⁵. This seems to be aimed at Vodafone mobile customers who do not subscribe to one of the fixed TV packages. Vodafone backup+ (unlimited zero-rated uploads, but not downloads, to a Vodafone-branded Dropbox cloud storage service⁶⁶) is zero-rated across all of Vodafone's tariffs. The MB Phone mobile banking application is also zero-rated on Vodafone according to information provided by the Portuguese regulator (Anacom). There is no mention of this on Vodafone's own website, although the description of the application on the iTunes App Store web page does mention that "data traffic generated by the application on Vodafone's network is free"⁶⁷ (see screenshots in Figure 33 below).

⁶² MEO Go :: TV em qualquer lugar :: Produtos. Available at: <http://meogo.meo.pt/oqueue/Pages/produtos.aspx#details-meo-go-gratis> [Accessed 10 October 2016].

⁶³ App Tv Vodafone. Available at: <http://www.vodafone.pt/main/particulares/apps/tv-vodafone.html> [Accessed 10 October 2016].

⁶⁴ AT&T Data Calculator. Available at: <https://www.att.com/att/datacalculator/> [Accessed 3 October 2016].

⁶⁵ App Vodafone Mobile TV. Available at: <http://www.vodafone.pt/main/particulares/apps/vodafone-mobile-tv.html> [Accessed 25 October 2016].

⁶⁶ App Vodafone Backup+. Available at: <http://www.vodafone.pt/main/particulares/apps/vodafone-backup-mais.html> [Accessed 25 October 2016].

⁶⁷ <https://itunes.apple.com/pt/app/mb-phone/id294931000?mt=8>

Figure 33: Screenshots of the MB phone page on Vodafone's website and on Apple iTunes' website

Produtos e Serviços ▾ Ajuda ▾ My Vodafone ▾

Início / Apps / MB Phone

MB Phone

Vá ao multibanco no smartphone. Quase tudo o que faz numa caixa multibanco pode ser feito através do telemóvel.

Download app:

Ou envie-nos um SMS grátis para o 12345 com o texto "MB".

Fácil, cómodo e seguro

O MB Phone permite-lhe associar até 5 contas bancárias e movimentá-las como se estivesse em frente a uma caixa multibanco.

- carregar o telemóvel
- pagar faturas
- fazer pagamentos de serviços
- consultar o saldo das suas contas, movimentos ou NIB
- pagar as compras que faz online

MB Phone

De Vodafone Portugal Comunicacoes Pessoais, S.A.

Abra o iTunes para comprar e descarregar apps.

[View in iTunes](#)

Gratuito

Categoria: Finanças
Actualizado: 25/11/2015
Versão: 1.6.8
Tamanho: 1.9 MB
Idioma: Inglês
Programador: Vodafone Portugal Comunicacoes Pessoais, S.A.
© Vodafone Portugal 2009
Classificação de 4+

Compatibilidade: Requer o iOS 6.0 ou posterior.
Compatível com iPhone, iPad e iPod touch.

Descrição

O Multibanco no seu iPhone.

Com o serviço MB PHONE pode utilizar o seu telemóvel para efectuar a maioria das transacções que estão disponíveis nos Caixas Automáticos Multibanco.

Funcionalidades:

- Carregar o seu pré-pago.
- Efectuar pagamentos de serviços
- Efectuar consulta de saldo, movimentos e NIB
- Pagar a sua factura Vodafone.
- Carregar outros números pré-pagos.
- Requisitar Cheques.
- Efectuar transferências entre contas associadas.

Activação:

Se não é cliente MB PHONE, deverá associar o seu número de telefone a(s) conta(s) bancárias que pretende gerir. Para isso deve basta dirigir-se a um Multibanco e seleccionar "Outras Operações", "MB PHONE" e seguir os passos indicados no ecrã.
(se for Cliente Millenium por favor ligue 12980)

Notas:

- Não é possível a utilização da aplicação MB PHONE em Wi-Fi. O tráfego de dados gerado pela aplicação na rede Vodafone é gratuito.
- Aplicação exclusiva para clientes Vodafone.
- Consulte tarifário em www.vodafone.pt ou na Aplicação em opção "Info MB PHONE", "Tarifas".

[Web site de Vodafone Portugal Comunicacoes Pessoais, S.A.](#) [Suporte de MB Phone](#)

Finally, NOS zero-rates its NOS TV application – which provides mobile access to NOS's fixed TV content – on the cheapest quad-play package it offers (10GB of video streaming is zero-rated) and both NOS TV and NOS Share, a cloud storage service, on the two most expensive quad-play packages (a total of 25GB of data is zero-

rated across both the NOS applications)⁶⁸. This zero-rated offer is not available to mobile-only customers.

For the avoidance of doubt, it is our understanding that customers of MEO, Vodafone and NOS's fixed TV services can access this content via the associated mobile applications regardless of which mobile operator they subscribe to. However, the content is only zero-rated if they subscribe to the same provider as their fixed service.

The second type of zero-rating currently being practiced in the Portuguese market is that of a large number of services by the youth-oriented brands owned by the three MNOs. The tariffs and zero-rated offers by all three are extremely similar. They all offer zero-rating of the most popular communication and social media services such as Facebook, Facebook Messenger, Instagram and Skype across all of their tariffs, and 5GB of zero-rated video streaming data on the two most expensive tariffs.

Moche, MEO's youth brand, offers 15GB of zero-rated data for a total of 11 communication, social media and gaming applications across all of its tariffs, and 5GB of zero-rated YouTube and Twitch data is included in the two highest priced tariffs⁶⁹. After reaching the tariff's data allowance, data has a cost of EUR1.99 per day with a limit of 60MB a day. However, based on the information available on Moche's website, it is not possible to confirm whether this also applies to the zero-rated services, although it seems likely that the services continue to be zero-rated even once the main data allowance is used up.

Yorn, Vodafone's Under-25 brand, offers 10GB of zero-rated data for a total of 13 applications (this includes all those zero-rated by Moche, plus Spotify Premium, Vodafone Message+ and Vodafone Call+), and 5GB of zero-rated YouTube and Twitch data is included in the two highest priced tariffs⁷⁰. It is not clear what happens when the tariffs' data allowances are reached. It is also interesting to note that the tariffs currently include 3 months' subscription to Spotify Premium, as well as zero-rated Spotify Premium (and not Spotify Free).

NOS's youth oriented brand, WTF, offers unlimited zero-rated data for 11 applications across all of its three tariffs and 5GB of zero-rated

⁶⁸ Pacotes NOS - NOS. Available at: <http://www.nos.pt/particulares/pacotes/todos-os-pacotes/Paginas/pacotes.aspx#tab2> [Accessed 10 October 2016].

⁶⁹ MOCHE Legend. Available at: <https://www.moche.pt/tarifarios/moche-legend.aspx> [Accessed 10 October 2016].

⁷⁰ Yorn És Tu. Available at: <http://www.yorn.net/YORN/tarifario/yorn-x/index.htm> [Accessed 10 October 2016].

YouTube and Spotify data is included in the two most expensive tariffs⁷¹. The main difference with regards to the Under-25 zero-rated offers of its competitors is the fact that Pokémon Go, Vine and Twitch are not zero-rated. Once the main data allowance is reached, it is explicitly stated that customers will continue to have access to the zero-rated services⁷².

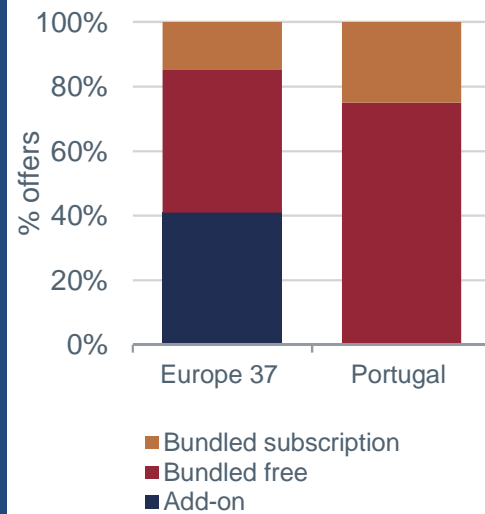
With regards to any possible exclusivity agreements between the operators and CAPs, it is clear that the youth brands do not have any exclusive arrangements with the social media and communication applications, as there are several applications that are zero-rated by all three operators (e.g. Facebook). It also seems unlikely that these CAPs have exclusive arrangements with the operators, as there are competing applications that are zero-rated by the same operator – e.g. WhatsApp (owned by Facebook), Skype (owned by Microsoft) and Viber (owned by Rakuten Inc.) are all zero-rated by all three operators.

⁷¹ WTF – Tá-se tudo a passar. Available at: <http://www.wtf.pt/> [Accessed 10 October 2016].

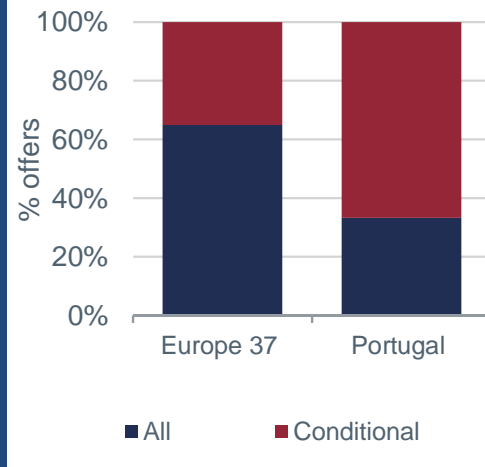
⁷² WTF FAQs. Available at: http://www.wtf.pt/upload/pdf/wtf_faqs_new.pdf?20160513 [Accessed 10 October 2016].

Box 5: Summary of mobile zero-rated offers in Portugal

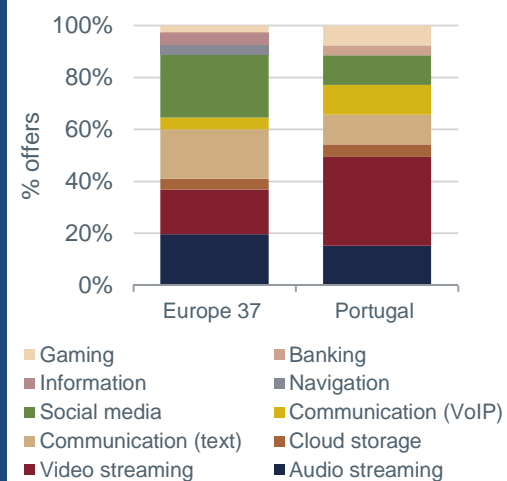
Zero-rated offers are always in-bundle, in marked contrast to the almost even split across the rest of Europe.



Zero-rated offers are more often with conditions attached (i.e. offers apply to some but not all of a tariff family)



Zero-rated offers largely follow the European pattern of prevalence, but with higher prevalence of cloud storage and lower presence of social media offers



Potential impact of mobile zero-rating on consumer behaviour

The main brands' zero-rating of their own TV and cloud storage applications is an important discount, due to this type of service being data-heavy, especially considering the low data limits common across the tariffs in Portugal. This combination of factors has the potential to have a significant impact on consumers' behaviour.

There may be an impact on consumer choice of MNO, due to the fact that subscribers of fixed TV services have an incentive to choose the same mobile provider because of the advantage of having zero-rated video streaming on mobile.

The impact is likely to be less for consumers that aren't already subscribed to a fixed TV service, as the MNOs all offer very similar zero-rated services, and the TV content and channels provided by all the quad-players is very similar. The only operator that does not currently zero-rate their own TV content is NOWO. However, it has only very recently launched as an MVNO and does not currently offer a mobile TV application.

There may also be an impact on consumers' choice of CAPs. The fact that the operators' own TV content is zero-rated could mean that consumers may be less likely to subscribe to other content providers, such as Netflix, as streaming Netflix on their mobiles has a high data cost⁷³. A subscription to Netflix costs EUR7.99 per month⁷⁴, and streaming 20 minutes a day of Netflix will use approximately 2.3GB of data⁷⁵, so would imply a subscription to one of the higher data plans available, for example MEO's 3GB mobile plan at EUR30.99 per month. This would cost a total of EUR38.98 per month. In comparison, for EUR16 per month, consumers can subscribe to a MEO TV package that includes 10GB per month of zero-rated MEO Go data, and subscribe to a lower mobile data package, for example MEO's 500MB package for EUR12.49 per month, for a total of EUR28.49/month.

Similarly, consumers may be less likely to use other cloud storage applications.

⁷³ Since December 2016, it has been possible to use Netflix offline, which may decrease the data cost of Netflix, as consumers are able to download content while connected to a WiFi network, and watch it later.

⁷⁴ Netflix Portugal. Available at: <http://www.netflix.com/pt> [Accessed 10 October 2016].

⁷⁵ AT&T Data Calculator. Available at: <https://www.att.com/att/datacalculator/> [Accessed 3 October 2016].

The youth brands' zero-rating of a wide range of applications is unlikely to have a strong impact on the consumers' choice of mobile operator, as the list of applications zero-rated by each operator is extremely similar.

However, this practice may have more of an impact on consumers' choice of CAPs, as the low data limits mean that consumers may be less likely to use any application that is not zero-rated. We are unable to provide concrete examples of this; but as an illustration, if a customer subscribed to WTF's middle data tariff, paying EUR11.80 for 1GB of data, and they wanted to stream 40 hours of music per month through Deezer instead of Spotify (worth approximately 1.14GB of data), they would probably need to subscribe to the higher data plan, for EUR16.80 a month (monthly incremental cost of EUR5). We note that the effective discount provided by zero-rated audio streaming is likely to be higher than for less data-intensive applications such as Facebook Messenger and WhatsApp.

3.3.3 The fixed market

We are only aware of one fixed offer that currently has a limited data allowance – MEO's ADSL + Phone plans have a monthly limit of 30GB for the 12Mbps tariff and 50GB for the 24Mbps tariff. However, these allowances only apply if customers do not sign up for electronic billing and payment by direct debit⁷⁶. There does not seem to be any zero-rated offers on MEO's limited fixed plan.

As far as we are aware all other fixed plans available have unlimited data allowances, with service providers using data rates to differentiate between tariffs. Zero-rating is therefore not relevant.

3.3.4 Key findings

There is a large amount of zero-rating activity in the mobile sector, with two main types of zero-rating currently being practiced:

Potential effect on consumer behaviour

Firstly, MNOs zero-rate their own TV streaming and cloud storage applications on their main brands.

Notably, all three MNOs zero-rate their own TV content, exclusively to subscribers of their fixed TV services. In the case of customers that are subscribed to one MNO's TV content and a different operator's mobile service, they can still access the TV content on

⁷⁶ MEO - Televisão, Internet, Telefone e Telemóvel. Available at: <https://www.meo.pt/pacotes/mais-pacotes/adsl/net-voz> [Accessed 12 October 2016].

their mobile phones although the service will not be zero-rated. The effective discount available from the zero-rating practice is sizeable given that the applications are relatively data-heavy. With TV content varying little across the different providers these zero-rating practices may have an impact on consumer behaviour. Specifically:

- customers that subscribe to a fixed TV package receive a discount if they choose the same mobile provider; and
- customers may favour the zero-rated operator-owned applications over other video streaming and cloud storage applications.

Secondly, the MNOs' youth brands zero-rate a wide range of services. This is however unlikely to be a major influence on consumers' choice of MNOs, as they all offer essentially the same service.

There is potentially a larger concern on the CAP side. Although there does not appear to be any exclusive arrangements, the combination of low data caps and a long list of zero-rated applications may mean that consumers are more likely to use the zero-rated applications than others. That said, zero-rating is just one reason of many why consumers choose certain applications over others; and in the case of data-light applications the influence of zero-rating is likely to be small.

In the fixed market there is only one fixed offer that has a limited data allowance, but no zero-rating is practiced.

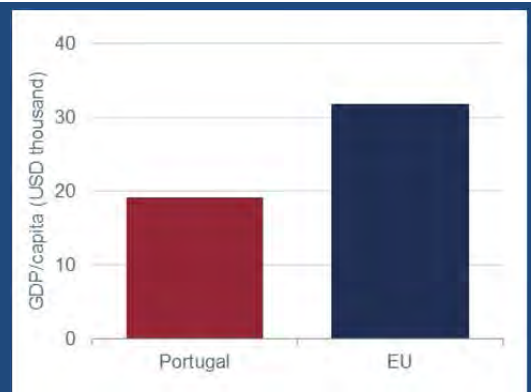
*Potential
competition
concerns*

It is possible that the zero-rating practices in Portugal – and specifically the MNOs zero-rating their own TV content – may cause some competition concerns.

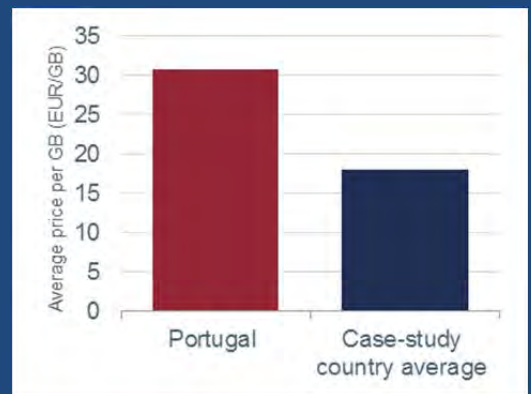
With all operators zero-rating their own TV content, there appears to be an advantage from obtaining mobile services from the same provider as fixed TV services. This suggests that operators are trying to compete across bundles including (at least) mobile and TV services.

Box 6: Portugal key statistics

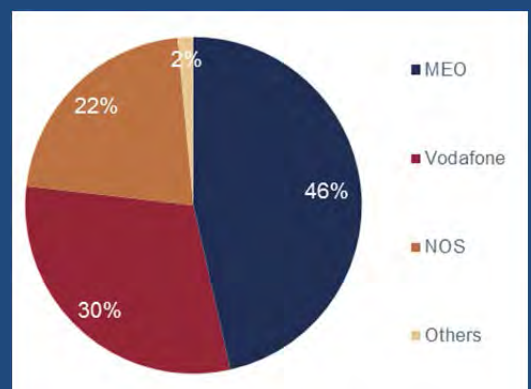
GDP per capita figures taken from World Bank 2015 data



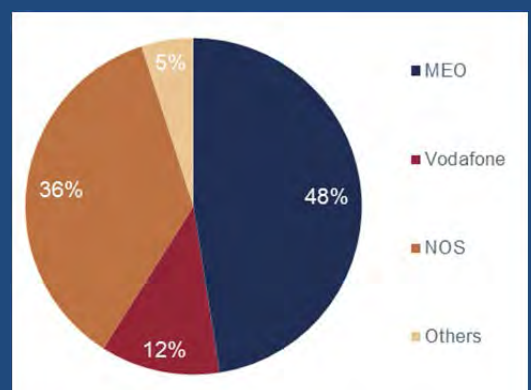
Note that average price per GB is compared to case study countries rather than EU



Retail mobile market shares taken from Anacom, 2015 figures



Fixed market shares taken from Anacom, 2015 figures.



3.4 Sweden

3.4.1 Background

Sweden has four mobile network operators: Telia, Tele2, Telenor and Tre (Hutchison). Together these four operators serve 93% of mobile subscribers, with the other 7% being served by MVNOs.⁷⁷ Three of the largest MVNOs are Lycamobile, Timepiece LDA and Vectone Mobile.

On the fixed side, Sweden has 3.5 million fixed broadband subscriptions.⁷⁸ Telia and Telenor make up the majority of the fixed broadband market, with Tele2 also offering broadband services to some subscribers. The other main fixed broadband provider is the cable operator Com Hem, with a 19% subscriber share.

The primary distribution method for TV in Sweden is cable (49% of subscriptions), followed by broadband (21%), satellite (13%) and DTT⁷⁹ (12%). Com Hem has the largest market share in the pay TV market, distributing services through its cable network and a DTT platform recently acquired from Boxer. Telia and Telenor both have pay TV offerings, making them the only operators to offer mobile, fixed and TV services. However, neither of these two operators bundle the services together in a quad-play offer. Rather, fixed and TV services are typically bundled, with mobile services retailed separately.

Figure 34: Major telecom providers in Sweden

Operator	Telia	Tele2	Telenor	Three	Com Hem	Lycamobile	Timepiece LDA	Vectone Mobile
Mobile	✓	✓	✓	✓		MVNO	MVNO	MVNO
Fixed voice / broadband	✓	✓	✓		✓			
TV content	✓		✓		✓			

The Swedish market is not particularly unusual with regard to CAPs, with the major global social media and communications companies (e.g. Facebook, WhatsApp, Skype) all having a strong presence. Sweden's audio streaming market is particularly well developed. In 2014, a third of Swedes were believed to have audio streaming accounts.⁸⁰ Spotify, which is headquartered in Stockholm, achieved

⁷⁷ 'The Swedish Telecommunications Market 2015', PTS, 10 June 2015

⁷⁸ 'The Swedish Telecommunications Market 2015', PTS, 10 June 2015

⁷⁹ Digital Terrestrial Television

⁸⁰ 'I have a stream', The Economist, 22 March 2014

early growth by offering free trials to Telia’s mobile subscribers (although the service was not zero-rated). Tidal and Deezer are also both popular in Sweden. In the OTT video space, popular applications include Netflix and Viafree, Viasat’s ad-supported online video service.

3.4.2 The mobile market

Mobile data allowances

Sweden’s mobile tariffs typically have a higher data allowance than those in our other case study countries. Figure 35 shows the distribution of tariffs currently offered by Sweden’s MNOs, relative to those in our other case-study countries. A greater proportion of tariffs in Sweden offer higher data allowances, with a third of tariffs including over 20GB of data per month. Excluding unlimited data offers, the average data allowance in Sweden’s tariffs is 20.5GB, which is very high relative to our case study country average of 7.9GB. It should be noted that this mean does not take into account the number of subscriptions to each tariff, and so may well be an overestimate. However, it appears reasonable to assume that the average consumer’s data allowance in Sweden is significantly higher than in the other case study countries.

Figure 35: Distribution of monthly data allowances by tariff



Evolution of zero-rated offers

Figure 36: Timeline of zero-rated offers in Sweden



Prior to 2015 there were only two examples of zero-rating in the mobile market, both from Tele2. Between 2010 and 2012, Tele2 offered a zero-rated audio streaming service (“Radio Unlimited”) and a zero-rated video streaming service (“TV i mobilen”).⁸¹ Tele2’s mobile customers were able to subscribe to these services for an additional monthly fee of SEK39 (EUR4.10) and SEK59 (EUR6.20) respectively, with the cost of all data for accessing the service “included in the price” of subscription. These services were therefore essentially zero-rated.

Both of these zero-rated offers were stopped in 2012, after which there were no instances of zero-rating until 2015.

Current zero-rated offers

The prevalence of mobile tariffs with generous data allowances would imply a reduced value of zero-rated offers to the consumer. However, since 2015 there are examples of zero-rating in the Swedish mobile market.

Telia and Tre currently offer zero-rated services.

⁸¹ Tele2. Available at: <http://www.tele2.se/noje.html#7747> via <http://web.archive.org> [Accessed 5 October 2016]

Figure 37: Current zero-rated offers in Sweden's mobile market

Operator	Packages	Services	Data allowance for ZR service	Incremental cost (EUR)
In bundle zero-rating				
Tre	All postpaid	Apple Music, Deezer, Google Music, SoundCloud, Spotify and Tidal	70GB	-
Telia	Mobil Dela, Mobil Komplet	Facebook, Instagram, Messenger, WhatsApp, Twitter and Kik	Unlimited	-
Add-ons to mobile plans				
Telia	Mobil Dela, Mobil Komplet	Spotify, Storytel, radio services	100GB	6.13

Tre currently zero-rates several audio streaming services across all of its postpaid tariffs.⁸² At no additional cost, postpaid subscribers have zero-rated access to six of the most popular music streaming services (Apple Music, Deezer, Google Music, SoundCloud, Spotify and Tidal). A data limit of 70GB per month is applied as a fair usage policy; however in practical terms usage is effectively unlimited, as it is equivalent to 70 days of continuous audio streaming at Spotify's default data rate (90kbps). After subscribers' general data usage has been exhausted, their general data usage is blocked whilst their zero-rated access persists. Any subscription cost associated with these services (e.g. a Spotify Premium subscription) is not included in the offer and is purchased independently of Tre. Audio streaming services other than the six mentioned above are not zero-rated. Tre's website invites other service providers to contact Tre regarding inclusion in the offer and Tre has stated that its "ambition is to include all music streaming services".⁸³

Telia introduced two zero-rated offers into the market in 2016. Firstly, Telia's "Fri surf Social" offer gives users zero-rated access to six popular social network and communication services (Facebook, Instagram, Messenger, WhatsApp, Twitter and Kik).⁸⁴ This offer is available to all subscribers of Telia's Mobil Komplet and Mobil Dela postpaid plans at no additional cost. When a subscriber's general data allowance runs-out, their general data usage is blocked whilst their access to these zero-rated services persists.⁸⁵

⁸² Tre, 'Släpp musiken fri med 3'. Available at: <https://www.tre.se/privat/kundservice/abonnemang/musikstreaming/> [Accessed 3 Oct 2016]

⁸³ Per Schelin, Vice President of Products and Business Development, via Computer Weekly, 'Mobile data freebies spark controversy in Sweden', 20 July 2016

⁸⁴ Telia, 'FRI SURF SOCIAL'. Available at: <https://www.telia.se/privat/telefoni/tjanster/produkt/fri-surf-social> [Accessed on 03 Oct 2016]

⁸⁵ Following a review of these offers, on 24 January 2017 the PTS concluded that they were discriminatory as upon reaching the data cap this traffic was treated differently to other traffic. Telia was given 30 days to comply with the decision.

Secondly, Telia's "Fri surf Lyssna" offer is an add-on available to subscribers of Telia's Mobil Komplet and Mobil Dela postpaid plans.⁸⁶ For a fee of SEK59 (EUR6.13) per month, subscribers get zero-rated access to Spotify, Storytel (an audiobook service) and several online radio services (Sveriges Radio, Mix Megapol, NRJ, Rockklassiker, Vinyl 107 and The Voice). When a subscriber's general data allowance runs out, its general data usage is blocked whilst its access to these zero-rated services persists.⁸⁵

A data limit of 100GB per month is applied as a fair usage policy; however, again in practical terms usage is unlimited, as it is equivalent to 100 days of continuous audio streaming at Spotify's default data rate (90kbps). Independently, people are able to subscribe to Spotify Premium and Storytel via Telia's website, with the cost of the subscription added to peoples' monthly phone bills. This does not appear to be directly related to the "Fri surf Lyssna" offer, but does suggest that Telia has a commercial agreement with these two companies.

Interestingly, both of Telia's zero-rated offers are valid for international roaming across Nordic and Baltic countries (Norway, Denmark, Finland, Estonia, Latvia and Lithuania). The Mobil Komplet and Mobil Dela postpaid tariffs allow subscribers to use mobile services in these countries at no additional cost, and this also applies to the zero-rated services. Note that Telia has operations in all of these countries, and presumably Telia Sweden customers would roam onto the local Telia networks. Thus the zero-rating would not drive roaming costs.

⁸⁶ Telia, 'Thank you for the music'. Available at: <https://www.telia.se/privat/erbjudanden/spotify> [Accessed 3 Oct 2016]

Figure 38: Screenshot of Telia's "Fri Surf Lyssna" offer

FRI SURF LYSSNA

Fri surf Lyssna är en helt ny tilläggstjänst som ger dig möjlighet att surfa fritt på några av de populäraste streamingtjänsterna. Lyssna tills du storknar på musik från Spotify, ljud- och e-böcker från Storytel eller radio från flera av de största radiokanalerna - som t ex Svenges Radio, Mix Megapol, NRJ, Rockklassiker, Vinyl 107 och The Voice till ett fast pris.

Fri surf Lyssna är perfekt för dig som gillar underhållning i hörlurarna, hemma eller på språng.

BESTÄLL

Bilder

SMS a **Fri surf Lyssna** och skicka till nummer **4466**

Beskrivning Villkor

Fri surf Lyssna

Fri surf Lyssna är en tilläggstjänst som gäller för utvalda mobilabonnemang till privatpersoner. Fri surf Lyssna gäller just nu på Spotify, Sveriges Radio, Radio Play och Storytel och du kan streama upp till 100 GB musik, radio och ljudböcker per månad utan att det påverkar surfmängden på ditt abonnemang, vilket motsvarar mer än 24h per dygn under en månad.

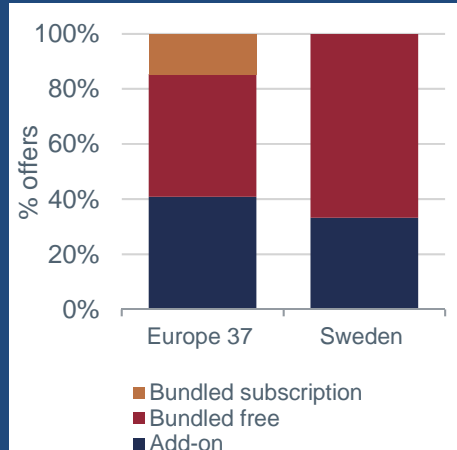
- Fri surf Lyssna är en tilläggstjänst du kan köpa om du har ett Telia Mobil Dela eller Telia Mobil Komplette abonnemang.
- Fri surf Lyssna har ingen bindningstid eller uppsägningstid.
- Gäller när du surfar i Sverige, Norge, Finland, Danmark, Estland, Lettland och Litauen.
- Eventuella kostnader för att prenumerera på en tjänst som ingår i Fri surf Lyssna tillkommer.
- Du kan följa ditt användande på Mitt Telia.
- Fri surf Lyssna innebär att musik och ljudstreaming relaterad till respektive tjänst/kanal som ingår påverkar din surfmängd.
- Eventuell annan trafik relaterad till bilder, videos, informationstexter, reklam som kan presenteras i app eller websidan kommer fortsätta att påverka surfmängd.
- Våra tjänster som ingår kan komma att förändras och berörda kunder blir då informerade.

"Free surf Listen applies right now to Spotify, the Swedish Radio, Radio Play and Storytel and you can stream up to 100 GB of music, radio and audio books per month, without affecting your data allowance, representing more than 24 hours per day for a month."

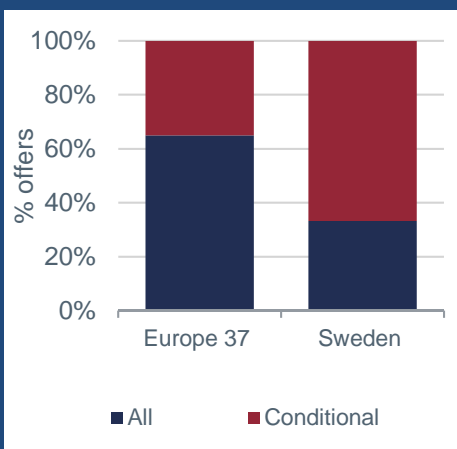
Zero-rating is clearly stated on the website.

Box 7: Summary of mobile zero-rated offers in Sweden

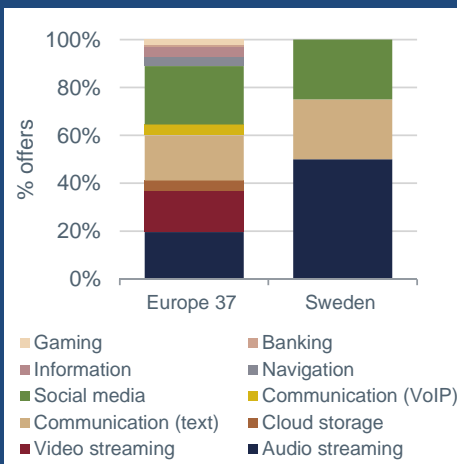
Two of the three zero-rated offers in Sweden are in-bundle, with only one (Telia's audio streaming offer) sold as an add-on. This split is broadly in line with the rest of Europe.



One of the three zero-rated offers in Sweden are available to all subscribers, with the other two offers available only with certain tariffs. This is in contrast with the rest of Europe where conditional offers are less common



Current zero-rated offers in Sweden cover audio streaming, communication and social media. No mobile networks offer zero-rated video streaming.



(Note that as Telia's zero-rated offer includes both communication and social media services, it appears in the chart twice).

Note that as there are a limited number of offers present in Sweden, these comparisons should be taken as an indication of the limited nature of zero-rating practices in the Sweden rather than of broader trends.

Potential impact of mobile zero-rating on consumer behaviour

The services that are zero-rated in Sweden's mobile market are typically not data-heavy. Tre and Telia both zero-rate audio streaming services and Telia also zero-rates social media and text-based communication services. Historically Tele2 has zero-rated video content, but this offer was for a limited time and likely designed to promote Tele2's proprietary music and video streaming service. Currently we do not observe data-heavy services such as video streaming or cloud storage services being zero-rated. One might have thought that the zero-rating of data-heavy services would be more common in Sweden due to the high levels of mobile data allowances.

The impact of zero-rating on the mobile market is likely to be small. The combination of high data caps and the fact that the zero-rated offers are for less data-intensive applications suggests that the zero-rating should be of minimal influence on customers. For example streaming two hours of music per day for a month would use 1.71GB of data⁸⁷. When the average data allowance is 20GB per month, zero-rated music is probably not a huge factor when choosing mobile operator.

There is no reason to believe that the operators that offer zero-rated services have an exclusive right to do so. The only possible example of exclusivity is the relationship between Telia and Spotify/Storytel. Telia subscribers are able to subscribe to Spotify Premium and Storytel through Telia's website, which suggests that there is a contractual agreement between the parties. It is not clear whether this agreement is exclusive, or whether other operators would be able to sign similar agreements with Spotify and Storytel, or Telia sign an agreement with a different audio streaming CAP.

The impact of zero-rating may perhaps be more of a concern from the CAPs' perspective. In May 2016, several publishers from Sweden issued a joint statement criticising Telia's "Fri surf Social" offer, as it gave subscribers preferential access to Facebook's content over that of other content providers.⁸⁸ These concerns were largely regarding net neutrality, and specifically that Telia is prioritising Facebook's traffic over other internet traffic. However, certain competition concerns we're raised, namely that Telia and Facebook – two dominant players in their respective markets – are creating a self-perpetuating closed system, giving Facebook an advantage over all other media players that are dependent on the internet. The statement claimed that in the long-run this would lead to less data

⁸⁷ AT&T Data Calculator. Available at: <https://www.att.com/att/datacalculator/> [Accessed 3 October 2016]

⁸⁸ Joint statement from Swedish publishers, 'Telia's zero rating agreement with Facebook a blow to Swedish media companies', 3 May 2016

included in the plans that consumers buy, leading to an incentive for mobile operators to raise prices.

However, given the large data allowances, it seems unlikely that the zero-rating of these data-light applications would have a large influence on consumers' choice of CAP.

We note that none of the zero-rated offers currently in the market are used to promote operator's own services. The only example of such an arrangement has been Tele2's Radio Unlimited and TV i mobilen offers between 2010 and 2012.

3.4.3 The fixed market

In Sweden all fixed broadband plans have unlimited data allowances, with service providers using data rates to differentiate between tariffs. Zero-rating is therefore not relevant.

3.4.4 Key findings

Potential effect on consumer behaviour

Sweden's mobile market is characterised by very large data allowances and low prices for data on a per GB basis, which is likely to reduce the influence of zero-rating on consumer behaviour. That said, there are a small number of examples of zero-rating in the market. Notably the practice has become more popular – in 2014 there were no instances of zero-rating; today two of the four MNOs practice zero-rating.

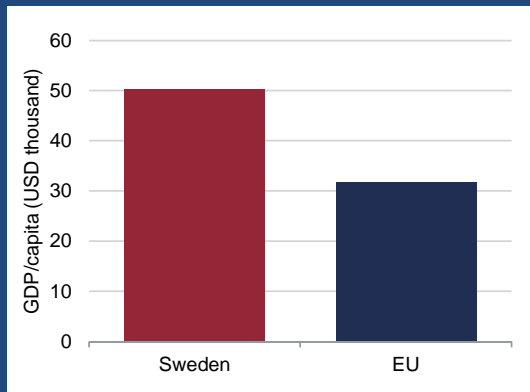
In the fixed market, all of Sweden's tariffs have unlimited data allowances. There are therefore no examples of zero-rating in the fixed market.

Potential competition concerns

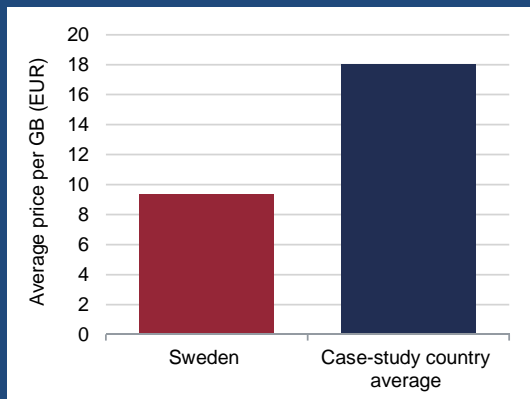
Overall, it appears unlikely that the zero-rating creates material competition concerns. The high data allowances means that the zero-rated offers are unlikely to have material impact on consumers' choice of mobile operator. Although concerns have been raised by certain CAPs regarding the impact on competition of Telia's zero-rating of Facebook applications, the low data intensity of these applications means that any disadvantage for other CAPs is likely to be small.

Box 8: Sweden key statistics

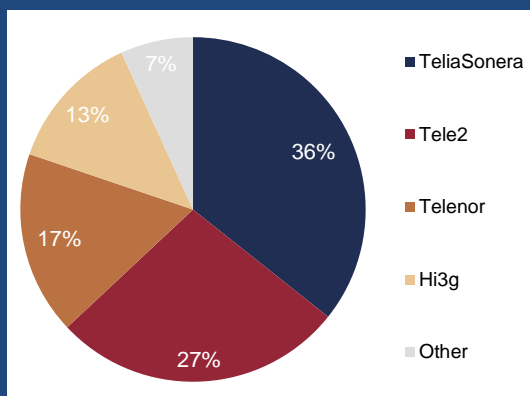
GDP per capita figures taken from World Bank 2015 data



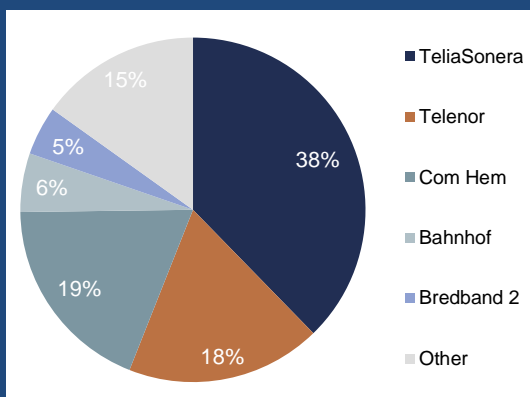
Note that average price per GB is compared to case study countries rather than EU



Mobile market shares (PTS, 2015)



Fixed broadband market shares (PTS, 2015)



3.5 United Kingdom

3.5.1 Background

The UK has seven major players in the fixed and mobile markets. On the fixed side, there are four main players (BT, Sky, Virgin Media, TalkTalk) with a further one (Vodafone) having a modest market share. Other operators, such as the Post Office, are present in the market but typically have small market share.

On the mobile side, four of these major players make up the UK's MNOs: EE (BT), O2 (Telefónica), Vodafone and Three (Hutchison). In addition, there are numerous MVNOs, including Tesco Mobile and Virgin Mobile (the largest MVNOs) as well as Lycamobile and Lebara.

Figure 39: Major telecom providers in the United Kingdom

Operator	EE /BT	Sky	Virgin Media	TalkTalk	O2	Vodafone	Three
Mobile	✓	(MVNO)	MVNO	MVNO	✓	✓	✓
Fixed voice / broadband	✓	✓	✓	✓		✓	
TV content	✓	✓	✓	✓			

There has been recent consolidation in the market, the major example being BT's takeover of mobile market-leader EE in 2015. Major fixed players – Virgin Media and TalkTalk – also operate MVNOs, and Sky has announced that it is soon to launch its own MVNO.

This means that there are three (soon to be four) major quad-play operators (BT, Sky, Virgin Media, TalkTalk), all of whom are providers of video content. It is important to note that the rights to key sports content in the UK – football, and specifically the English Premier League and Champions League – are primarily owned by Sky and BT, and sold as a subscription-only service. There are also OTT providers with a strong presence and offering premium quality and exclusive content, such as Netflix and Amazon Prime, as well as free-to-view providers such as BBC, ITV and Channel 4.

The UK market is not particularly unusual with regard to CAPs, with the major global social media and communications CAPs (e.g. Facebook, WhatsApp, Skype) all having a strong presence. The main

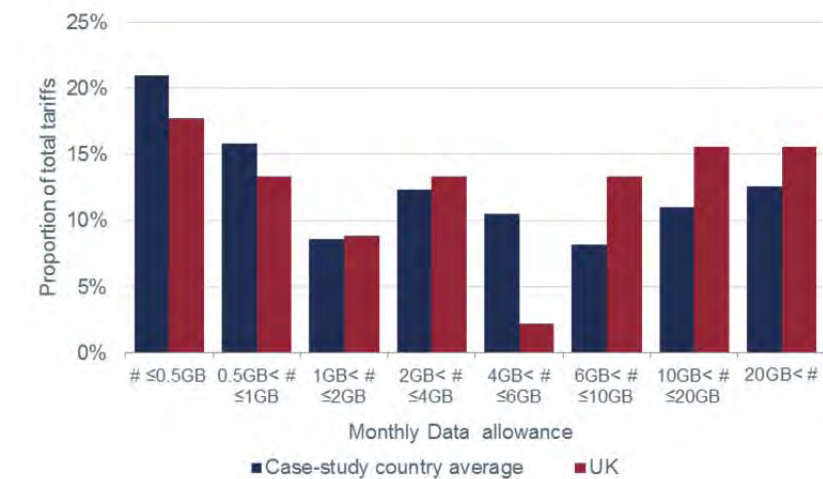
exception is Spotify's clear lead over its major European rivals Deezer and Tidal in the audio streaming market⁸⁹.

3.5.2 The mobile market

Mobile data allowances

The UK mobile market has medium-level data allowances compared to the other case study countries. The average data allowance in the UK (not including unlimited tariffs) is 7.6GB, compared to our case study average of 7.9GB.

Figure 40: Distribution of monthly data allowances by tariff

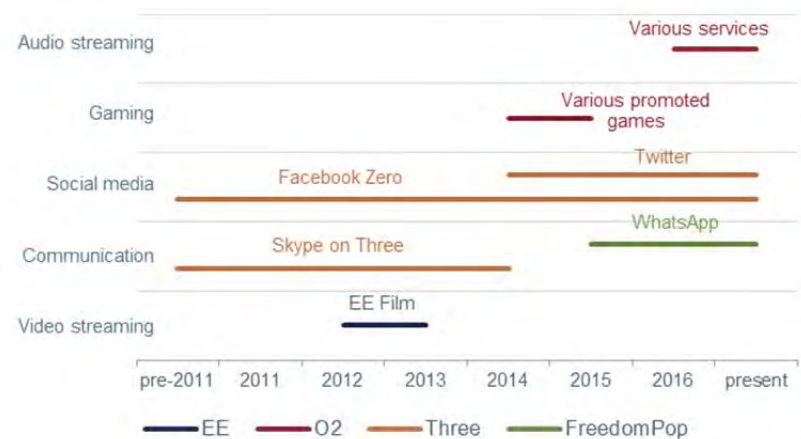


Evolution of zero-rated offers

Zero-rating services in the mobile market has been a relatively infrequent practice in the UK. While three of the four MNOs have practiced some zero-rating, the only operator to have consistently zero-rated is Three. Three has tended to zero-rate popular communications (Skype) and social media services (Twitter, Facebook Zero).

⁸⁹ Spotify Claims Streaming Music Throne Worldwide, But Pandora Is Still Top Service In U.S., TechCrunch. Available at: <https://techcrunch.com/2015/12/01/spotify-claims-streaming-music-throne-worldwide-but-pandora-is-still-top-service-in-u-s/> [Accessed 22 September 2016]

Figure 41: Timeline of zero-rated offers in the United Kingdom



In contrast, EE and O2 have both only used zero-rating during time-limited periods to promote specific products/events. In the case of EE, the data traffic used to download or stream films from EE Film (a film download and streaming service) was zero-rated in 2012 and 2013, as part of an offer to promote the newly formed merged brand⁹⁰. In the case of O2, the launch of its 4G service in 2014 was promoted by zero-rating traffic used while playing some selected mobile games – the idea being to demonstrate that new types of service were possible on mobile with 4G. This zero-rated offer ended in 2015.

Current zero-rated offers

There is currently a low prevalence of zero-rated offers in the UK. We are aware of only three operators zero-rating: Three, O2 and the MVNO FreedomPop.

Figure 42: Current zero-rated offers in the United Kingdom mobile market

Operator	Packages	Services	Data allowance for ZR service	Incremental cost (EUR)
In bundle zero-rating				
Three	All	Facebook Zero, Twitter	Unlimited	-
O2 (Telefónica)	30GB+ data packages and only customers with iPhone SE, 7, 7 Plus, 6s and 6s Plus	Spotify, SoundCloud, iTunes, Apple Music, Deezer	40GB	-
FreedomPop	All	WhatsApp	Unlimited	-

⁹⁰ EE was formed from a merger of the T-Mobile and Orange networks in 2012

Three zero-rates Twitter and Facebook Zero across all of its tariffs⁹¹. These tariffs have data allowances that range from 500MB – 30GB, with unlimited offers also available. They are priced (12 month contract, SIM only) from EUR6.97 – EUR38.33⁹², with the zero-rated services bundled into the package⁹³. Once a subscriber reaches its data allowance, data usage is throttled. However, based on the information available on Three’s website, we were unable to confirm if this also applies to the zero-rated applications⁹⁴.

O2 includes 40GB of zero-rated data for audio streaming on Spotify, SoundCloud, iTunes, Apple Music and Deezer for customers that purchase the 30GB (monthly cost EUR41.14) and 50GB (monthly cost EUR64.64) air-time tariffs with an eligible handset (iPhone SE, iPhone 7, iPhone 7 Plus, iPhone 6s and iPhone 6s Plus)⁹⁵. It should be noted that 40GB of audio streaming is in practical terms unlimited, as it is equivalent to 19 hours a day of streaming on Spotify’s ‘High Quality’ setting⁹⁶. Once customers reach their standard data allowance, the zero-rating ceases. This zero-rated offer seems to be part of promoting the new iPhone 7.

It is notable that there are no current instances of video streaming being zero-rated in the UK despite the presence of three strong quad-play operators (BT, Virgin Media and TalkTalk).

The MVNO FreedomPop entered the UK market in 2015 with the unique proposition of offering 200 minutes, 200 texts and 200MB data for free⁹⁷. After these have been used up, the user is charged

⁹¹ What can I get or use for free? - Support - Three. Available at: [http://support.three.co.uk/SRVS/CGI-BIN/WEBISAPI.dll?Command=New,Kb=Mobile,Ts=Mobile,T=CaseDoc,Case=Obj\(1192\),VARSET_BusinesshelpbckDisp=1,VARSET_CatID=](http://support.three.co.uk/SRVS/CGI-BIN/WEBISAPI.dll?Command=New,Kb=Mobile,Ts=Mobile,T=CaseDoc,Case=Obj(1192),VARSET_BusinesshelpbckDisp=1,VARSET_CatID=) [Accessed 23 September 2016]

⁹² GBP6.00- GBP33.00

⁹³ SIM Only Plans from £6 a month | Unlimited Data SIM | Three. Available at: http://www.three.co.uk/Store/SIM/Plans_for_phones [Accessed 23 September 2016]

⁹⁴ EE teams up with Apple Music in bid to undermine Spotify, The Telegraph. Available at: <http://www.telegraph.co.uk/business/2016/08/25/ee-teams-up-with-apple-music-in-bid-to-undermine-spotify/> [Accessed 10 October 2016].

⁹⁵ O2 | Terms and Conditions. Available at: <http://www.o2.co.uk/termsandconditions/rewards/iphone-tariffs-with-unlimited-music-and-inclusive-o2-travel-terms-and-conditions> [Accessed 21 October 2016].


⁹⁶ Spotify data usage | Vodafone Support. Available at: <http://vodafone.intelliresponse.com/index.jsp?requestType=NormalRequest&source=100&id=1537&question=Spotify+data+usage> [Accessed 10 October 2016].

⁹⁷ Mobile Phone Deals + Cheapest Mobile Phone Deals - FreedomPop™ UK. Available at: http://uk.freedompop.com/uk/plans_bundle?experience=uk.default [Accessed 23 September 2016]


for further minutes, texts and data. However, from 2016 FreedomPop has also zero-rated WhatsApp data for voice and text services, which appears to be available even after the free bundle has expired (although once again it is difficult to confirm this based on the information available on FreedomPop's website).

Figure 43: Screenshot of FreedomPop's UK website offering zero-rated WhatsApp

FreedomPop

100% Free WhatsApp Data Every Month! 

Special Launch Deal



Get 100% Free w/ FreedomPop:
Free Unlimited WhatsApp Data usage

Free Plan: 100 Minutes, 200 Texts, 200MB each month
Use your phone around the world in 25+ countries
Earn additional free data every month by adding friends
Earn unlimited free data by completing partner offers

100% FREE Talk, Text, Data + WhatsApp

See if your location qualifies:

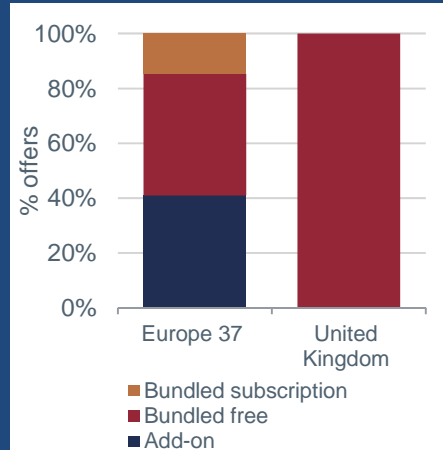
CHECK AVAILABILITY NOW

By continuing, you agree to our [terms of use](#) and [privacy policy](#).

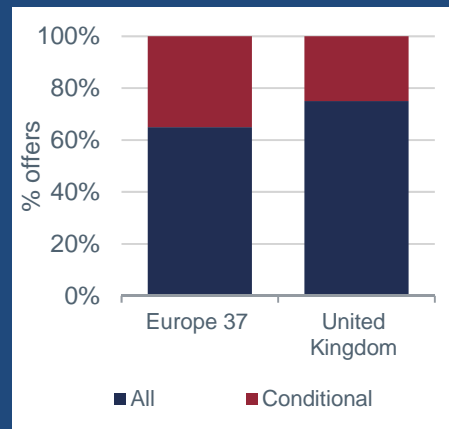
Zero-rated offer clearly stated on website, however details of what happens after bundle expires are not clear.

Box 9: Summary of mobile zero-rated offers in the United Kingdom

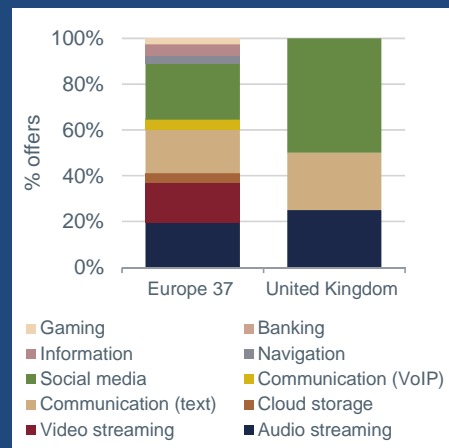
Zero-rated offers are always 'Bundled-Free', in contrast to the split across the rest of Europe.



A minority of zero-rated offers have conditions attached (i.e. offers apply to some but not all of a tariff family), following the Europe-wide trend.



Zero-rated offers all fall within the major categories of social media, communications and audio streaming, which is different to the rest of Europe as we do not see any video streaming being zero-rated.



Note that as there are a limited number of offers present in the UK, these comparisons could possibly best be taken as an indication of the limited nature of zero-rating practices in the UK rather than of broader trends.

Potential impact of mobile zero-rating on consumer behaviour

The UK is not a high-data-allowance market, and as such one might expect zero-rated offers to be more prevalent. However, there is little zero-rating in practice – only Three, O2 and a small MVNO (FreedomPop) practice zero-rating, and then only in a small number of content categories.

Three out of four of applications that are zero-rated (Facebook Zero, Twitter and WhatsApp) are relatively data-light. On the assumption that consumers are aware of this fact, such zero-rated offers are unlikely to be a material differentiator, as customers of competing MNOs could consume reasonable data on these applications within their data allowances or for minimal incremental cost. Therefore, one would expect that there is a rather limited impact on consumer behaviour.

However, it may be that consumers are not aware of the level of data consumption of these applications and so may be cautious regarding exceeding their data allowance. In such circumstances, these zero-rated offers may have a larger impact on consumer behaviour.

The other instance of zero-rating is O2's audio streaming offer. As this offer is only available to customers with newer iPhone models who are subscribed to the 30GB and 50GB tariffs, it seems unlikely that the zero-rating will have a significant impact on consumer behaviour. Streaming 40 hours of music per month only uses approximately 1.14GB of data, so this offer is unlikely to influence the type of consumers that are already looking for higher-data plans.

3.5.3 The fixed market

Fixed data allowances

In the UK, the majority of plans have unlimited data allowances, including all those offered by TalkTalk and Virgin Media. BT offers

plans with limits at 12GB and 25GB⁹⁸ and Sky offers plans limited to 25GB⁹⁹. Both providers also offer a range of unlimited plans.

Fixed zero-rated offers

The only fixed zero-rated offers we have found are from BT, where YouView and BT TV services are zero-rated. YouView is a hybrid (DTT/IPTV) TV platform, offering both live television and various on-demand services. It is owned by BT, TalkTalk, Arqiva (the tower operator) and broadcasters BBC, ITV, Channel 4 and Channel 5. BT TV is the standard TV offering from BT, which includes YouView. These services are accessed through a set-top box.

The zero-rated offers are as follows:

- If a 12-month subscription to BT TV is purchased, all live and on-demand services from YouView and BT TV are zero-rated¹⁰⁰
- If only the Pay-As-You-Go BT Player account is registered (and, for example, a YouView box is purchased separately), then only BT TV programmes are zero-rated¹⁰¹
- When connected to BT Broadband, live or on-demand programmes from the premium BT Sport 1, BT Sport 2 and

⁹⁸ Compare Cheap Broadband Deals and Packages | BT. Available at: https://www.productsandservices.bt.com/products/broadband-packages?s_cid=con_ppc_maxus_vidZ60_T1&vendorid=Z60&gclid=CjwKEAjw8da8BRDssvyH8uPEgnoSJABJmwYocgTKOrqQji2rDxBxFBx1YqvVXKkgM4a-0z-AsGjJXxoCJ67w_wcB&gclsrc=aw.ds&dclid=CN22sMz5js4CFRai7Qod19oFOA&mboxSession=1469461215911-557796#unlimited [Accessed 23 September 2016]

⁹⁹ Sky Broadband compare - Compare Sky Broadband products. Available at: <http://www.sky.com/shop/broadband-talk/broadband-compare/#section-2> [Accessed 23 September 2016]

¹⁰⁰ Does my YouView viewing count towards my broadband usage allowance? | Help | BT.com Help. Available at: http://bt.custhelp.com/app/answers/detail/a_id/44084/~~/does-my-youview-viewing-count-towards-my-broadband-usage-allowance%3F [Accessed 23 September 2016]

¹⁰¹ Does BT TV count towards my broadband usage guidelines? | Help | BT.com Help. [online] Available at: http://bt.custhelp.com/app/answers/detail/a_id/9871/~~/does-bt-tv-count-towards-my-broadband-usage-guidelines%3 [Accessed 23 September 2016]

ESPN channels are zero-rated – though a subscription to BT Sport is needed to access these channels in the first place¹⁰²

BT is a shareholder in YouView; therefore zero-rating YouView is still consistent with BT promoting its own content. However, it is possible to buy add-ons to BT TV bundles for Sky Sports packages and Netflix. As far as we are aware, these services are zero-rated under the 12-month subscription offer – so it is not exclusively BT (or BT part-owned) content which is being zero-rated.

Potential impact of fixed zero-rating on consumer behaviour

Unlimited broadband offers are by far the most prevalent form of tariff in the UK fixed market, with only three limited tariffs found across all operators. Zero-rating is practiced by only one operator – the market leader BT - and the zero-rated content is almost all operator-owned.

However, due to the presence of unlimited plans offered by competing operators, this content is available at minimal additional cost to the consumer with other operators. For example, TalkTalk is also a shareholder in YouView and offers only unlimited plans via which YouView can be watched. It seems likely that there is little effect on consumer behaviour as a result of UK fixed zero-rating practices.

3.5.4 Key findings

Potential effect on consumer behaviour

There is only limited zero-rating in the mobile market in the UK. Historically, it seems that MNOs have used zero-rating primarily as a marketing tool to promote particular services or events.

It appears that current MNO zero-rated offers have limited influence on consumers – either the zero-rated applications are data-light (e.g. Twitter) or they are only available to customers with high-data-allowance plans (i.e. O2's zero-rating of audio streaming services).

Among MVNOs, FreedomPop is alone in practicing zero-rating. This is part of its unique business model, where zero-rated WhatsApp is

¹⁰² Will using the BT Sport App and online player count towards my data usage cap? | Help | BT.com Help. Available at: http://bt.custhelp.com/app/answers/detail/a_id/45884/~/~will-using-the-bt-sport-app-and-online-player-count-towards-my-data-usage-cap%3F [Accessed 23 September 2016]

used as a key differentiator between it and other price-focused MVNOs. This may contribute it to successful market entry.

The UK market is unique in Europe in that there is zero-rating also in the fixed market. The largest two fixed ISPs (BT, Sky) offer plans with limited data allowances (with others offering only unlimited plans), but only the market leader BT engages in zero-rating.

Overall, due to the limited levels of mobile zero-rating and the high prevalence of unlimited fixed plans, zero-rating appears to have a small impact on consumers' behaviour in the UK.

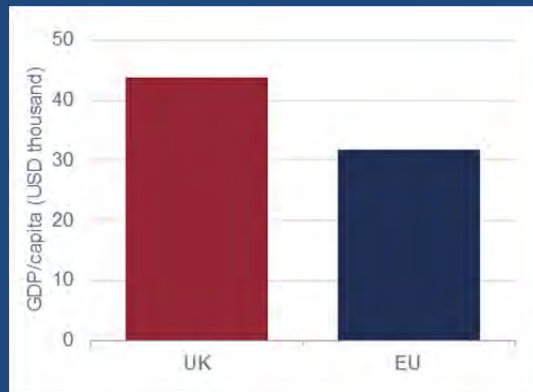
*Potential
competition
concerns*

The limited used of zero-rating and the ease with which competitors could replicate zero-rated offers suggests that there is little concern about the impact of zero-rating on competition between ISPs.

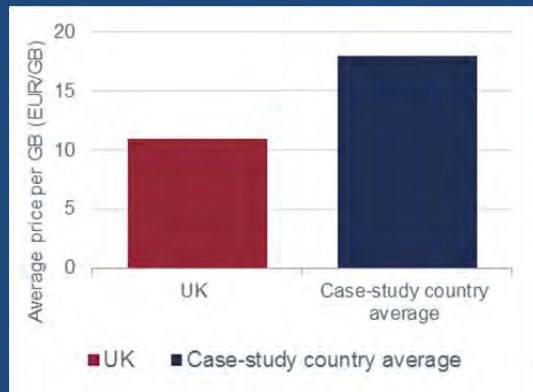
The low data intensity of zero-rated applications and the fact that O2's zero-rated music streaming offer covers a range of different providers suggests that zero-rating has limited impact on competition amongst CAPs.

Box 10: United Kingdom key statistics

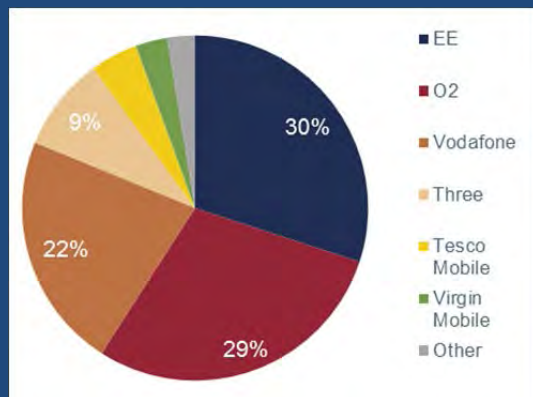
GDP per capita figures taken from World Bank 2015 data



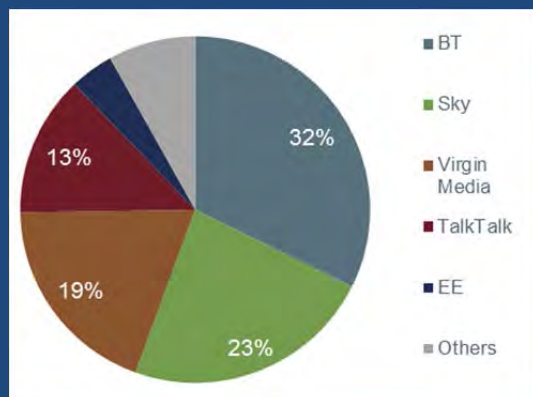
Note that average price per GB is compared to case study countries rather than EU



Retail mobile market shares taken from Kantar report, 2015 figures



Fixed market shares taken from Ofcom, 2015 figures. EE and BT are shown separately due to the merger not being fully completed



3.6 Non-European case study – USA

3.6.1 Background

The USA has six major players across the fixed and mobile markets. On the fixed side, there are four main players (Comcast, Charter, AT&T, and Verizon) that serve approximately 70% of the market, with a large number of smaller players serving the remainder.

On the mobile side, four of these major players make up the nationwide MNOs (Verizon, AT&T, T-Mobile, and Sprint). There are also regional MNOs such as US Cellular that have modest market share. The USA has a large MVNO market with substantial numbers of small operators. The most significant MVNO is América Móvil-owned TracFone, which has 6% market share. FreedomPop is another MVNO in this market, which is notable due to its zero-rating practices.

Figure 44: Major telecom providers in the USA

Operator	Comcast	Charter	AT&T	Verizon	T-Mobile	Sprint	Tracfone
Mobile	(MVNO)	(MVNO)	✓	✓	✓	✓	MVNO
Fixed voice / broadband	✓	✓	✓	✓			
TV content	✓	✓	✓	✓			

The major global social media and communications CAPs (e.g. Facebook, WhatsApp, Twitter) all having a strong presence. Most of these services are American-owned or originated in the USA. Exceptions can be found in the audio streaming market where mostly US-focused services, such as the market-leader Pandora or Napster/Rhapsody, have a strong presence alongside Spotify and Tidal¹⁰³.

There has been some recent consolidation in the US market, with the 2016 merger between Charter and Time Warner Cable creating a strong second player in the fixed market. In addition, Charter and Comcast are both set to launch their own MVNOs in 2017. This means that there are two, soon to be four, major quad-play operators in the USA.

¹⁰³ Spotify Claims Streaming Music Throne Worldwide, But Pandora Is Still Top Service In U.S., TechCrunch. Available at: <https://techcrunch.com/2015/12/01/spotify-claims-streaming-music-throne-worldwide-but-pandora-is-still-top-service-in-u-s/> [Accessed 22 September 2016]

It is also worth noting that the major players in the US market seem to have a recent increased focus on video content. The 2015 merger of AT&T with DirecTV and Verizon's recent acquisition of (mobile) content providers AOL and Yahoo are significant changes in this context. More recently AT&T announced its intention to acquire Time Warner, which would give it access to a range of content (e.g. HBO, CNN). Alongside this, there are television providers such as Dish and Cox, as well as OTT providers such as Netflix, Hulu and Amazon Prime who have a strong presence in the content market.

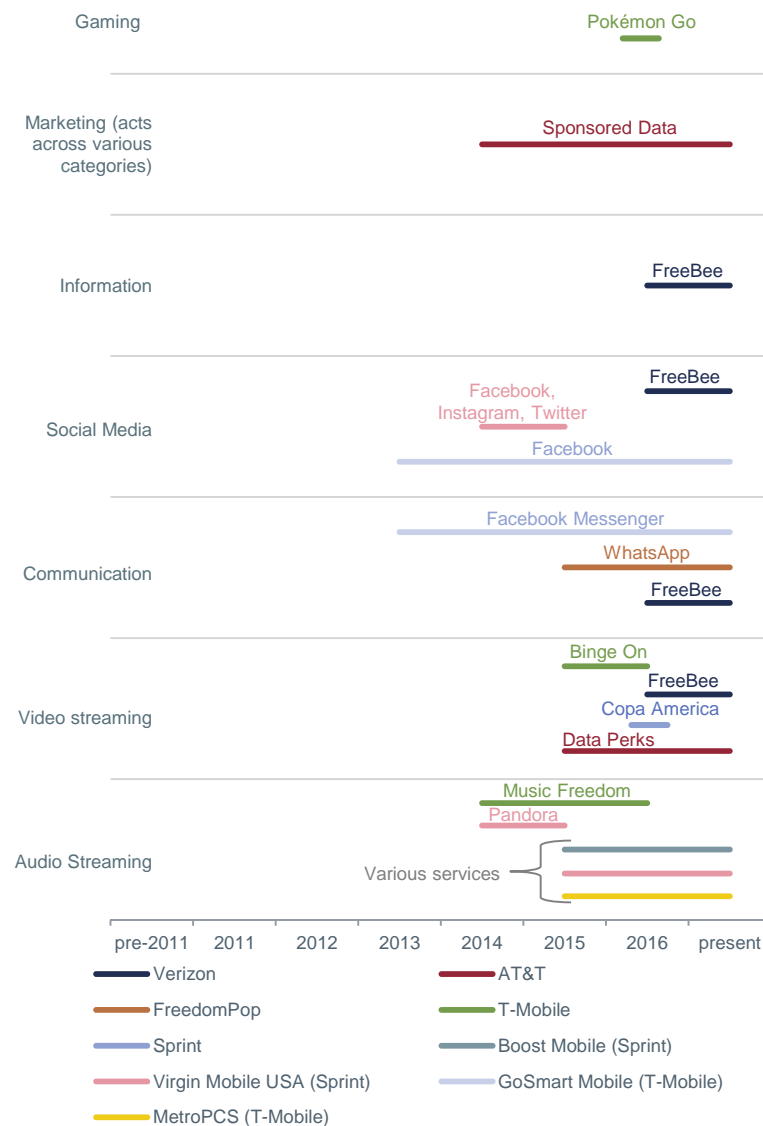
3.6.2 The mobile market

Evolution of zero-rated offers

Zero-rating services on mobile networks is a relatively recent practice in the US. We are not aware of any zero-rated offers from earlier than 2013, with 2014 marking the point at which zero-rating became prevalent. Since then, all four nationwide carriers have practiced zero-rating, with T-Mobile and Sprint also having offered zero-rated services on their alternative prepaid brands (GoSmart, MetroPCS, Boost, Virgin Mobile USA).

Smaller operators were the first to practice zero-rating: GoSmart (Facebook and Facebook Messenger zero-rated in-bundle) and Virgin Mobile USA (zero-rated add-ons for Facebook, Twitter, Instagram and Pandora).

Figure 45: Timeline of zero-rated offers in the USA



The first major zero-rating programme was T-Mobile's Music Freedom in 2014. This programme zero-rated audio streaming from a large range of popular services, including services from major CAPs, such as Pandora and Spotify. The programme provided free data for these services, but did not cover any subscription costs associated.

It was followed by the Binge On programme, which was an equivalent service for zero-rating video content. T-Mobile required CAPs to meet certain technical criteria (which initially implied that services such as YouTube were excluded) and throttled streaming

to standard definition (480p) for all providers. However, despite initial opposition from consumers annoyed at the enforced quality changes, recent figures show that less than 0.8% of T-Mobile's customers opted out of Binge On¹⁰⁴. The strong uptake led to increased video streaming by customers¹⁰⁵, but T-Mobile's data traffic was flattened with the busy-hour traffic peak becoming less pronounced. T-Mobile reported a 'traffic decline' after Binge On launched of 10%, although it is unclear exactly which measure of traffic is being referred to (e.g. busy hour peak)¹⁰⁶.

Both the Music Freedom and Binge On programmes were discontinued in 2016 in favour of a new unlimited tariff, which requires an extra fee to be paid for data-intensive services such as HD video streaming and tethering.

Sprint has zero-rated primarily on its alternative brands (Boost, Virgin Mobile USA). It has however used zero-rating on its primary brand to promote a specific service. The 2016 Copa America football tournament was hosted in the US, and Sprint zero-rated streaming of the matches via the FuboTV application. In this case, both the normal subscription fee and the associated data costs were waived by the operator.

In 2016, T-Mobile offered zero-rated Pokémon Go data for a year to customers who claimed the offer through the T-Mobile Tuesdays application. Customers were only able to sign up for this offer between 19 July 2016 and 9 August 2016¹⁰⁷.

¹⁰⁴ Less Than 0.8% of T-Mobile's Customers Turn Off Binge On | Androidheadlines.com. Available at: <http://www.androidheadlines.com/2016/09/less-0-8-t-mobiles-customers-turn-off-binge.html> [Accessed 29 September 2016]

¹⁰⁵ Reed, B. (2016). Study reveals why Binge On was a brilliant move for T-Mobile. [online] BGR. Available at: <http://bgr.com/2016/01/18/t-mobile-binge-on-data-use/> [Accessed 30 September 2016]

¹⁰⁶ T-Mobile CTO Ray: only .8% of T-Mobile subscribers have opted out of Binge On. Phone Arena. Available at: http://www.phonearena.com/news/T-Mobile-CTO-Ray-only-.8-of-T-Mobile-subscribers-have-opted-out-of-Binge-On_id85949 [Accessed 30 September 2016]

¹⁰⁷ Pokémon Go Mania Sweeps the Country ... So T-Mobile Thanks Customers with Free Pokémon Data and More | T-Mobile Newsroom. Available at: <https://newsroom.t-mobile.com/news-and-blogs/free-pokemon.htm> [Accessed 3 November 2016].

Current zero-rated offers

There is currently a high prevalence of zero-rated offers in the USA. Zero-rating is practiced by all of the major MNOs, either on their main brands (AT&T, Verizon) or on alternative brands (T-Mobile, Sprint). The MVNO FreedomPop also practices zero-rating.

Figure 46: Current zero-rated offers in the USA mobile market

Operator	Packages	Services	Data allowance for ZR service	Incremental cost (EUR)
In bundle zero-rating				
Verizon	All postpaid	Sponsored 'FreeBee' apps and websites	Unlimited	-
AT&T (Sponsored Data)	All	Sponsored data apps and websites	Unlimited	-
AT&T (Data Perks)	All	Sponsored data apps and websites	Unlimited	-
Boost Mobile (Softbank)	All postpaid	Pandora, iHeartRadio, Slacker Radio, 8Tracks, Napster, Spotify	Unlimited	-
FreedomPop	All	WhatsApp	Unlimited	-
GoSmart Mobile (Deutsche Telekom)	All	Facebook, Facebook Messenger	Unlimited	-
MetroPCS (Deutsche Telekom)	40USD and higher postpaid plans	40+ streaming music services including Apple Music, Pandora,	Unlimited	-
Virgin Mobile USA (Softbank)	Virgin Mobile Unlimited Plans	Pandora, iHeartRadio, Slacker, 8tracks and Milk Music	Unlimited	-

AT&T's Sponsored Data and Data Perks as well as Verizon's FreeBee are all sponsored data programmes in which content providers can pay for some specified data usage to be zero-rated on behalf of the consumer. The consumer is made aware of this by the presence of a banner or sticker by the sponsored data content.

AT&T's programmes apply to all of its tariffs. Data Perks appears to be primarily used by marketers as a means of delivering advertising to consumers. The programme enables the marketers to offer AT&T's customers extra data in addition to their monthly plan allowances as a reward for engaging in activities such as purchasing products, viewing advertising, using promotional games or apps, completing surveys, etc. AT&T's Sponsored Data programme enables CAPs to supply streaming video and other content to AT&T's customers without them incurring the data cost.

Verizon's FreeBee programme is currently mostly used to promote Verizon's own video content such as the Go90 application, or Hearst magazines. It is unclear whether this content is accessible after a consumer reaches their data allowance limit.

Sprint's alternative brands Boost Mobile and Virgin Mobile USA have similar zero-rated offers in which a range of music streaming services (e.g. Rhapsody, Pandora, iHeart, 8tracks, Slacker Radio) are zero-rated. While the services in both cases are bundled into the

tariff package, the offers differ in pricing (Boost USD35-45 for 2-5GB¹⁰⁸, Virgin USD30-50 for 0.5-6GB¹⁰⁹). The operators also offer differing non-zero-rated tariffs: Boost Mobile's non-zero-rated offer is an unlimited data plan, whereas Virgin Mobile USA offers tariffs with no included data.

T-Mobile's MetroPCS brand also zero-rates a range of music services (over 40 services including Pandora, Spotify, Apple Music). The offer applies to its higher-cost plans (USD40-50 for 3-5GB), with an unlimited plan for USD60 and a non-zero-rated 1GB plan for USD30 also being available¹¹⁰.

T-Mobile's GoSmart brand offers zero-rated Facebook and Facebook Messenger bundled with all of its tariffs (USD25-55 for 4-20GB)¹¹¹. There is also a package available with no included data other than zero-rated access to Facebook.

It is also worth noting that from Q4 2016, AT&T has announced plans to zero-rate its TV service (DirecTV) on mobile under "DirecTV Now" branding. Currently, AT&T has an offer where fixed DirecTV customers are able to purchase an unlimited mobile data plan (which is unavailable to other customers)¹¹².

The MVNO FreedomPop offers 100 minutes, 100 texts and 200MB data for free, alongside zero-rated WhatsApp data for voice and text services¹¹³. WhatsApp appears to be available even after the free bundle has expired (although it is difficult to confirm this). No other MVNOs offer zero-rated services.

¹⁰⁸ Unlimited Music - No Data Charges | Boost Mobile. Available at: <https://www.boostmobile.com/shop/plans/data-free-music> [Accessed 27 September 2016]

¹⁰⁹ Virgin Mobile USA Data Free Music. Available at: <https://www.virginmobileusa.com/#!/datafreemusic/> [Accessed 27 September 2016]

¹¹⁰ Music Unlimited. Available at: <https://www.metropcs.com/music-unlimited.html> [Accessed 27 September 2016]

¹¹¹ Compare Prepaid Cell Phone Plans | GoSmart Mobile. Available at: <https://www.gosmartmobile.com/browse-plans> [Accessed 27 September 2016]

¹¹² Get the AT&T Unlimited Data plan when you have AT&T wireless and DIRECTV. Available at: <https://www.att.com/shop/wireless/unlimited-plan.html> plans [Accessed 27 September 2016]

¹¹³ Free Wireless Internet | Free Internet | 4G Wireless Internet - FreedomPop. Available at: https://www.freedompop.com/wa?utm_oscampaign=FP_US_WebDesktop_Visitor_NA&utm_osplacement=LandingPage_Top-Ctr_940x60_Open&utm_oscreative=USSVF_wa_UnlimitedWhatsApp [Accessed 27 September 2016]

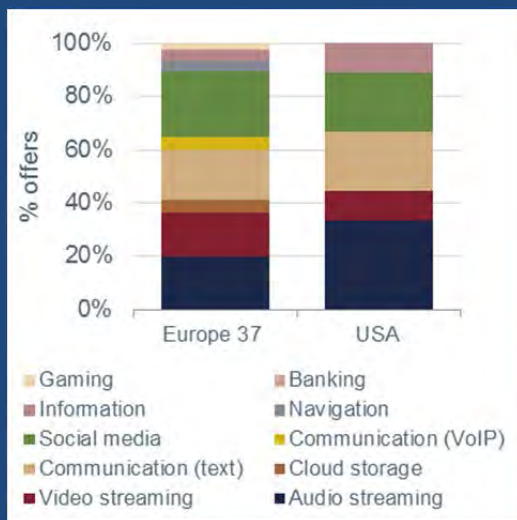
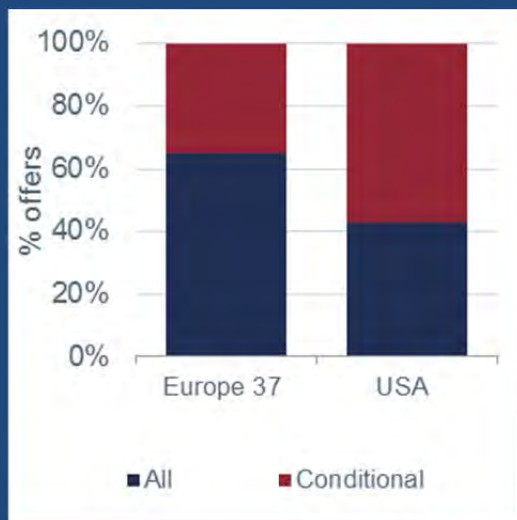
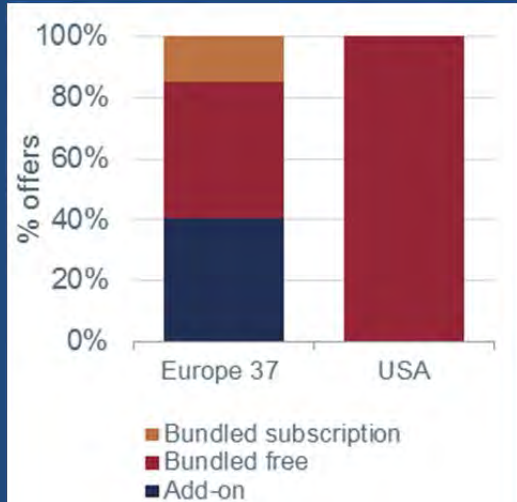
It is notable that many of the zero-rated offers found in the USA are not exclusive. There are many instances of numerous services being zero-rated (for example, T-Mobile and Sprint's zero-rating of various music services). Programmes like these suggest that there are not exclusive arrangements between operator and CAP, with certain services (e.g. Pandora) zero-rated on multiple operators alongside various other music services.

Box 11: Summary of mobile zero-rated offers in the USA

Zero-rated offers are always "Bundled free", in contrast to the almost even split across Europe.

Zero-rated offers are without conditions attached (i.e. no offers apply to some but not all of a tariff family) 43% of the time, which is slightly less than compared to Europe.

Zero-rated offers occur across most categories in similar proportions to Europe; although audio streaming has a larger relative prevalence.



Potential impact of mobile zero-rating on consumer behaviour

Zero-rating is highly prevalent in the US mobile market, with innovative zero-rated plans used by all of the major nationwide MNOs to differentiate themselves.

Audio and video streaming services are among the major categories of zero-rated applications. In the case of audio streaming, for example, according to AT&T's data calculator streaming one hour of music every day would require 0.85GB per month¹¹⁴. Boost Mobile (owned by Sprint) offers a 1GB plan that costs USD30, including zero-rated music streaming¹¹⁵. To acquire the equivalent amount of data (total 1.85GB) with Cricket Wireless (another prepaid brand, owned by AT&T) would require subscribing to their 2.5GB plan which costs USD40¹¹⁶ – an extra USD10 (EUR8.92) per month. This is significant given that we have assumed modest monthly usage, and compared two similar mobile brands. The saving would clearly be higher for subscribers that stream more than one hour of music per day.

Given that video streaming is yet more data-intensive than audio streaming, acquiring non-zero-rated services would imply an even higher cost to consumers.

Therefore, offers such as Verizon's zero-rating of its Go90 application, AT&T's zero-rating of DirecTV Now and Virgin Mobile USA's zero-rating of services such as Pandora and Napster (but not Spotify) have the potential to influence consumer behaviour. It is worth noting that offers such as MetroPCS' zero-rating of over 40 different music services are arguably likely to have a lesser impact on consumer choice of CAP than Virgin Mobile USA's zero-rating of just six services – but consumers still may be incentivised to divert their attention from smaller and/or independent music streaming services.

Offers for less data-hungry applications, such as GoSmart's zero-rating of Facebook, are less significant with regard to consumer behaviour. This is because the cost of obtaining the services through a non-zero-rated tariff is not as high for consumers as it is in the case of audio or video services. However, tariffs such as

¹¹⁴ AT&T Data Calculator. Available at: <https://www.att.com/att/datacalculator/> [Accessed 3 October 2016].

¹¹⁵ Shop Prepaid Cell Phone Plans – Unlimited You | Boost Mobile. Available at: <https://www.boostmobile.com/unlimitedyou> [Accessed 27 September 2016]

¹¹⁶ Cell Phone Plans: Cheap, Prepaid Plan Prices | Best Value | Cricket. Available at: <https://www.cricketwireless.com/cell-phone-plans> [Accessed 27 September 2016]

GoSmart's plan that provides no data other than zero-rated Facebook may influence consumer behaviour at the budget end of the market

3.6.3 The fixed market

Fixed data allowances

In the USA, the majority of plans have unlimited data allowances, including all those offered by Charter and Verizon. AT&T offers a single plan with 1TB limit¹¹⁷ and Comcast also offers some plans with a 1TB limit¹¹⁸. It is worth noting here that the limits for these plans are very high, particularly in comparison to Europe. Both providers offer unlimited plans as well.

Fixed zero-rated offers

The only fixed offer that could potentially be categorised as zero-rating is from Comcast. Comcast's Stream TV service, launched in 2015 and only available to Comcast customers, is exempted from the data allowance¹¹⁹. However, Comcast claim that this is not a case of zero-rating because Stream TV is a cable television service rather than one offered over the internet – in other words, Comcast argues that even though Stream TV is accessed through the consumer's fixed broadband service, because it never passes through the public internet this cannot be defined as zero-rating.

However, Stream TV is currently only available in the Greater Chicago and Greater Boston areas. Of these areas, the only place that is currently offered Stream TV without an unlimited plan is a region of Maine.

The Stream TV offer can be seen as a part successor to Comcast's Xfinity Xbox 360 application, which was available from 2012 to 2015. This application allowed video from various on-demand services (HBO, Max Go and other Xfinity-packaged services) to be

¹¹⁷ AT&T Internet Service - High Speed Internet Providers. Available at: <https://www.att.com/internet/> [Accessed 27 September 2016].

¹¹⁸ Questions & Answers About Our Data Usage Plan. Available at: <https://customer.xfinity.com/help-and-support/internet/data-usage-trials/> [Accessed 27 September 2016]

¹¹⁹ Stream TV FAQs. Available at: <https://customer.xfinity.com/help-and-support/cable-tv/stream-faqs> [Accessed 27 September 2016]

streamed without counting towards the data allowance¹²⁰. The application was discontinued as a result of lack of consumer interest following substantial changes in the video content and fixed markets, not least the rapid growth of Netflix and Comcast's failed merger with Time Warner Cable.

Potential impact of fixed zero-rating on consumer behaviour

Unlimited broadband offers are the most prevalent form of tariff in the US fixed market, with only two operators (AT&T and Comcast) offering limited plans, and even these have high limits. Only one operator, the fixed market leader Comcast, carries out zero-rating-like practices and the zero-rated content is all operator-owned.

However, due to the small number of consumers affected by this practice, the impact on consumers as a whole is rather limited. Further, because of the high data allowances of 1TB on the plans involved, the affected consumers would likely be able to access the non-operator-owned content without incurring substantial additional cost. Therefore, it seems likely that there is little effect on consumer behaviour as a result of US fixed zero-rating practices.

3.6.4 Key findings

The US features substantial recent and innovative approaches to zero-rating in the mobile market, with some evidence of zero-rating-like behaviour also in the fixed market.

Potential effect on consumer behaviour

Mobile operators have used zero-rating as a key differentiator to:

- promote their own content (e.g. Verizon's zero-rating of Go90 as part of its FreeBee programme);
- utilise highly attractive content (e.g. T-Mobile's Binge On programme and Boost Mobile's zero-rating of various music services);
- promote specific events (e.g. Sprint's zero-rating of streaming of Copa America matches); and to
- monetise existing users (e.g. AT&T's Sponsored Data and Verizon's FreeBee programmes)

¹²⁰ Xbox 360's Comcast Xfinity TV app in beta testing, won't count against data caps when it launches. Available at: <https://www.engadget.com/2012/03/23/comcast-xbox-360-video-app> [Accessed 27 September 2016].

Among MVNOs, FreedomPop is the only operator engaged in zero zero-rating.

The prevalence of zero-rated offers in the mobile market, as well as the data-hungry applications to which they are often applied, means that zero-rating practices may have a significant impact on consumer behaviour. Tariffs such as GoSmart, which includes no data except zero-rated Facebook use, may have an impact on take-up and customer behaviour at the budget end of the market.

On the fixed side, leading ISP Comcast is the only operator with zero-rating-like behaviour, albeit with limited geographical scope. Given the prevalence of unlimited and high-data-allowance plans and relatively low level zero-rating in the fixed market, zero-rating is likely to have little impact on consumer behaviour.

*Potential
competition
concerns*

Recently the FCC raised concerns over the zero-rated offers of AT&T and Verizon in connection with their sponsored data programmes. Though framed in terms of a violation of the net neutrality principles set out in the Open Internet Order, these concerns at the heart relate to distortions or restrictions of competition.

On 9 November, the FCC wrote to AT&T expressing concerns that *"the terms and conditions under which Sponsored Data is offered to content providers unaffiliated with AT&T, combined with its current practice of zero-rating DIRECTV video applications for AT&T Mobility subscribers, may obstruct competition and harm consumers by constraining their ability to access existing and future mobile video services not affiliated with AT&T."*¹²¹ The FCC was clear that its concerns were not with zero-rating per se, but with the fact that the AT&T offer was discriminating against independent providers of video streaming services. Even though DIRECTV was understood to be making an internal transfer payment on the same terms that would apply to external participants of the sponsored data programme, the FCC noted that *"there is no cash cost on a consolidated basis for AT&T to zero-rate its own affiliate's mobile video service (since DIRECTV's 'cost' of Sponsored Data is equal to AT&T Mobility's Sponsored Data "revenue"), an unaffiliated provider's Sponsored Data payment to AT&T Mobility is a true cash cost."*

In its response, AT&T re-iterated the fact that participation in the sponsored data programme was open to third parties on a non-discriminatory basis and on the same terms and conditions faced by AT&T, for whom the provision of zero-rated data streams was not costless.¹²² However, the FCC pointed out that the costs to a third-party of sponsoring 10 - 30 minutes of LTE video per day would

¹²¹ Letter from the FCC (Jon Wilkins) to AT&T (Robert Quinn) of 9 November 2016.

¹²² Letter from AT&T (Robert Quinn) to the FCC (Jon Wilkins) of 21 November 2016.

amount to between 46% and 134% of DIRECTV's retail price, which would seem to prevent independent providers from competing effectively with AT&T.¹²³ At the same time, the FCC raised concerns about Verizon's zero-rating of its Go90 video streaming service in combination with the terms available to third-party providers under Verizon's FreeBee sponsored data programme.¹²⁴

Ultimately, the FCC appears to be concerned about a potential margin squeeze, which is related to the level of charges for participation in the sponsored data programmes relative to the retail prices set by the MNOs for their own content.¹²⁵

On 11 January 2017, the FCC published a report that summarised the results of its review on this matter (FCC, 2017). The report considered AT&T's Data Perks and T-Mobile's Binge On programmes in addition to AT&T's Sponsored Data and Verizon's FreeBee programmes. It concluded that both AT&T and Verizon had failed to provide sufficient evidence that they offer access to Sponsored Data / FreeBee on non-discriminatory terms – i.e. that the price offered to third parties was the same as the effective incremental cost of carrying the data. The FCC therefore concluded that there was a “*substantial possibility*” that both programmes violated the General Conduct Rule¹²⁶ of the Open Internet Order. In contrast, the FCC concluded that neither T-Mobile's Binge On nor AT&T's Data Perks programmes violated the General Conduct Rule, mainly due to:

- T-Mobile not charging CAPs to participate in Binge On;
- T-Mobile not providing substantial video content of its own and therefore not competing with CAPs;
- Data Perks participants typically marketing services that do not run over mobile networks, and having other means of marketing their services; and
- AT&T not providing any services that compete with the services of Data Perks participants.

¹²³ Letter from the FCC (Jon Wilkins) to AT&T (Robert Quinn) of 1 December 2016.

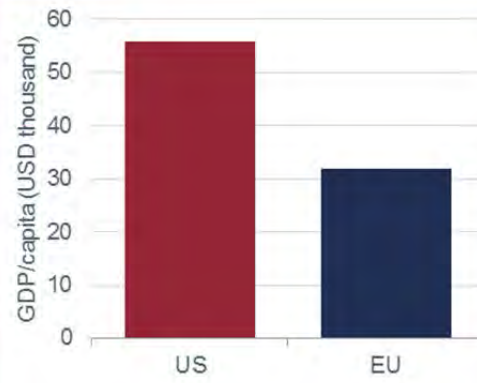
¹²⁴ Letter from the FCC (Jon Wilkins) to Verizon (Kathleen Grillo) of 1 December 2016.

¹²⁵ We note that the distinction drawn by the FCC between direct cash costs and internal transfer prices is not necessarily relevant in this context. Even at lower levels of charges for participation in the sponsored data programme, this difference would remain.

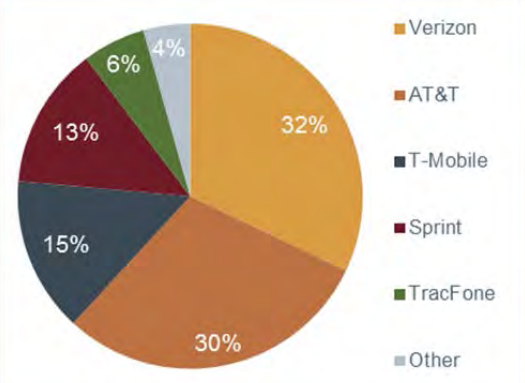
¹²⁶ The General Conduct Rule prohibits practices that unreasonably interfere with or unreasonably disadvantage end users' ability to select, access, and use broadband Internet access service (BIAS) or the lawful Internet content, applications, services, or devices of their choice, or that unreasonably interfere with or unreasonably disadvantage edge providers' ability to make lawful content, applications, services, or devices available to end users.

Box 12: USA key statistics

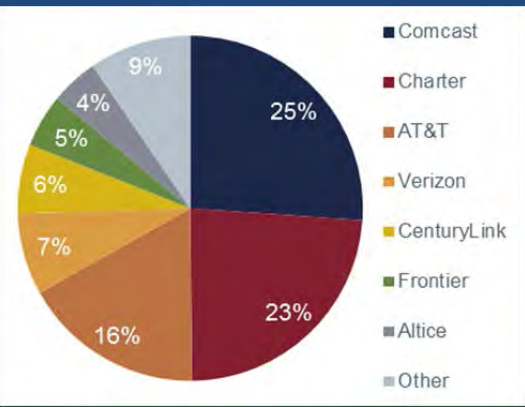
GDP per capita figures taken from World Bank 2015 data



Retail mobile market shares taken from MarketRealist report, 2015 figures



Fixed market shares taken from Leichtman Research, Q2 2016 figures.



4 Summary of key findings from our research

In this section, we present a summary of the most important conclusions from our research into zero-rating in the Europe 37 countries and the USA, our case studies and the responses from the regulators and operators.

4.1 Zero-rating in mobile markets

Zero-rating in mobile markets is becoming more prevalent across Europe as well as the USA. Across our case study countries, there was little zero-rating prior to 2012, but it is now becoming increasingly common.

The number of zero-rated offers varies significantly between European countries, and there does not appear to be any geographical or economic pattern in the use of zero-rating across markets.

One might expect zero-rating to be correlated with average data allowance, with zero-rating being more common in countries with low data allowances, and the evidence from the case studies partially supports this hypothesis. Bulgaria and Portugal have the lowest data allowances in our case study countries as well as the most instances of zero-rating. On the other hand, Swedish tariff plans have very high data allowances, but we still find instances of zero-rated offers.

The content categories that are most commonly zero-rated are social media, audio streaming, video streaming and communication (text). Data-light applications are more commonly zero-rated than data-intensive applications.

In most content categories, there are more instances of third-party content being zero-rated than operator-owned content. However, this may simply reflect that there are many more third-party applications and content than operator-owned ones. Cloud storage and video streaming applications are notable exceptions, with operator-owned content more readily zero-rated than third-party-owned content. Both these types of applications are data-intensive.

The nature of the zero-rated offers differs substantially between countries.

- In some countries, such as Bulgaria and Germany, it is more common for operators to zero-rate one or two specific services (e.g. Facebook only), whereas in Portugal and

Sweden it is more common for operators to zero-rate a wide range of services within a category (e.g. a group of audio streaming applications rather than only Spotify).

- In Portugal all the MNOs zero-rate applications that contain their own TV content, whereas in Sweden no operators currently zero-rate their own applications.
- In Bulgaria there is a large number of add-on zero-rated offers; in other countries we mostly find in-bundle zero-rating.

MNOs engage in zero-rating much more frequently than MVNOs. Multi-state MNOs vary in their propensity to zero-rate. For example, Telefónica zero-rates in all three of its European markets, whereas Telia practices very little zero-rating.

There appears to be little pattern in the extent to which major applications are zero-rated across markets. For example, Spotify is zero-rated in some of the case study countries but not others. Facebook-owned services are zero-rated in different combinations in different countries. For example in Germany only Facebook Zero and WhatsApp are zero-rated, whereas in Sweden Facebook, Facebook Messenger, Instagram and WhatsApp are all zero-rated. This suggests that:

- either CAPs have little influence over whether their applications are zero-rate (and instead the decision is made by the operators); or
- CAPs do not take a multi-country approach to the applications they wish to be zero-rated.

In most but not all cases it is clear from the operator's website and/or terms and conditions whether an application is zero-rated. However, it is often not possible to ascertain what happens to the zero-rated application once the general data allowance is exceeded (i.e. whether the application continues to be zero-rate or is rated, throttled, blocked, etc.).¹²⁷

We have found little evidence of commercial arrangements between ISPs and CAPs regarding zero-rating, let alone of exclusivity. The operators we spoke to did not have and were not aware of any such exclusivity arrangements. We also understand that operators do not need the agreement of CAPs to zero-rate access to their content, and it is common practice that they do so without even informing the content provider. Sponsored data arrangements where content providers pay for reducing data-

¹²⁷ We note, however, that treating the zero-rated application differently from other applications once the general data allowance is exceeded would be a violation of the BEREC Guidelines (and the PTS decision of 24 January 2017 requiring Telia to stop its current zero-rated offers confirms this).

related cost to their users (such as AT&T's Sponsored Data programme¹²⁸) appear to be more prevalent in the US and in relation to video and audio streaming services.

Where zero-rating is 'exclusive' to one operator, this is often because the application itself is exclusive to that operator or operator-owned (e.g. MobileTV is exclusive to Deutsche Telekom customers).

Few regulatory authorities have received complaints regarding zero-rated offers. The complaints that were reported were typically informal.

The potential impact of zero-rated offers on customer behaviour in the case study countries varies and is likely to depend on a range of factors. Our preliminary conclusions are that:

- It appears unlikely that the zero-rating of data-light applications (for example social media and messaging applications) in high-data-allowance markets will affect the choice of either MNO or CAP (e.g. in Sweden), though such effects may arise in low-data-allowance markets (e.g. in Bulgaria).
- The impact of a zero-rated offer is likely to vary depending on the level and nature of other zero-rated offers in the market. For example, as the only zero-rated video streaming offer, Deutsche Telekom's MobileTV in Germany may have a larger impact on consumer choice of mobile operator than the numerous video streaming zero-rated offers found in Portugal, though the latter appear to promote the take-up of bundled TV and mobile services from the same provider.

4.2 Zero-rating in fixed markets

Of the 37 European countries researched, we found only 11 that have fixed plans with limited data allowances¹²⁹. Consequently, there are very few zero-rated offers in fixed markets.

¹²⁸ However, even in these cases it is not clear to what extent network operators receive payment from the content providers. Videotron in Canada, for example, stated that it was not receiving any compensation from providers of audio streaming services included in its zero-rated selection (see 'Some kinds of 'differential' internet pricing should be banned, Competition Bureau says', 30 June 2016, <http://www.cbc.ca/news/technology/zero-rating-crtc-competition-bureau-1.3659865>)

¹²⁹ The 11 countries where we fixed plans with limited data allowances were: Albania, Austria, Belgium, Bosnia and Herzegovina, Germany, Ireland, Italy, Macedonia, Montenegro, Portugal, and the UK.

The only fixed zero-rated offers we found in the case study countries were in the UK and the USA. However, due to the prevalence of unlimited data plans and high data allowances in limited plans these zero-rated offers are likely to have little impact on consumer behaviour.

5 Potential benefits and costs from zero-rating

In this section, we provide an overview of the potential benefits and costs of zero-rating identified in the economic and legal literature, and consider the extent to which our research into zero-rating practices across Europe provides evidence for the existence and potential magnitude of these benefits and costs.

More details of the papers we have reviewed can be found in Annex A.

5.1 Potential benefits from zero-rating

Broadening access and promoting take-up

As zero-rating provides an effective discount on the cost of data usage, it should be expected to promote take-up and broaden access.

This benefit is perhaps more important for developing economies where the cost of access to data services could be prohibitive, and zero-rating can have a substantive impact.¹³⁰ However, even in more developed countries with affordable data plans, reducing the effective cost of accessing content could stimulate take-up: zero-rating *“can promote a wider variety of offers for price-sensitive users,*

¹³⁰ See, for example, Carew (2016) or Saenz (2016) with further references. The Wikimedia Foundation estimates that by 2016 more than 600 million people can access Wikipedia Zero – launched in 2012 – for free (CRC, 2016). Though it is not clear how many of these users would have been going online in any case, the benefit from offering such services was considered to be sufficiently large by the Chilean regulator Subtel to exempt Wikipedia Zero from its general ban on zero-rating (see Moore and Rossini, 2015). Internet.org was launched in India in February 2015, and by May 2015, Facebook claimed that the programme had brought 800,000 people online. Their data usage of Internet.org users outside of the zero-rated content had increased by 100 MB (see Moore and Rossini, 2015). Zero-rating has since however been banned in India. Overall, Internet.org claims to have brought 19 million people online (and that on average 50% of the users of the Free Basic service eventually purchase a data plan providing them with access to content outside the zero-rated package (see CRC, 2016)). Carillo (2016) argues that in these market conditions any potential discriminatory effect could be justified under human rights principles.

give them interesting deals, and encourage them to use digital services.”¹³¹

For example, in the UK and Spain, the MVNO FreedomPop offers a small bundle of minutes, SMS and data free of charge, together with zero-rated WhatsApp, which can be used even when the data allowance (200MB per month) is exceeded. There are also offers that provide free messaging applications without the user needing to have any credit on a pre-paid plan.¹³² In the US, T-Mobile’s GoSmart brand offers a package that does not include any data but provides zero-rated access to Facebook, which is presumably aimed at customers who would otherwise not be able or willing to connect to the Facebook service. However, zero-rating often also covers more data-heavy applications (in particular audio and video streaming).

Though there is little evidence of the extent to which offering such services increases overall take-up of broadband plans rather than simply affecting the competitive position of individual operators, one might reasonably assume that lower effective prices will have an impact on overall subscriber numbers. An obvious question is why, in order to stimulate take-up, ISPs provide zero-rated access to a particular range of services rather than offering a low-cost entry-level data plan with a relatively low data cap, but not restricted to any particular content.¹³³ However, the zero-rating plans often involve agreements between ISPs and CAPs that limit the bandwidth requirements of these services (see, for example, Ard, 2016 or CRC, 2016). An example of this is Facebook Zero, a text-only low-bandwidth version of Facebook designed specifically to be zero-rated, currently available in six European countries.

Product differentiation

An important argument in the literature is that zero-rating can increase consumer welfare through product differentiation, both in terms of providing products that better suit the needs of particular types of customers and by increasing the service aspects upon which both broadband access and service providers may compete. Competition over a greater range of plans means more options for

¹³¹ European Commission, Press Release: ‘Roaming charges and open Internet: questions and answers’, 30 June 2015, available at: http://europa.eu/rapid/press-release_MEMO-15-5275_en.htm

¹³² WhatsApp SIM offered by E-plus in Germany (<https://www.eplus.de/whatsapp#WhatsApp-Alle-Optionen>)

¹³³ see van Schewick (2015), who argues “[i]f ISPs really want to help these communities, they have alternatives that are equally cost-effective, but that do not similarly restrict users to a walled garden, distorting competition and user choice in the process.”).

consumers, and this increases the likelihood of new business models that are more efficient than those currently in the market. By contrast, strict net neutrality requirements would remove at least one service aspect on which firms can compete and lead to more standardised products (see Marini-Balestra and Tremolada, 2015).

Layton and Calderwood (2015) argue that zero-rating is an important part of the marketing strategies by which ISPs differentiate themselves. Different ISPs frequently target different tranches of consumers, and through zero-rating an operator may be able to achieve this more effectively than through price or network quality. For example, the youth brands of all three Portuguese MNOs zero-rate a range of social media and messaging applications that are popular amongst this target group.

Zero-rating may better address the needs of niche consumer groups who would not be well served through uniform broadband access products (see Marini-Balestra and Tremolada, 2015). For example, consumers who purchase unlimited data plan in order to use just a handful of websites or applications each month would be arguably better off with a lower priced data-limited plan plus zero-rated access to their preferred sites/applications.

Layton and Calderwood (2015) suggest that entrant operators such as MVNOs and resellers, who are less able to differentiate on network quality and price, have often implemented zero-rating. Eisenach (2015) notes that in the US it is the small competitors such as MetroPCS, Sprint and T-Mobile that have used zero-rating to differentiate themselves from larger competitors.

However, our research in Europe suggests that zero-rating is more prevalent amongst MNOs, and that there is no conclusive support for the claim that it is smaller MNOs and new entrants that are more interested in zero-rating. Whilst we have found some instances of challengers being the instigator of zero-rating (e.g. Three in the UK), in other countries it have been the market leaders (e.g. Deutsche Telekom in Germany and MEO in Portugal) who have adopted zero-rating first.

Lyons (2016b) argues that co-marketing of zero-rated services between mobile operators and CAPs *"can promote greater competition within broadband markets by allowing smaller broadband providers who lack the scale and infrastructure to compete against entrenched incumbent providers, by changing the rules of the game"*. A potential example in Europe is the co-branded tariff between E-Plus (Telefónica) and WhatsApp (Facebook) in Germany.

Price differentiation

Zero-rating can be regarded as a form of differential pricing, or price discrimination by ISPs (Eisenach, 2015; Layton and Calderwood, 2015; Brake, 2015; Stallman and Adams, 2016). Offering essentially uncapped access to some types of content in combination with an overall data cap selectively lowers the price of internet access to customers who value the zero-rated content particularly highly.

Eisenach notes that *“differential pricing – referred to by economists as – “competitive price discrimination” – is not only widespread, but generally improves economic efficiency and increases consumer welfare.”* Layton and Calderwood (2015) quote Baumol (2005) who states that *“in highly competitive markets, firms may have no choice: Competition can force them to adopt the vector of profit maximizing discriminatory prices.”*

Price discrimination can of course also be used anti-competitively, but Eisenach (2015) argues that this is less likely in relation to zero-rating. IT markets are characterised by innovation, platform competition and demand side scale economies (giving rise to direct network effects) and scope economies (leading to indirect network effects and the prevalence of multi-sided markets). In such markets, the output-enhancing effects of price discrimination are particularly valuable, and differential pricing is an effective way of recovering the often substantial upfront (sunk) costs incurred by market players.

Equally, where there are direct or indirect network effects, increasing usage or stimulating take-up will have important dynamic benefits. In particular social media platforms benefit from greater usage, and reducing the cost of using particular services could result in an increase in the availability of user-generated content and thus the value of the platform to all of its customers. Marini-Balestra and Tremolada (2015) argue that stimulating greater demand for connectivity by offering free access to some content may boost investment in network infrastructure and help operators build scale. Layton¹³⁴ claims that this is particularly true for small growing mobile operators, citing the Slovenian Competition Authority which *“observes that zero-rating can help small and entrant operators win new customers, which helps them invest in spectrum and network because they can amortize a fixed cost over a larger customer base.”*

Whilst the potential benefits of price discrimination are widely discussed in the literature, our research suggests that the extent to which zero-rating is used as a tool for differentiating prices is limited. Many zero-rated offers apply to a range of tariffs rather than only to tariffs with relatively tight data caps, so they are unlikely to amount to selective price reductions for customers valuing the

¹³⁴ Letter to BEREC <http://roslynlayton.com/wp-content/uploads/2016/07/Academic-evidence-for-outcomes-on-zero-rating-and-net-neutrality-policy-for-EU-2011-2016.-Special-letter-for-BEREC.pdf>

zero-rated content particularly highly compared with customers who wish to use more data in general.¹³⁵

Efficient pricing in multi-sided markets

Eisenach (2015) states that zero-rating is a way of collecting revenues from CAPs, which may be required for efficient pricing in two-sided markets. Hemphill (2008) argues that ISPs charging CAPs for sending information to consumers can be desirable because ISPs are best placed to pursue strategies that promote broadband adoption compared with CAPs because the latter will only reap part of the benefit from increasing overall broadband take-up.¹³⁶

These arguments would apply only to sponsored data programmes where CAPs pay the ISP for zero-rating access to their content.¹³⁷

Our research has found little evidence for the use of sponsored data programmes outside of the US at present. However, they may well be introduced in Europe as zero-rating becomes more widespread.

Promotion of content and application creation

In addition to allowing ISPs to collect revenues from CAPs to fund investment in networks and promote broadband take-up, sponsored zero-rating programmes can also be valuable for CAPs as a way of differentiating their content from that of competitors online (see Lyons, 2016b). However, the two main sponsored content programmes identified in our research – AT&T’s Sponsored Data Programme and Verizon’s FreeBee – are mainly used by advertisers¹³⁸ and mobile operators zero-rating their own content rather than by third-party CAPs trying to differentiate.

¹³⁵ However, the FCC found that in the US carriers pursued more differentiated strategies, noting that “[o]ver the course of 2016, carriers introduced numerous unlimited data programs, as well as launched a variety of zero-rated services and sponsored data arrangements” (FCC, 2017, p 2).

¹³⁶ As Hemphill (2008) notes, “[a] consumer subsidy strategy has plenty of precedents where markets are “two-sided”—that is, where a firm enables interactions between different types of end users.” It is of course worth pointing out – as Hemphill does – that the arguments about the efficient pricing in two-sided markets become irrelevant if CAPs and users can internalise these charges (e.g. if lower costs of access are exactly offset by higher prices for content; see Rochet and Tirole, 2006). Such complete internalisation is however unlikely in practice, not least because of the heterogeneity of consumers in terms of their usage of particular types of content.

¹³⁷ Viewed through a more traditional lens, sponsored data programmes can be seen as vertical agreements that allow companies to share resources and leverage one another’s strengths. This can lead to greater operational efficiencies and reduce costs (see Marini-Balestra and Tremolada, 2015).

¹³⁸ Even when not aimed directly at promoting access to particular applications, zero-rating has been said to promote service development by facilitating efficient advertising (see Brake, 2016). With advertisers using AT&T’s Sponsored Data Programme to zero-rate their adverts, customers will not be discouraged from watching adverts because doing so might add into their data allowance.

Oxera (2016) and Lyons (2016a) note that new CAPs and small start-ups may wish to pay for zero-rating in order to enter the market and gain users. By contrast, Layton and Calderwood (2015) find that it is usually content and applications that have a leading position in their respective sector that are zero-rated.

Our research of zero-rated offers in Europe largely confirms the latter view. The content that is zero-rated is generally from the large well-established CAPs such as Facebook, Spotify, Viber or Twitter, and less established zero-rated applications are usually owned by mobile operators (such as Deutsche Telekom's Message+). Similarly, in the case of video streaming, it is operator-owned content rather than the most well-known brands that is likely to be zero-rated. The preference for zero-rating the most attractive content is likely to reflect that such arrangements are driven by the ISPs wanting to offer access to attractive applications in order to improve their market position.

However, there is also some evidence to suggest that zero-rating can help with cross-border expansion in Europe (Lyons, 2016a). For example, soon after launching its services in Germany in March 2012 Spotify entered a zero-rating arrangement with Deutsche Telekom. Subsequently, Spotify became the market leader in the developing audio streaming market in Germany (though it is unclear how much of this success can be attributed to the zero-rating deal with Deutsche Telekom).

Congestion management

By definition zero-rating implies the presence of usage-based pricing or data caps, which in turn are seen as an important traffic management tool (though this view is not universally shared¹³⁹). In the presence of such constraints, zero-rating may be considered as a form of (paid-for) prioritisation *"enabling content providers to subsidise data usage as a marketing device."* (Marini-Balestra and Tremolada, 2015). Similarly, Brake (2016) notes that zero-rating may be seen as a way of experimenting with usage based pricing to address capacity constraints.

However, the link between zero-rating and traffic management is somewhat tenuous. Zero-rating may result in greater traffic volumes than would result from looser data caps, because it effectively removes any cap on certain types of traffic. Even if ISPs set lower general caps with zero-rating than they might otherwise

¹³⁹ See "Data caps are a business decision—not a network necessity, Frontier says" (<http://arstechnica.com/business/2016/06/ex-verizon-customers-wont-face-data-coverage-charges-with-frontier/>), or "Leaked Comcast memo reportedly admits data caps aren't about improving network performance" (<http://www.theverge.com/smart-home/2015/11/7/9687976/comcast-data-caps-are-not-about-fixing-network-congestion>). In particular very high caps (set at hundreds of gigabytes or higher) appear to be mainly aimed at ensuring fair use.

impose, there is no guarantee that traffic volumes are lower. For example, Deutsche Telekom stopped its zero-rating of Spotify in Germany because of the increased traffic it generated.¹⁴⁰

However, as Odlyzko et al. (2012) or Lyons (2016b) point out, it is not the total volume of traffic that matters for congestion, but peak traffic volumes. Thus, if the zero-rated traffic falls mostly outside of peak periods whilst traffic generated under looser caps would be mainly add to the peak, then combination of zero-rating and tighter data caps can lead to lower traffic peaks and a more equal traffic distribution over time. T-Mobile in the USA claimed, for example, that that the busy hour traffic peak became less pronounced after Binge On was introduced¹⁴¹.

5.2 Potential harmful effects from zero-rating

The arguments against zero-rating in the literature typically focus on the fact that the practice entails a discriminatory treatment of different types of traffic and is therefore a violation of net neutrality. There are two broad views as to why net neutrality is an appropriate objective:

- From the first perspective, net neutrality is simply the embodiment of the principle of free speech in a digital world. In this view, interfering with the user's choice of content through discriminatory treatment of traffic conflicts with free speech and undermines democratic participation. In the extreme, net neutrality would be regarded as an inviolate principle, and zero-rating as a practice that is not

¹⁴⁰ Deutsche Telekom Blog. Available at: <https://telekomhilft.telekom.de/t5/Blog/Wichtige-Information-zur-Option-Music-Streaming-fuer-Neukunden/ba-p/2034561> [Accessed 8 June 2017]

¹⁴¹ T-Mobile CTO Ray: only 8% of T-Mobile subscribers have opted out of Binge On. Phone Arena. Available at: http://www.phonearena.com/news/T-Mobile-CTO-Ray-only-8-of-T-Mobile-subscribers-have-opted-out-of-Binge-On_id85949 [Accessed 30 September 2016]

justifiable under any circumstances.¹⁴² More pragmatic views look at net neutrality as a human right that is nevertheless susceptible to exceptions under certain conditions (e.g. Carillo, 2016). In both cases, however, violations of net neutrality are harmful in themselves.

- From the second perspective, net neutrality is a safeguard against the detrimental impact that interference with end user choice of content through discriminatory treatment of traffic might have on the market for content and the provision of internet access. In this view, violations of net neutrality would result in harm to users (which may be set against countervailing benefits).

As we are interested in the potential sources of harm, we look at zero-rating from the second perspective in the remainder of this section.

Zero-rating potentially distorts content competition and limits user choice

The biggest concern about zero-rating in the economic and legal literature is related to the impact that it has on the end users' choice of content and thereby on the content market. As zero-rating removes the data cost associated with particular types of content and thus makes this content relatively more attractive (all other things being equal): *"it is self-explanatory that zero-rating leads to selected traffic from the internet service provider itself or affiliated providers being favoured above other traffic."*¹⁴³ The zero-rated content enjoys an immediate competitive advantage over non-zero-rated content, which may be struggling to reach the market. This limits growth and innovation (in addition to undermining free speech).

Critics of zero-rating point out that customers of zero-rated plans may for example be able to watch unlimited video from certain zero-rated service providers, but only a few minutes of video from non-qualifying service providers. This in turn will distort

¹⁴² Crawford (2015) - perhaps the most outspoken critic of zero-rating – claims that the practice is *"pernicious; it's dangerous; it's malignant. ... Zero-rating ... is absolutely inappropriate. It makes certain kinds of traffic exempt from any data cap at all, or creates a synthetic 'online' experience for users that is not the Internet. Traffic that is 'approved' is allowed; other traffic won't flow to users. That's discrimination on the basis of the nature of the traffic itself, being carried out by the service provider — not by the user. The pragmatists, and the carriers, say that it is worth allowing poorer populations around the world (now barred by the high cost of Internet access) to see part of the Internet. But the cost of such services is the future of the Internet. Those users may never move to 'real' Internet access, satisfied with their 'free' access to a walled garden of chosen services. And carriers will have no particular incentive to provide them with that open Internet access. Instead, vertical discrimination will become the norm: the Internet as cable TV."*

¹⁴³ Marini-Balestra and Tremolada (2015); Marsden (2016) simply states that the discriminatory effect is 'obvious'.

competition between content providers who may be aiming to convince ISPs to include their offering in zero-rated plans. If they are permitted to zero-rate, ISPs are in the position to “*pick winners and losers online by favoring some applications over others*”, as van Schewick (2016) puts it. ISPs become the gatekeepers of the Internet and may restrict access to rival content entirely.

Mitchell Bakes, Chair of the Mozilla Foundation, suggests that zero-rating is “*bad for the ability of new entrepreneurs to grow onto the global scale.*” Where zero-rating occurs new content cannot compete on its quality or desirability to consumers but on financial means to zero-rate or partnerships with operators.¹⁴⁴

Critics also point out that users may have a choice between tariff plans, including a choice in terms of the content that would be available zero-rated, but as ISPs and broadband providers respond to commercial demand they may end up favouring certain classes of more popular Internet uses, such as video streaming, over all other Internet uses. They will also favour the most commercially attractive content, which stifles democratic expression. For example, as van Schewick (2016) notes, the 42 providers included in T-Mobile’s Binge On delivered mostly commercial video entertainment – not user-generated, educational or non-profit video. Only 8 of these 42 providers offered free video streaming services supported by advertisements. The rest required customers to subscribe separately.

The evidence from our research and interviews suggests that ISPs indeed tend to zero-rate content that is already popular. In some instances this may include several applications in the same category. For example, O2 (Telefónica) in the UK and Tre (Hutchison) and Telia in Sweden zero-rate numerous audio streaming applications. This could potentially make it more difficult for new entrants to compete with existing zero-rated applications, but would have less of an impact on competition amongst existing applications included in the offer.

In any case, if ISPs decide which content to zero-rate on the basis of what their potential customers want to access most, it is difficult to see how zero-rating would interfere with end user choice: ISPs zero-rating decisions simply reflect end users preferences (though these may in turn be evolving and responding to network effects, in particular in the case of social networks).

In the extreme case, the lower cost of accessing zero-rated content could result in foreclosure of non-zero-rated content.

*Zero-rating could
foreclose content
markets*

¹⁴⁴ <https://blog.lizardwrangler.com/2015/05/06/zero-rating-and-the-open-internet/>

Foreclosure concerns arise where particular CAPs are unable to compete effectively with rivals whose content has been zero-rated, and are unable to obtain an arrangement that would zero-rate access to their content. Such outcomes may arise in a number of ways.

One instance is where some CAPs are able to obtain agreement from an ISP not to extend zero-rating to competing services. New competitors would then face a barrier to compete with zero-rated content. This *"would artificially limit the growth of new applications, inappropriately reinforce existing network effects, and hinder new application discovery."*¹⁴⁵ There are claims that zero-rating deals between CAPs and ISPs are often exclusive¹⁴⁶ as well as arguments that most zero-rating arrangements should be expected to be non-exclusive, not least because broadband providers are reluctant to enter into exclusive agreements with independent providers of video, programs and other content in complementary upstream markets under which they promise not to zero-rate access to the content of competitors (see Eisenach, 2015). This is because broadband providers have no interest in distorting competition in content markets as doing so will reduce the value of the broadband access to their customers.¹⁴⁷ Although agreements between ISPs and CAPs that might exist are likely to be confidential and therefore the prevalence of exclusive arrangements is difficult to gauge, our research suggests that exclusive agreements between ISPs and CAPs are rare. Indeed, one operator we interviewed told us that it did not have any formal agreements with CAPs at all regarding zero-rating. Further, one major CAP told us that all instances of its applications being zero-rated is on a non-exclusive basis, and indeed in many cases no formal agreement was in place regarding the zero-rating.

Another instance is where ISPs zero-rate their own content but do not zero-rate competing services. For example all three Portuguese MNOs zero-rate their own TV content and Deutsche Telekom in Germany zero-rates its own MobileTV application, but no other video streaming services. Unlike in the case of exclusively zero-rating content from selected third parties, the ISP here would potentially have an interest in affecting competition in the content market in favour of its own applications.

¹⁴⁵ ITIF (2016)

¹⁴⁶ <https://savetheinternet.eu/en/faq/#what-is-zero-rating>

¹⁴⁷ See Lyons (2016b), referring to the economic theory of 'internalisation of complementary externalities' (ICE, see Farrell and Weiser, 2003); ISPs would have an interest in maintaining vibrant competition amongst content providers as this has a positive impact on the willingness to pay of customers for internet access.

A third instance where zero-rating arrangement may not be open to all CAPs on the same basis is where eligibility is subject to technical restrictions. Van Schewick (2016), for example, notes that T Mobile's Binge On product had standards that *"categorically exclude providers that use the User Datagram Protocol (UDP), making it impossible for innovative providers such as YouTube to join. They discriminate against providers that use encryption, a practice that is becoming the industry standard. While some providers can join easily, a significant number will need to work with T-Mobile to determine whether their service can be part of Binge On. Many will have to invest time and resources to adapt their service to T-Mobile's systems. The smaller the provider, the longer it will likely take for T-Mobile to get to it. The result: Binge On allows some providers to join easily and creates lasting barriers for others, especially small players, non-commercial providers, and start-ups."* This situation did not persist, since YouTube became available zero-rated as part of the program. However, UDP services (and the use of encrypted connections) required *"additional collaboration"* with T Mobile¹⁴⁸, which may have been achievable for a large CAPs (such as YouTube) but prohibitively costly for smaller providers.

The extent to which zero-rating favours a particular service or a particular type of content depends on the size of the effective discount enjoyed by the zero-rated traffic, which in turn depends on a number of factors, such as the size of the data cap, the value of accessing content that would be displaced at the margin, and the bandwidth requirements of the services in question. There appears to be some agreement that discriminatory effects are likely to be stronger for bandwidth-hungry content in the presence of tight data caps, and perhaps less important for data-light applications.¹⁴⁹ However, as van Schewick (2015) points out, even for data-light applications, the psychological effect of not having to worry about breaching a data cap could have a strong effect in favour of the zero-rated content.

In our research, we found instances of zero-rating of data-light applications in combination with generous data caps (e.g. in Sweden, or in the UK where O2 zero-rates audio streaming applications on plans with very large data caps of 30 or 50GB per month), which would at least suggest that operators believe

¹⁴⁸ T Mobile's requirements also include a video detection signature, that changes to identification of video traffic must be reported to T Mobile in advance, that video is provided using adaptive bitrate technology and content providers may be expected to make technical modifications at T Mobile's request.

¹⁴⁹ See, for example, Marini-Balestra and Tremolada (2015) who find that *"the foreclosing impact of zero-rating is likely to be particularly detrimental in internet access markets where ISPs allow for low-volume caps."*

customers to be somewhat unclear about data requirements or overly concerned about breaching caps.

Potential harm to innovation and service development

Even where zero-rating does not have exclusionary effects, it may harm innovation because it limits service providers' technical choices and the overall incentive to innovate. Ramos (2014) argues that zero-rated access to Facebook and other services in developing countries may be responsible for (or at least contribute to) a lack of investment in the development of indigenous social networking services.

The broadband access provider's technical requirements for content to be zero-rated can be substantial in terms of required protocols, streaming technology and integration with other content. They may discourage encryption (as was reportedly the case with T-Mobile's technical requirements for Binge On) or impose specific encryption parameters. This can undermine the 'virtuous circle' that characterises Internet evolution: the more CAPs are able to experiment and innovate, the more the Internet is used and the more broadband providers have an incentive to invest to improve the speed and capacity of their networks. Paid prioritisation, including zero-rating, could undermine the competition underpinnings of this cycle (see Marini-Balestra and Tremolada, 2015, with further references).

Van Schewick (2016) argues that CAPs having to focus on being eligible to become part of a portfolio of zero-rated services will *"end the era of 'innovation without permission' – an important principle that has allowed innovation to flourish on the Internet up until now."* *"Innovators will now need to work with ISPs around the world to join their zero-rating programs – all just for an equal chance to compete. Small players, non-commercial speakers, and start-ups without the resources to engage numerous ISPs across the globe will be left behind."*

Potential anti-competitive impact on the market for Internet provision

Some commentators note that zero-rating may also have an impact on competition between ISPs where an operator is able to zero-rate popular content in an exclusive arrangement. In this case, other operators may be unable to compete for consumers who place a high value on the zero-rated content. Oxera (2016), for example, argues that *"[w]hile zero rating could be considered a legitimate commercial strategy for ISPs, it could also raise concerns about ISP foreclosure. For example, content provided by a particular CAP to an ISP on an exclusive basis or on preferred terms could lead to foreclosure effects in the ISP market. These foreclosure effects are likely to be stronger if the content is considered 'must have'— i.e. customers will switch their ISP in order to have (exclusive or better) access to the essential content."*

CRC (2016) notes that *"a company with market power may try to prevent market entry or affect the competitive process by bundling its services (mobile telephony, mobile broadband and relevant video content with ZR models) in such a way that it increases the costs of its*

competitors who cannot generate similar packages causing an exclusion mechanism. There is also the possibility that a vertically integrated operator with market power, includes its contents of for [sic] example music or video within a ZR scheme, while competing applications affect the consumption of the user's data generating an effective exclusion mechanism". If consumer preference for the key content were strong enough the operator would face very limited competition.

Our research finds some examples of ISPs zero-rating their own content on an exclusive basis, but little evidence of exclusivity in terms of zero-rating third-party content. A CAP whose content is frequently zero-rated told us that there is no requirement for an ISP to seek an agreement with the CAP in order to zero-rate a particular application, and that this regularly happens without the CAP even being informed. This would suggest that exclusivity is difficult to achieve except in relation to operator-owned content. For example all three MNOs in Portugal zero-rate their own TV content (which is very similar across all MNOs with no MNO having exclusive access to 'must-have' TV content). Although the TV content of one MNO is available to subscribers of other MNOs, and these other MNOs could decide to zero-rate access to such content as well, they have little incentive to do so, and rather try to convince subscribers to switch to their own content.

ISPs may face incentives to impose tighter caps or raise charges to CAPs

A direct consequence of zero-rating that is often said to harm customers directly is that operators who zero-rate some traffic may set tighter caps overall. Zero-rating and other forms of paid prioritisation can lead to excessive access charges by terminating monopolists and create an incentive for them to degrade non-priority traffic or set low monthly bandwidth caps. Net neutrality advocates remark that *"just as paid fast lanes would encourage broadband providers to offer slow lanes in order to entice content providers to pay for faster connections, zero rating, with its underlying reliance on data caps, would encourage lower data caps to incent payments for zero-rating."*¹⁵⁰

Support of this assertion comes mainly from a small number of observations by Rewheel, namely:

- the assertion that KPN would not have increased its overall data cap in support of launching its television service but instead zero-rated the traffic if this practice had not been

¹⁵⁰ Letter to the FCC from 18MillionRising.org and others, GN Docket No.14-28, 19 February 2015 (<http://apps.fcc.gov/ecfs/document/view?id=60001031560>)

- banned in the Netherlands¹⁵¹, which suggests that increasing data caps is the next best alternative from an operator's perspective to introducing zero-rating; and
- the claim that *"mobile network operators that zero rate their own or third party video services have an economic incentive (non-coordinated effect) to set restrictive gigabyte volume caps in order to enhance the appeal of their zero-rated services"*; in support of this assertion, Rewheel shows the average and median GB cap of (68) operators who do not offer zero-rated plans, and of (24) operators who do offer such plans, though without any information about the underlying details or the extent to which the analysis tried to control for other differences;¹⁵²
 - the claim that Hutchison Three introduced a zero-rated film store and halved the number of GB on its flagship mobile plan in Italy.¹⁵³

These observations are however somewhat speculative. Our research does not find robust evidence to support the claim that zero-rating leads to lower data caps. We do not have information about tariffs across time and therefore we are not able to determine what impact zero-rating has had on data caps within countries, but the prevalence of zero-rating across an entire family of tariffs with varying data caps would seem to be inconsistent with a negative impact of zero-rating on caps. We do not find evidence to suggest that zero-rated tariffs within a country have lower data caps than non-zero-rated tariffs; on the contrary, in the UK O2 only offers zero-

¹⁵¹ Rewheel claims that the change in KPN's data caps in the Netherlands is *"the first empirical evidence of the pro-competitive benefits of real net neutrality rules that ban price discrimination (zero-rating) – it leads to lower internet usage prices and higher volume caps!"* (Rewheel / Digital Fuel Monitor flash research note, 6th February 2015, http://dfmonitor.eu/downloads/Banning_zerorating_leads_to_higher_volume_caps_06022015.pdf). However, it is not clear how Rewheel's analysis arrives at a reduction in the price per MB of 80%, when the doubling of a data allowance would suggest more that effective prices have fallen by 50%. Also, the claim that KPN reduced its prices *"days after the ACM announced its zero-rating decision"* is factually incorrect, given that the ACM decision is dated 18 December 2014 (though the publication of the decision on ACM's website is 27 January 2015).

¹⁵² Rewheel, The state of 4G pricing – 1st half 2016 DFMonitor 5th release (http://dfmonitor.eu/downloads/1H2016_DFMonitor_fifth_release_11052016.pdf). For example, zero-rating may be concentrated in particular countries where country-specific factors play a role, or amongst particular operators who might be spectrum-constrained.

¹⁵³ Rewheel, 'Digital Fuel Monitor: The 4 to 3 consolidation effect – Hutchison Three Italy halved the gigabytes in its flagship smartphone plan and launched its own zero-rated film store', September 2015, (http://dfmonitor.eu/insights/2015_sept_premium_three_italy/); at the same time, it is worth pointing out that according to Rewheel's own analysis, Hutchison offers the largest data cap/lowest prices in the Italian market (<http://dfmonitor.eu/IT>)

rating on its tariffs with the largest data allowances. Across our case study countries, we find that Bulgaria and Portugal have the lowest data allowances as well as the most instances of zero-rating, but on the other hand Swedish plans have very high data allowances and still include zero-rated offers.

Our analysis of five case study countries is of course also insufficient to draw solid conclusions on the relationship between zero-rating and data caps, but even if there were evidence to suggest that zero-rating leads to lower data caps it is far from clear whether this causes consumer harm (see Box 13 below).

Box 13: Welfare implications of tighter data caps

Assuming that zero-rating of particular types of content goes hand in hand with tighter data caps, it is far from clear that this causes consumer harm. In sufficiently competitive markets, the overall price level would be constrained by competition, so the comparison between lower caps + zero-rating and higher caps is simply one between different price structures.

It may indeed be the case that consumers who place little or no value on the zero-rated content but have substantial demand for other types of content are worse off under tighter caps – but other customers may gain. In particular, customers who want to make extensive use of the zero-rated content will benefit in the zero-rating scenario, and customers who want to access the zero-rated service as well as other types of content may well be better off. These effects are largely ignored.

Put differently, the fact that zero-rating of particular types of content may be associated with tighter data caps should not be considered to be a problem unless one can demonstrate that customers overall would prefer looser caps but are forced to accept an inferior pricing structure where some content is free and limits on other content are tighter. Such an outcome may well arise if competition in the market place is ineffective – but in this case, the problem lies with limited competition resulting in inferior pricing structures (which in this case would presumably also entail excessive charges) rather than zero-rating itself.

An important issue in relation to the incentives to lower data caps on plans that include zero-rating and the consumer harm implications is transparency: if prices for plans that are zero-rated are higher than non-zero-rated plans, consumers may be deceived by the inclusion of 'free data'. Ard (2016) suggests that *"[r]egulators should prohibit unfair and deceptive advertising with respect to zero rating. Chile has begun to address this problem through a prohibition on zero-rated social networks. Mobile carriers in Chile advertised free access to Facebook and other social networks, but they charged a premium for these plans: consumers paid extra for their supposedly 'free' service while competing carriers who did not engage in the same marketing strategies lost customers. In the United States, the Federal Trade Commission ('FTC') has expressly condemned marketing like this as deceptive. Recent research in behavioral science confirms the wisdom of this approach; the offer of 'free' service is seductive and*

interferes with consumers' ability to shop for the deal that best serves their need."¹⁵⁴

5.3 Summary

Overall, the economic and legal literature on zero-rating consists to a large extent of regulatory advocacy submissions relating to legislative initiatives in the US and EU. These submissions, although important, are understandably biased and should be assessed in the context of the specific consultation processes they aspire to influence.

Scholarly articles generally tend to assess zero-rating as a net neutrality issue rather than in the context of competition law. Ensuring compliance with net neutrality (as the over-arching principle) is primarily a matter for sector-specific regulation and policy. However, much of the literature recognises that zero-rating can affect both the decision for a particular ISP and the choice of content, and thus affect competition. Proponents and critics of zero-rating differ with regard to their view as to whether these tools are being used for the benefit of users, or (ab-)used to distort competition and ultimately exploit customers.

Robust evidence about the strength and relevance of the various effects that are being claimed to flow from zero-rating is lacking. Some specific observations aside, there is little reliable data that would show the impact of zero-rating in the market place.

Much of the discussion of both benefits and potential harm presumes that CAPs pay for zero-rating, and that zero-rating arrangements are potentially exclusive. Our research has found little evidence to support the validity of either presumption. At least at present, the only examples of paid-for zero-rating arrangements are in the US (AT&T's Sponsored Data programme and Verizon's FreeBee); no such agreements exist in Europe. Similarly, there is little by way of evidence of exclusive arrangements other than in the case of ISPs zero-rating their own content. Indeed, we understand that there is little that would prevent ISPs from zero-rating access to any content they choose. In many instances, they do not need the consent or the assistance of the CAP, and perhaps the only restriction arises from limitations on being able to use the CAP's brand in marketing the tariffs or technical constraints specified by the ISP.

¹⁵⁴ Ard (2016) references work by Shampaner et al. (2007) who demonstrate that zero price offers have a particular impact on choices.

6 Framework for competition assessment

Based on our research and our analysis of zero-rating practices across Europe and the US, as well as the survey of national regulators and competition authorities, we have not identified any particular concerns about the competition impact of zero-rating. However, information about the market impact of zero-rating is extremely limited. Also, there is a lack of transparency about any agreements between broadband providers and CAPs that might be in place, as well as about the issue of who pays what (if anything) for zero-rating. The practice has also been limited to date, but has been growing recently, and is increasingly involving data-intensive applications and operator-owned content.

The growth in zero-rating may be partly the result of greater certainty over what practices are permissible coming from the BEREC guidelines on the implementation of net neutrality provision under the TSM regulation. The guidelines set out a number of conditions and considerations that determine whether zero-rating should be permitted or considered to be non-compliant with the net neutrality requirements in the TSM regulation (see box below).

Though there is room for interpretation, what one would expect in practice is that:

- all zero-rating agreements will have to ensure that the zero-rated traffic is treated in the same way as the non-zero-rated traffic once a data cap has been reached because of the bright-line requirement; and that
- ISPs with a strong market position may need to be more careful in terms of designing their zero-rated offers (e.g. more likely to include a range of services rather than single services) in order to minimise the impact on end user choice.

Therefore, these regulatory constraints impose a first screen and potentially affect the type of zero-rating practices we will see in the market place. Indeed, the need for compliance with the guidelines was explicitly pointed out in our interviews with operators. Their existence and enforcement does not however eliminate the possibility that competition authorities will have to look at zero-rating practices in particular cases.

Box 14: The BEREC guidelines on the implementation of net neutrality principles

The BEREC guidelines suggest one bright-line requirement, and a number of considerations that would need to be applied in order to establish whether a particular practice would be in violation of the TSM net neutrality regulations.

- The bright-line requirement derives from BEREC's view that a zero-rated offer where all applications are blocked (or slowed down) once the data cap is reached except for the zero-rated application(s) would be incompatible with the net neutrality requirements. This implies that any permissible zero-rated offer will have to treat the originally zero-rated content and other content equally once the data cap is reached.
- Other offers would need to be assessed in terms of their impact on end-users rights and the aims of the regulation.

The criteria suggested by BEREC for such an assessment require an analysis of the impact of the practice on:

- consumer and business customer end-user rights, including whether *"the range and diversity of applications which end-users can choose from is reduced in practice; whether the end-user is incentivised to use, for example, certain applications"* and *"whether the IAS subscription contains characteristics which materially reduce end-user choice"*;
- CAP end-user rights in terms of whether *"there is an effect on the range and diversity of content and applications which CAPs provide, and to what extent the range and diversity of applications may not be effectively accessed; whether CAPs are materially discouraged from entering the market or forced to leave the market, or whether there are other material harms to competition in the market concerned"* and *"whether the continued functioning of the internet ecosystem as an engine of innovation is impacted, for example, whether it is the ISP that picks winners and losers, and on the administrative and/or technical barriers for CAPs to enter into agreements with ISPs."*; and on
- the scale of the practice and the presence of alternatives.

The guidelines also state that

- *"commercial practices which apply a higher price to the data associated with a specific application or class of applications are likely to limit the exercise of end-users' rights because of the potentially strong disincentive created to the use of the application(s) affected, and consequent restriction of choice"*;
- *"end-users of an IAS whose conditions include a lower (or zero) price for the data associated with a specific application or class of applications will be incentivised to use the zero-rated application or category of applications and not others. Furthermore, the lower the data cap, the stronger such influence is likely to be"*; and that
- *"price differentiation between individual applications within a category has an impact on competition between providers in that class. It may therefore be more likely to impact the 'continued functioning of the internet ecosystem as an engine of innovation' and thereby undermine the goals of the Regulation than would price differentiation between classes of application."*

This means that zero-rating practices that apply to specific applications are more likely to *"undermine the essence of end-users' rights"* and thus be incompatible with the net neutrality rules than practices that apply to classes of applications and that in assessing the materiality of the impact on end user's choices the *"respective market positions of those providers of internet access services, and of the providers of content, applications and services, that are involved"* will need to be assessed.

In this section, we briefly discuss the key questions that would need to be addressed in a competition assessment of zero-rating¹⁵⁵, noting that competition concerns may arise with regard to competition between both ISPs and CAPs.

6.1 Competition assessment must reflect the internet ecosystem

Assessing the competition effects of zero-rating needs to take into account a number of salient points about the internet ecosystem.¹⁵⁶

ISPs provide a platform that enables users and CAPs to interact, which means that zero-rating practices will need to be assessed in the context of two-sided markets. Specifically, one has to recognise that demand for internet access is derived from demand for applications, and that customer demand for applications is potentially very heterogeneous. This has a number of implications:

- Decisions to zero-rate particular types of content are made in light of the users' preference for this content (which ISPs in competitive markets should ignore at their peril). This is evident from the many instances where ISPs decide to zero-rate attractive applications such as Facebook or Twitter (even in cases where the data-related cost of using these applications would perhaps not be overly large).
- Demand for internet access reflects differences in application preferences and given the heterogeneity of these preferences, multi-part tariffs for internet access may be an important tool for the efficient recovery of the costs incurred in network investment.
- In the first instance, ISPs should have incentives not to limit the range of applications and content available, as any reduction in the range of content that their subscribers can access will have a negative impact on demand for internet access. This general statement does not hold where ISPs are

¹⁵⁵ Howell and Layton (2016) set out a set of five questions that should help regulators (and adjudicators) to identify zero-rating practices that are beneficial and where a ban would have a detrimental impact on welfare. Their guidance is based primarily on an assessment of the impact that the practice (or banning it) has on competition, and therefore links the application of the net neutrality guidelines to the competition impact of zero-rating.

¹⁵⁶ Greenstein et al. (2016) provide a simple model of the internet ecosystem within which the effects of various net neutrality requirements can be analysed. They highlight the role of the ISP as a platform, allowing users to access content and content providers to reach users, which is the basis for their ability to earn money from direct user charges or from providing an audience to advertisers.

also content providers, as there is then a potential conflict between offering access to the widest possible range of applications and attracting customers to the ISP's own applications. Similar incentives also exist where ISPs are incentivised to drive traffic to particular applications by the CAP.

The interaction between users and CAPs may, but need not, involve direct contact between the CAP and the user, which will generally involve the exchange of information (e.g. in the case of users having to register for getting access to Spotify's free tier¹⁵⁷) and may involve payment (e.g. in the case of access to Spotify's premium tier or services such as Netflix). Such payments may be structured as general subscriptions or payments for individual content (e.g. rental or download of movie on iTunes).

The effective cost of accessing content for the user is the sum of any direct costs charged by the CAP (and/or by the ISPs on the CAP's behalf, as in the case of subscriptions to music streaming services bundled with internet access), and the data-related cost (which may be the opportunity cost of displaced content at the point the data cap is reached).

The impact of zero-rating has to be assessed in terms of the inter-related decisions about take-up (whether to subscribe to a data package at all), ISP choice and content consumption. What matters in this choice is relative weight of potential savings on data-related costs compared with direct costs and differences in the value of zero-rated and non-zero-rated content. As the findings from Nevo et al. (2015) suggest, users generally optimise their data consumption in response to data caps, and such optimising behaviour would need to be taken into account when looking at the impact of zero-rating and the choices made by data users and the impact this has on their welfare. Understanding the impact of zero-rating on overall data usage and on choice of content is further complicated by the fact that usage patterns may be very different and reflect the heterogeneity of customers (e.g. with some customers relying to a large extent on WiFi offload).¹⁵⁸

¹⁵⁷ Foditsch (2016) specifically looks at the privacy aspects of data provided in exchange for zero-rating.

¹⁵⁸ For example, Gzrybowski and Liang (2015) find that *"for quadruple play subscribers mobile data is complementary to fixed broadband access, which suggests that these consumers use Internet access via mobile data to sample online content but complete their online activity using fixed Internet access at home."* According to Lee et al. (2010), who collected statistics on the WiFi connectivity of 100 iPhone users over two and a half weeks in February 2010, *"WiFi carried "about 65% of the total mobile data traffic."*

Overall, this means that zero-rating in itself is likely to have a material impact on user choices where data costs are large relative to the difference in value (net of any direct cost) of different applications, but not otherwise.¹⁵⁹

Video streaming is a good example of a service where data-related costs are potentially large. Even in this case, however, the zero-rated content will be chosen over non-zero-rated variants only if the video content is of comparable quality. While zero-rating may affect the choice between YouTube and DailyMotion, a user interested in watching Hollywood blockbusters streamed to her phone is unlikely to watch foreign language art house films if the latter were zero-rated and the former were not. Rather, such a user might be expected to pick the ISP that enables access to the content she wants at the lowest cost. The popularity of Pokémon Go in Portugal is not the result of some operators zero-rating the associated traffic – rather, the decision to do so would in all likelihood have been driven by the fact that the game had attracted a large base of followers.¹⁶⁰

On the basis of these general insights, we can look at potential competition concerns, in particular in relation to the risk of foreclosure of competing ISPs and CAPs (as a result of ISPs allegedly picking winners).

We first consider the impact of zero-rating on competition between ISPs. This depends on how the practice affects the users' choice of ISP (and the decision to subscribe to a data plan in the first instance). We then look at competition between CAPs, which depends on the effect of zero-rating on the user's application choice and the potential for CAPs to influence the zero-rating practices of ISPs.

¹⁵⁹ As Cho et al. (2016) show, these factors determine the decision of the ISP to offer content providers the option to pay for zero-rating traffic to their sites. The model looks specifically at sponsored data, which our research has not identified to be used widely in Europe, but the general insight that the match between a customer's most preferred content and what the customer might end up consuming is an important factor.

¹⁶⁰ Moreover, as an hour of gameplay only uses around 10MB of data, the impact on the choice of ISP and on access to other content would seem to be limited (see Arstechnica, 'T-Mobile's Pokemon Go freebie data bad for net neutrality, cry activists', 15 July 2016, <http://arstechnica.co.uk/gaming/2016/07/pokemon-go-t-mobile-free-data-net-neutrality/>)

6.2 Elements to be considered when assessing the potential impact on competition between ISPs

Zero-rating allows ISPs to offer selective price reductions to their subscribers and engage in price discrimination, implicitly bundling certain applications with their broadband access service.

Depending on their preferences for using particular applications, different customer types receive different effective discounts relative to various alternative capped plans. A user who is very interested in consuming video content will be more attracted by plans that offer zero-rated video streaming, and may well prefer a tightly-capped zero-rated plan to an unlimited one at a small discount.

In general terms, such strategies can have both efficiency-enhancing and anti-competitive effects. They are seen to be beneficial where they expand output, but can raise antitrust concerns where they are used to extract consumer surplus or foreclose competitors who are not able to replicate the offers.

These concerns typically arise where the firm engaging in such practices enjoys market power in at least one of the bundling markets.¹⁶¹

In relation to the zero-rating of third-party content – which is by far the most prevalent form of zero-rating, as shown by our research – concerns might arise if the ISP engaging in zero-rating is not effectively constrained by competition from other ISPs (i.e. there must be barriers to expansion) or potential entrants (i.e. there must be barriers to entry).

Looking specifically at the case of mobile broadband access, limited access to spectrum, refusal to provide MNVO access, or capacity constraints under existing MVNO arrangements may all contribute to market power in the supply of mobile broadband services. In this case, the MNO might use zero-rating to extract consumer surplus or in order to foreclose competitors.

Using zero-rating to extract consumer surplus would involve charging more to customers who are interested in larger data caps or unlimited plans whilst retaining those who are primarily interested in access to particular types of content through offers

Concerns about bundling/price discrimination are linked to market power

Extracting consumer surplus

¹⁶¹ As is also consistent with the Commission's 2009 Guidance on "enforcement priorities in applying Article 82 of the EC Treaty to abusive exclusionary conduct by dominant undertaking", para. 50, fn. 3.

with tight caps but with those applications zero-rated. This would involve offering customers a menu of tariffs where zero-rating is more extensive or more common on packages with smaller caps.

It would in general be difficult to establish whether such a strategy is aimed primarily at extracting consumer surplus, or whether it also has an output-enhancing effect. However, at least at present we observe that operators tend to zero-rate particular applications across a range of data plans (and in the case of O2 in the UK offer zero-rating on plans with higher rather than lower caps). This is not indicative of attempts to segment customers in order to extract consumer surplus.¹⁶²

Foreclosure concerns may arise where ISPs have an exclusive ability to zero-rate access to content that is highly valuable

Foreclosure concerns arise where other ISPs could in principle compete for the customers, but are unable to replicate the bundling/discounting strategy. Such concerns would typically arise where the ISP has some form of exclusivity in terms of being able to zero-rate access to the application in question.

From our interview with a CAP whose content is zero-rated in many countries, we understand that the CAP does not have to consent to an ISP zero-rating access to its content, and that in fact the CAP is often not even informed about an ISP's decision to zero-rate access to its content. Normal IP law would apply to MNOs using the CAP's trademarks or brands for marketing purposes. However, even though the CAP's agreement would be required before its brand can be used prominently in marketing materials, this is hard to monitor and is not widely enforced. There are generally no formal agreements in place between CAPs and ISPs, and where agreements are in place, e.g. in relation to service specifications or technical conditions, they are generally non-exclusive.

There is at present also little, if any, evidence of ISPs having potentially exclusive arrangements with CAPs under which they receive compensation for zero-rating access to the latter's content (i.e. where the CAP rather than the ISP's subscriber bears the data-related cost).

Overall, this means that replicability of zero-rated offers should generally not be a concern in relation to content that is generally available over the internet, and certainly not for content that is free at the point of use.

Zero-rated access to content that normally attracts a charge might be an issue where the ISP has an agreement under which it can offer its subscribers access to the application on preferential terms.

¹⁶² It may of course be the case that operators consider that the impact of including zero-rating also on plans with higher caps is negligible and that therefore there would be no good reason to exclude zero-rated access to the same applications in plans with higher data caps.

However, where the ISP has been able to agree an exclusive discount arrangement with the provider of an application for which a user charge is levied, and which is sufficiently attractive to foreclose competing ISPs who are not able to offer the same terms, zero-rating would appear to be very much ancillary, and concerns about potential distortions of competition could also arise in the absence of zero-rating. Whilst zero-rating of access may be easily replicable, only an ISP who has come to an exclusive agreement with the content owner would be able to offer the service at a discounted subscription fee without eating into its own margins.¹⁶³

Matters look different in the case of operator-owned content that is sufficiently attractive potentially to drive the choice of ISP. Where the content is not available to customers of other ISPs, or is available on significantly worse terms, concerns about exploiting the control of content to distort competition between ISPs may arise.

Where the content is also available to subscribers of other ISPs, they could in theory zero-rate access. This would seem to be the case in Portugal, for example, where TV services operated by one MNO are also available to the customers of another MNO at the same subscription fee. Other MNOs could in principle decide to zero-rate access to their competitor's content, but would be at a significant disadvantage because they would not gain any benefit from promoting access to the content. Even in the simplest case where the content in question is free to the user (and provision is funded by advertising, for example), the ISP who owns the content and decides to zero-rate traffic benefits both from attracting more subscribers and from increased advertising revenues. Other ISPs would only enjoy the benefit from attracting customers (or not losing customers to their competitor), but would create a benefit for their competitors rather than themselves.

Note that for there to be a foreclosure concern, in all instances the content in question needs to be sufficiently attractive to a sufficiently large number of customers to affect their choice of ISP. This would imply that the CAP enjoys some market power, or that the ISP has managed to sign up, on an exclusive basis, a sufficiently large proportion of the CAPs covering a particular market through a network of contracts.

¹⁶³ For the avoidance of doubt, please note that the lower subscription fee would have to be the result of a discount agreed with the CAP rather than a decision by the ISP to subsidise subscriptions for its customers. Competing ISPs could of course decide to offer such a subsidy to match the reduced subscription, but would have to bear a higher cost.

Evidence of exclusivity

Although our research identified a small number of arrangements that were reported to be exclusive, it was difficult to establish the precise nature of this exclusivity. For example both the deal between Mtel and Viber In Bulgaria¹⁶⁴ and between Deutsche Telekom and Spotify in Germany¹⁶⁵ were described as 'exclusive' in the press, but with no information about the details of this exclusivity in terms of what undertakings were given by the CAP or the ISP.

What we observe in some isolated cases is that different ISPs chose to zero-rate different applications in the same class (e.g. in Bulgaria Mtel zero-rates Viber in a reportedly exclusive arrangement, whilst Telenor zero-rates WhatsApp), or that only one ISP zero-rates an application in a particular class. This may be consistent with exclusivity agreements being in place, but falls far short of providing proof of such agreements.

Zero-rating of operator-owned content, on the other hand, is relatively common in relation to data-intensive services such as video streaming or cloud storage, where in particular the former may have the capability of affecting the choice of ISP. For example, all Portuguese MNOs zero-rate their own TV streaming applications.

Exclusivity – whether it is through agreements between ISPs and CAPs, or by virtue of the fact that the content is operator-owned – is critical for the assessment of any potential foreclosure effects.

In summary, the main considerations when checking for abusive pricing or foreclosure (either as the result of a vertical agreement, or as abuse of a dominant position), always subject to further case-specific factors that will need to be taken into account in any individual assessment, are:

- whether the ISP is likely to enjoy some market power – if this is not the case, there should be less of a concern;
- whether zero-rating is linked to plans with tight data caps – if this is the case, the question whether there is likely to be an output-expanding effect is crucial for determining whether the practice is beneficial or potentially anti-competitive;
- whether the zero-rated content is sufficiently attractive to drive the choice of ISP, and if this is the case, whether there

¹⁶⁴ "Мобилтел" и Viber разширяват сътрудничеството си, Капитал, 27 October 2015, Available at: http://www.capital.bg/biznes/kompanii/2015/10/27/2637761_mobiltel_i_viber_ra_zshiriatvat_sutrudnichestvoto_si/ [Accessed 21 October 2016].

¹⁶⁵ Deutsche Telekom bringt Spotify exklusiv auf das Smartphone, 30 August 2012, Available at: <https://www.teltarif.de/telekom-spotify-musik-streaming-flatrate/news/47994.html> [Accessed 15 December 2016]

is some degree of exclusivity (either because the zero-rated content is operator-owned, or because there is an agreement between the CAP and the ISP that affords the ISP exclusive rights) – if this is the case, there could be concerns about foreclosure because of the lack of replicability of the zero-rating arrangement.

6.3 Elements to be considered when assessing the potential impact on competition between CAPs

Zero-rating gives an advantage to the CAP

Looking at competition between CAPs, it is obvious that – all other things being equal – a CAP whose service is zero-rated gains an advantage over competitors (though this advantage is not necessarily material). At first blush, the associated cost is borne by the ISP who gives up data revenues it might otherwise have earned.

In the absence of an agreement for the zero-rated CAP(s) providing some compensation to the ISP (as in the case of AT&T's sponsored data programme or Verizon's FreeBee), the decision to offer zero-rated access to some content would therefore seem to reflect that doing so allows the ISP to attract customers (and potentially engage in price differentiation). As noted above, this should not raise any competition concerns unless there competition amongst ISPs is potentially ineffective.

Where ISPs decide to zero-rate third-party content, we would expect this to involve the most attractive CAPs, and this is what we by and large observe in our research. Such behaviour does not appear to distort competition between CAPs, but rather adds another dimension: the ISPs choice of which content to zero-rate reflects user preferences, and competing to be zero-rated by an ISP is simply another way of trying to attract more users to a particular application.¹⁶⁶

Zero-rating of incumbents may make entry more difficult

One might argue that the effect of (though not the intention behind) such zero-rating practices is to make market entry more difficult for new CAPs, as they would not only have to win users from their established rivals, but would have to do so in the face of higher effective prices as traffic to their applications would bear data cost whilst traffic to their competitors would be free. Zero-

¹⁶⁶ That ISPs make commercial decisions to zero-rate applications in which their users are interested does of course not guarantee that all possible preferences are catered for, but this is not generally considered to be a competition issue, and would not be addressed by preventing zero-rating.

rating in this case complements and potentially reinforces the reputation and brand recognition enjoyed by incumbent CAPs, which, though not an issue in general, may be a concern in specific instances.

As a corollary, disallowing paid-for zero-rating could be counter-productive, as new entrants whose content is not sufficiently attractive to be zero-rated by an ISP might be able to convince the broadband provider to zero-rate their services in exchange for payment (incurring a cost not dissimilar to the investment they would need to make in order to catch up on the incumbent's brand recognition, for example).

Even agreements where CAPs pay for zero-rating may not give rise to concerns, in particular where the applications are otherwise free. In these cases, CAPs cannot compete for customers by lowering their prices, and offering to pay for the users' data cost through zero-rating may be the most natural way of trying to attract customers. ISPs should generally be happy to exempt traffic from data charges to their users if they can recover associated costs from the CAP.

Concerns would arise if there were agreements for exclusive zero-rating

Agreements between CAPs and ISPs would give rise to concerns where they impose restrictions on the ISP preventing the zero-rating of competing applications, i.e. where the CAP obtains a guarantee of exclusivity from the ISP. Note that such agreements would not necessarily need to be accompanied by any zero-rating of traffic to the CAP, but could simply stipulate that the ISP undertakes not to zero-rate traffic to competing applications.

Such agreements would need to involve some compensation of the ISP above and beyond simply covering the traffic-related costs as the ISP would otherwise have no incentive to help CAPs to restrict or limit competition, which would only reduce the derived demand for internet access. Therefore, ISPs receiving compensation for zero-rating a particular application that is substantially above the level that could reasonably be considered to reflect the traffic-related cost from the application could be an indicator suggesting some anti-competitive motivation.

In order to have the desired exclusionary effect, such agreements would also have to cover a sufficiently large proportion of all internet users who might conceivably be interested in the competitor's applications. This would involve an agreement with a large ISP (who might be expected to have potentially little interest in limiting its options in terms of being able to offer its customers the most attractive range of applications), or a series of agreements with smaller ISPs which in total cover a sufficiently large share of the potential target audience.

Indications of exclusivity

As noted above, our research has identified a number of zero-rating arrangements that were reported to be exclusive, but the precise nature of this exclusivity remained unclear, and it has not been

possible to identify any evidence of ISPs agreeing to zero-rate only one particular application, or of any commercial agreements. For example, although Mtel's deal with Viber in Bulgaria was reported to be 'exclusive', we have not been able to confirm that this actually would have prevented Mtel from zero-rating other messaging applications.

Generally, we have not found any example of agreements in Europe where ISPs would receive payment. Our interviews suggest that ISPs normally do not get paid for zero-rating particular content, and that formal agreements between ISPs and CAPs do not normally exist. On this basis, there would seem to be little scope for imposing any exclusivity requirement on the ISP.

As noted above, zero-rating practices are evolving, and it is quite possible that paid-for zero-rating arrangements emerge in the future. However, even in this case, such agreements are not necessarily exclusive.

Operator-owned content

Concerns about the use of zero-rating to distort competition between CAPs might also arise where the application is operator-owned, highly attractive and where the ISP has market power. In this case, the vertically integrated ISP/CAP may have both the ability and the incentive to foreclose competition in the content market by discriminating between its own application and those offered by potential competitors. For example, this could be achieved through zero-rating access to the operator-owned content and denying others the opportunity to obtain similar benefits. The concerns raised by the FCC in relation to AT&T's and Verizon's practice of zero-rating their own video streaming applications (see Section 3.6.4) are an example of this – even though competitors have access to sponsored data programmes that would allow them to pay for having their applications zero-rated alongside the operator-owned content, the cost of doing so is substantially higher.¹⁶⁷

In this case, zero-rating is of course only one of a number of potential foreclosure strategies revolving around discounting, and is likely to be effective only where data-related costs of accessing the application are substantial. This would be the case where the content is provided free at the point of use. With paid-for applications, competitors could try to match the effective discount from zero-rating by offering a reduced price to customers, though this might involve discounting across all ISPs and thus put such competitors at a disadvantage.

¹⁶⁷ This is however not because the cost is a direct cash cost for competitors, but only a transfer charge for the operator-owned content, as the FCC seems to suggest, but rather because the charges for participation in the sponsored data programme give rise to a margin squeeze.

In summary, the key consideration in assessing foreclosure risks at the CAP level, always subject to further case-specific factors that will need to be taken into account in any individual assessment, are:

- whether the zero-rated content is operator-owned – if this were the case, and the ISP has some degree of market power, zero-rating might foreclose competing CAPs unless the ISP offers them the option to have their content zero-rated as well on terms that do not discriminate in favour of its own applications;¹⁶⁸
- where the zero-rated content is not operator owned, whether the ISPs undertake not to zero-rate any other similar application, and whether the arrangement covers a large share of the target audience, either because the zero-rating ISP has market power, or because the CAP has exclusivity agreements with multiple ISPs – if this were the case, similar foreclosure concerns would arise.

Zero-rating of groups of applications could give rise to horizontal concerns

The BEREC guidelines suggest that zero-rating groups of applications rather than individual applications is potentially a lesser restriction of end user choice and might therefore be preferable on net neutrality grounds. Whilst such zero-rating strategies would indeed leave competition amongst the applications included in the zero-rated offer unaffected, they might make it more difficult for new entrants to come in the market because they would compete against a larger portfolio of applications that enjoy the benefit of being zero-rated.

So far, evidence on the relative importance of zero-rating single applications and groups of applications respectively is mixed.

- Of the 44 zero-rated offers including an audio streaming service that we identified in Europe 37, 34 only included a single application in this category, and 10 offers included two or more audio streaming services.
- In the social media category, the split is more even with 28 offers including only one application, and 29 covering two or more.
- In some of the case study countries, it is common to see only one or two applications from the same category being zero-rated. In Germany and Bulgaria, for example, all of the zero-rated offers are for a single application. However, in the other case study countries, zero-rating of entire groups of applications is more common. In Portugal the MNOs' youth brands zero-rate a large number of different

¹⁶⁸ These are the considerations that have led the FCC to raise concerns about AT&T's and Verizon's sponsored data programmes in combination with zero-rating their own applications (see FCC, 2017).

applications across various categories, and O2 in the UK zero-rates five different music streaming services.

- In our interviews with the operators, some indicated that they were open to extending their zero-rated offers to include more applications within the same category.

Zero-rating of a range of similar applications (such as zero-rating a group of audio streaming applications) could also give rise to horizontal effects. Specifically, where the applications eligible for inclusion in the zero-rated offer need to comply with certain technical restrictions or meet other requirements; and where these requirements are agreed between the ISP and the CAPs, there is scope for setting access conditions that make it more difficult for new entrants to come into the market.

However, in this case it would not be the zero-rating practice as such, but rather the collective agreement on requirements that CAPs have to meet in order to be eligible for a zero-rating plan that is the root cause of any competition concern. Nevertheless, where such requirements arise from any proclivity of ISPs to zero-rate classes of applications rather than single applications in order to minimise the impact on end user choice – as required by net neutrality requirements – this would be the vehicle for co-ordination.

6.4 Materiality of effects

It seems to be relatively easy to identify the potential effects that zero-rating may have on choice of ISP and choice of content and thus on competition amongst ISPs and CAPs. It is much more difficult to show that, on balance, the effects of zero-rating are material and, in particular, of such a magnitude that competition concerns would be justified.

In all cases where competition concerns might reasonably be suspected, it is therefore important to assess the materiality of the specific effects (and any countervailing benefits that might be relevant under Article 101(3) TFEU).

Unfortunately, there is little in terms of evidence currently available that would allow one to unpick the factors that are relevant for the inter-related decisions

- whether to subscribe to a data package,
- which ISP to choose and
- what content to access.

Our research has not identified any assessment of the impact of zero-rating on customer behaviour that would have been undertaken by CAPs, ISPs or third parties, and given that the practice has not been widely adopted there is insufficient market data to undertake any substantive analysis.

There are, however, some plausibility considerations that might be used to gauge the impact of zero-rating in the market place:

First, zero-rating often applies to content that is very attractive – presumably because is zero-rating of such content that is likely to attract more customers to a particular ISP. However, such content would in all likelihood be used widely even in the absence of zero-rating, so that the incremental effect of zero-rating on the level of use may be small. In this case, zero-rating may have a rather limited material impact on competition between CAPs. There is little reason to believe that Facebook’s position as the leading social network would come under more pressure, for example, if ISPs could not zero-rate Facebook access in their tariff plans. However, zero-rating may also strengthen the market power that a CAP might already enjoy. Zero-rating could of course affect competition between ISPs, but given that zero-rating traffic for particular applications is easily replicable, any such effect would be limited.

Second, zero-rating may have more impact on the choice of content where data-related costs account for a substantial proportion of the total cost to the user. This is more likely to the case where the content is otherwise available for free. In this case, zero-rating is easily replicable for applications available on the open internet, and should therefore be unlikely to have a material impact on the choice of ISP. It may, however, affect the choice of applications that are otherwise very similar. If there are economies of scale in the provision of content, this could lead to reduced variety and potentially the emergence of a few or perhaps a single application of a particular type, though this should largely reflect user preferences.

Third, zero-rating may have a potentially greater distortive effect on the choice between zero-rated and non zero-rated content where customers upon reaching their data cap not only lose access to the latter, but also to the former. This is because, as noted above, the shadow price of non-zero-rated content is determined by the value of displaced traffic. If customers pick plans in a manner that implies a fairly low value of marginal traffic, as the work by Nevo et al. (2015) suggests, the shadow price of non zero-rated content should be low. Thus, if the only effect of exhausting the data cap were that, for example, all further browsing activity were to be curtailed, users would not be discouraged from using up their data allowance by accessing non zero-rated content. However, if at this point customers also lose access to the content that had been zero-rated, and which they might value very highly, then the shadow price of using non zero-rated content can increase substantially. A customer might be very concerned about reaching its data cap through general browsing if this not only leads to further browsing activity being curtailed, but also to losing access to zero-rated audio streaming. This might actually increase the impact of zero-rating on the use of non-zero-rated content as customers may be more concerned about reaching the cap.

6.5 Summary

Competition concerns linked to zero-rating would arise if competition at the ISP level or amongst CAPs were ineffective. In this case zero-rating might be considered to have potential exploitative or foreclosure effects.

In the case of zero-rating of third-party content, potential anti-competitive effects may result from agreements between ISPs and CAPs that give rise to exclusivity.

- Exclusive rights of ISPs to zero-rate particular types of content are difficult to establish, given that competitors would be able to replicate such zero-rating without great difficulty for all content that is available on the open internet. Exclusivity for the ISPs therefore would seem to be limited to co-marketing agreements or exclusive discounts for paid-for content.
- Exclusive rights of CAPs to be zero-rated would require that ISPs agree not to include competing applications in any zero-rated offer. In order to be effective, such arrangements would further have to cover a substantive portion of the potential target audience a new entrant would need to succeed.

We have not found any evidence of such arrangements, and have been told that they do not exist in Europe – at least at present.

Moreover, competition concerns may exist where ISPs zero-rate access to their own content. However, in this case the content in question should be sufficiently attractive compared with potential alternatives for zero-rating to have a material impact on choice of content (and not to discourage customers from choosing the ISPs in question). Such concerns may become more prevalent as a result of mergers between ISPs and CAPs.

Annex A Brief summaries of the reviewed literature

In this annex, we provide brief summaries of some of the key contributions we have reviewed in the course of preparing this draft.

We have grouped papers according to whether they are predominantly supportive or critical of zero-rating, or whether they provide a more balanced assessment.

We also provide a brief summary of the papers dealing with customer responses to usage-based pricing and data caps.

A.1 Predominantly supportive

Eisenach, (2015), The Economics of Zero Rating

Eisenach argues that zero-rating programs *"in general represent an economically efficient mechanism for increasing consumer welfare given the unique characteristics of information technology markets, which make it beneficial to offer lower prices and other incentives to expand the size of the market, especially in developing countries where incomes, and market penetration, are low."*

He provides a broad overview of zero-rating content, which varies widely and includes access to popular services (Facebook, Google, Twitter, Wikipedia or online music services) as well as government and community service sites, and may be customised for zero-rated plans. Arrangements may be characterised according to the relationship between content provider and carrier. Most programmes are carrier-initiated, aimed at attracting customers. Sponsored content involves payments from the CAP to the carrier, but many initiatives (such as Facebook Zero) involve co-operation between content providers and carriers without there necessarily being any payment from the CAP to the network operator.

Eisenach argues that the effects of zero-rating have to be considered in the context of the competitive dynamics of information technology markets, as the welfare effects of pricing arrangements (and other business practices more generally) depend on the market context. These markets are characterised by:

- dynamism, reflecting the role played by innovation (which typically involves making large upfront sunk investments) in terms of attracting customers;
- modularity, which captures the notion of platform competition and strong complementarities in production and consumption; and

- demand side effects, in particular network effects (demand-side scale economies) and multi-sided markets (demand-side economies of scope).

In such markets, zero-rating has benefits in terms of:

- capturing demand side scale economies by attracting more customers to the network;
- exploiting demand side scope economies by supporting efficient pricing in the two-sided market for mobile services;
- being a way of implementing differential pricing (through essentially bundling different services); and
- providing price differentiation amongst mobile services that promotes competition.

Eisenach sees little reason to consider that zero-rating poses a threat to competition or freedom of expression, as is often asserted by net neutrality advocates.

The reason why zero-rating practices are unlikely to harm competition is that they are mostly carrier-initiated and cannot therefore be classified as attempts to foreclose content markets. Even where there are sponsored data programmes, there appears to be no indication that these involve exclusivity, which could conceivably give rise to foreclosure concerns, but would in any case be unlikely to do so in any case. Carriers have an incentive to maintain a competitive content supply and would therefore be unwilling to take part in strategies that would limit competition in the supply of services that are complementary to their offering, and there is evidence to suggest that many smaller content providers take part in zero-rating programmes.

With regard to concerns about freedom of expression, Eisenach notes that *"it is difficult to construct a scenario under which increasing access to online information and adoption of digital communications services would be harmful to online speech."*

Therefore, *"while regulatory authorities should remain vigilant in monitoring business practices, broad-based bans or restrictions on Zero Rating plans are far more likely to harm consumer welfare than improve it."*

Layton and Calderwood (2015), Zero rating: do hard rules protect or harm consumers and competition? Evidence from Chile, Netherlands and Slovenia

Layton and Calderwood present the issue as one of deciding whether mobile operators and their customers *"should have the freedom to create contracts for mobile broadband service based on their preferences and constraints or whether mobile Internet service must be sold in a so-called "neutral" fashion where the only differentiating parameters are speed and megabytes."* According to net neutrality advocates, the only acceptable form of internet access is affordable full access, rejecting the combination of data

caps and zero-rating of some traffic as a “backslide into a the world of scarcity.” This implicitly assumes that “users value all data equally” and ignores that “many would gladly substitute ‘low cost limited access’ without feeling any twinge of discrimination.”¹⁶⁹

Zero-rating can be “a driver of competition in the marketplace and is a model most frequently used by entrant operators”. It is “[d]eployed by mobile virtual network operators (MVNOs) and resellers. As they cannot differentiate on network quality or price, they only have marketing and customer service. Zero rating becomes increasingly important for them both to establish themselves against incumbents, and perhaps to offer zero rated forms of customer service applications, similar to an 800 toll free number for support.” It is a form of price differentiation that is helpful for recovering large upfront costs of network deployment in an efficient manner. Where there are competitive markets, “[i]n a transparent environment, consumers, if unhappy with traffic management practices, can switch providers.” Therefore, in the views of the authors, “[i]t is counterintuitive that [Dutch] net neutrality laws should be so strict, for if ever a market existed where consumers could switch if they didn’t like their provider, it is the Netherlands.”

The authors are aiming to address the claims that zero-rating is harmful in the form of five assertions and try to assess their validity empirically. These assertions are:

1. *The operator that offers zero-rating will win market share.*
2. *The zero-rated service will win market share.*
3. *The presence of zero-rating will preclude the emergence of new applications and services.*
4. *Users do not go to non- zero-rated content. If Facebook is free, they don’t venture beyond it.*
5. *Operators that zero-rate their own content foreclose other content.*

Layton and Calderwood use information on mobile operators’ financial performance and market data from a number of Latin American and African countries, discussing growth of subscribers, service revenues, ARPU and broadband penetration. They suggest that zero-rating is a means of meeting challenges of deploying broadband infrastructure in developing economies where broadband demand and revenues are low.

¹⁶⁹ Layton and Calderwood note that “[a]n important issue that is overlooked in the discussion of zero rating is an economic analysis of the disproportionately high level of traffic generated by the top 10 mobile applications and the aggregation of traffic at exchanges and backbones. Net neutrality wants to ensure equal access to sites and services for end users, but such performance can only be achieved by keeping good provision, upgrade, and maintenance of the telecom network, which implies costs and relationships between the pricing of services and expenditure.”

Given that the country level information “offers limited opportunity to address the five assertions” the authors present more detailed case studies of three countries with hard net neutrality rules, namely Chile, the Netherlands and Slovenia. They note that the ban of zero-rating usually was decided on the basis of theoretical findings of harm that did not include an investigation in traffic management practices and despite regulators having noted benefits of zero-rating at some point.

On the basis of their case study analysis, Layton and Calderwood find that there is no evidence to suggest that operators offering zero-rating or the zero-rated services will win market share, nor that the presence of zero-rating will preclude the emergence of new applications. Equally, there is no evidence to suggest that users will limit themselves to zero-rated content and not explore other types of content. In relation to limits placed on innovation, the authors note that the ban has also affected customer service applications such as those introduced by Vodafone in the Netherlands or Tasmobil in Slovenia that allowed users, for example, to manage their accounts and top up subscriptions without having to use data and thus have hurt users.

In summary, Layton and Calderwood find that “[o]n balance for the three countries, it appears that the impact of zero rating is negligible but not negative.” They also find that comparable discounting practices are widespread across different types of internet applications and services (e.g. advertising supported games, search, social networks, music streaming etc.) and that there are no justifiable reasons for an arbitrary prohibition of such practices for mobile broadband services.

Brake (2016), *Mobile Zero Rating: The Economics and Innovation Behind Free Data*

Brake argues that, even though zero-rating violates “the spirit of network neutrality principles” in that “[s]trictly speaking, zero-rated data is treated differently ... in a way that influences consumer behaviour”, such a narrow interpretation is misguided: zero-rating is unlikely to harm the open internet and is a sign of healthy product differentiation that supports the efficient allocation of a scarce resource in a competitive market.

Again, the focus is on mobile tariff plans as mobile operators tend to impose data caps and rely on usage-based pricing owing to the fact that spectrum is constrained and “providing wireless coverage is expensive.”¹⁷⁰ The use of tiered data plans has been aimed at allocating the costs of providing services more efficiently. Brake

¹⁷⁰ Strictly speaking, it is not the cost of providing wireless coverage that should justify usage-based pricing, but rather the cost of providing capacity. Where provision of a coverage layer is accompanied by sufficient capacity to accommodate all the traffic that users might generate, there are no concerns about congestion and no opportunity costs to carrying more data on the network.

notes that prior to the introduction of usage based pricing, more than 50% of all data traffic was generated by the top 1% of heaviest data users. Towards the end of 2015 – five years after the introduction of usage based pricing, this had shrunk to 7% of traffic (with the top 20% of users generating 60% of the traffic). Whilst motivations for offering zero-rating differ across markets, at least in the US it is seen as a strategy aimed at differentiating services *“in a competitive fight over who can best meet consumers’ ever increasing demand for streaming video.”*

Against this background, zero-rating arrangements are not only advantageous in an environment where penetration is low and the practice helps to bring more people online, but also in advanced economies because they allow the exploitation of complementary efficiencies. Even though it may be construed as discriminatory treatment, discrimination is not necessarily bad but could be evidence of healthy competition. The author notes that there is little difference between zero-rating and commonplace discounts, using the example of a CAP offering customers to cover the data cost (e.g. through vouchers) – a scheme that would seem to be *“silly to outlaw ... From an economics perspective, sponsored data is not much different from companies establishing toll-free 800 numbers or sender-pays shipping, where the provider of the service pays, not the consumer.”*

Zero-rating allows for service differentiation (potentially supporting the strategies of disruptive ‘mavericks’ trying to experiment with freemium models), gives customers more of what they want, and can potentially support the development of new services as a way of differentiation in an increasingly crowded market place. Brake also points out that enjoying zero-rating on data-intensive applications or services provides customers with more opportunities to explore other services and facilitates more efficient advertising. Unlike other forms of paid prioritisation, zero-rating does *“not diminish quality of availability of other services.”*

Evidence from zero-rating programmes such as Bing On show that concerns are overblown, and that technical restrictions with which CAPs need to comply in order to be eligible for joining the programme are less onerous than often claimed.

Brake acknowledges that some zero-rating practices may have detrimental effects, e.g. exclusive arrangements that hinder new application discovery or a lack of transparency that undermines consumers’ ability to express their preferences. Therefore, whilst there is an *“outside potential for ill-designed zero-rating programs to unfairly restrict competition in vertical markets, unduly magnify application lock-in, or otherwise unintentionally diminish the openness of the Internet”* in general there are substantial benefits from zero-rating both in developing and developed markets. Opponents of zero-rating, are choosing ideology over economics, favouring *“the precautionary principle over experimentation and innovation.”*

Ard (2016), *Beyond Neutrality: How Zero Rating Can (Sometimes) Advance User Choice, Innovation and Democratic Participation*

Ard argues that rather having to be seen as either an inexcusable violation of net neutrality or a practice whose connectivity benefits justify the apparent departure from net neutrality, zero-rating “*is defensible even by net neutrality’s own normative lights*” as “[n]etwork neutrality is not about neutrality for its own sake, but about advancing consumer choice and welfare participation in the public sphere. Scholars may disagree about which of these factors to prioritize, but these goals share a common thread: each seeks to facilitate diverse contributions from the Internet’s global audience in order to maximize the network’s benefits for all its participants”, which Ard refers to as ‘generativity’.

After discussing various zero-rating models (single website plans such as Facebook Zero or Wikipedia Zero, website bundles such as Internet.org – now Facebook Basics, or Binge On, and sponsored data, such as mCent), Ard develops a framework for comparing the various zero-rating strategies, looking at:

- the sponsorship model (from self-sponsorship, where the edge provider pays for the data generated by users visiting the edge provider’s site over hybrid models such as mCent where edge providers may subsidise user data to other sites to – conceivably - full sponsorship that exists for example in relation to phone services for low-income households subsidised by the government such as the US Lifeline program);
- the site selection model, where the zero-rated content may be selected exclusively by the platform, where the user may choose from a selection of services that comply with certain standards to complete user choice (as in the case of data credits earned under mCent); and
- the communications modality supported (one-to-many such as music or video streaming, one-to-one such as with zero-rated WhatsApp, or many-to-many, such as Facebook)

According to Ard, the framework based on these three criteria “*offers two analytic strengths. First, it provides a metric for assessing a program’s relative generativity, as well as the relative weight of the net neutrality objection, as applied to that program. On each axis, the objection should diminish as the program moves down the spectrum: the risks are fewest when a site cannot pay for special privileges; when the platform does not play a major gatekeeping role; and when users are free to develop and share their own content. Second, considering these features in concert allows us to predict the overall impact of a zero-rating plan. A system that combined self-sponsorship with the carrier’s discretion to charge different rates to different edge providers is one that could devolve into a payola scheme. Or, consider a program where the government subsidized several one-to-many news and educational sites. That program might provide a valuable information service—educating and informing the public much as state-supported broadcasters like the BBC have done for nearly a century. It might even be generative to the extent it developed users’ capabilities to*

participate in the public sphere. But it would not provide a communications service with the interactive features of the open Internet."

Ard discusses the net neutrality objections to zero-rating under four broad headings, namely that zero-rating results in sacrificing the open internet for a series of 'walled gardens', that it stifles innovation to the detriment of competition and the generative society, and that it jeopardises democratic participation and the future of the internet.

While the walled garden objection highlights serious risks (in particular if edge providers can prevent competition in content), one would need to establish that zero-rating indeed displaces opportunities for users to get access to the wider internet, which is far from clear. There may be many other reasons for which users do not venture beyond a particular range of services. Transparency of offers appears to be crucial in deciding whether walled garden concerns are material (and in any case, *"a walled garden will usually prove better than no garden at all"*).

In relation to innovation, the threat from zero-rating is greatest where the platform owner chooses which services to include: *"the transaction costs of negotiating with a gatekeeper and the risk that the carrier will arbitrarily reject the application for reasons other than its merit would discourage third parties from investing their time or money in developing new apps. Even a sponsored data system, where the entrepreneur merely had to pay for the data associated with her app, might deter innovators who were uncertain as to whether their offering would be profitable enough to cover the costs of entry. ... [E]stablished U.S. companies—like those that have so far had the greatest success in zero-rating their services—are systematically better equipped than local startups to meet carriers' demands."* Zero-rating may contribute to innovation where it pushes broadband use, as in the developing world.

Finally, Ard discusses a number of implications for regulatory policy that follow from the assessment of zero-rating practices, namely promoting transparency, promoting competition (through prohibiting unfair and deceptive advertising and discriminatory treatment of edge providers, potentially banning payments for zero-rating and potentially extracting concessions that promote interoperability and switching between platforms in exchange for permitting zero-rating).

*Lyons (2016a),
'Usage-Based
Pricing, Zero-Rating,
and the Future of
Broadband
Innovation'*

Lyons notes that the focus of the debate about the benefits of an open internet appears to have shifted from promoting the interests of consumers in being able to *"have access to the lawful Internet content of their choice, to run applications and use services of their choice, to connect the devices of their choice to the network, and to benefit from competition among broadband and app providers"* towards CAPs, emphasising the need *"to protect a 'level playing field' for edge providers and to reduce barriers for the hypothetical 'next*

Facebook'." The rules introduced to prevent broadband providers from discriminating between traffic to edge providers had the effect of depriving consumers of what they want in order to protect edge providers. ISPs are required to provide a homogenous 'dumb pipe' broadband service.

Specifically, Lyons argues that this *"need for a homogenized broadband experience is at odds with an increasingly heterogeneous customer base."* A ban of zero-rating effectively prohibits consumer friendly innovation by operators: *"Some consumers cannot justify paying high prices for a mobile plan that largely duplicates the access they already have at home or at work, but they might pay less for access to a handful of services."* He refers to the emergence of "social media plans that include talk, text, and access to selected social media services such as Facebook or Twitter" priced below traditional mobile data plans in many Latin American countries, the offer of a Skype-optimised plan by TELUS in Canada, or Orange's strategy of bundling news, video or music streaming services with broadband subscriptions in the UK as examples of the benefits of being able to zero-rate particular types of traffic.

Although usage-based pricing of content outside of zero-rating arrangements is theoretically capable of restricting competition, the *"mere risk of anticompetitive harm alone is insufficient to ban a practice, especially in light of the procompetitive justifications for such a practice."*

As Lyons argues, the real problem is the existence of market power which could be exploited through usage-based pricing (both in terms of extracting more surplus from consumers and potentially further distorting competition).

In relation to arguments about the potential disadvantage of new entrants who might not be able to afford sponsor zero-rating of traffic to their sites, Lyons notes that *"zero-rating of traffic is hardly the most significant part of the Internet ecosystem where well-capitalized companies have an advantage over their competitors. For example, large companies such as Google and Microsoft have built huge server farms to cache and distribute their content locally rather than deliver their services over the public Internet. Others like Netflix rely upon private content-delivery networks (or construct their own CDNs)."* In other words, there is a question of materiality of any impact that the ability to negotiate zero-rating arrangements would have on new entrants.

Lyons examines in more detail T-Mobile's Binge On offer and argues that it has been an innovative form of product differentiation helping T-Mobile (as the third largest operator) make some more headway in the market. In relation to Comcast's Stream TV, Lyons notes that *"[i]f one considers Stream a substitute for online video like Netflix, then the objection seems obvious. Netflix video counts toward the customer's monthly limit. Stream video does not. Therefore, given the choice, customers will choose Stream, which penalizes Netflix for*

not being zero-rated." However, Lyons argues that Stream TV is a substitute for traditional cable, and video content that is subject to data caps has thrived alongside video content that is not (with Netflix and other OTT applications having succeeded alongside traditional cable TV even though the former are subject to data caps and the latter are effectively zero-rated).

Overall, Lyons concludes that it would be important to establish that zero-rating practices cause actual harm, and that absent proof of such harm *"policy should promote innovation that enhances consumers' ability to access the content and services they desire – no matter where in the Internet ecosystem this innovation occurs."*

MMTC (2016)
Understanding and Appreciating Zero Rating, the use and impact of free data in the mobile broadband sector

MMTC considers zero-rating to be the outcome of competition for new consumers and for retaining existing ones, offering services that are popular. *"Despite such popularity and promise, however, free data has come under attack as being contrary to the "spirit and the text" of the FCC's open Internet regime."*

MMTC suggests that opponents of zero-rating *"overlook and dismiss the benefits"* of the practice, in particular to poor consumers. Zero rating can close the digital divide by *"addressing cost concerns and strengthening the value proposition offered to skeptical non-users"* – one of the main reasons for which US consumers remain offline. *"[O]ffering 'free stuff' is at the core of attracting consumers in virtually every other American industry, e.g. fast food (meal deals), online purchases (free shipping), and Buy-One- Get-One ("BOGO") offers."* Free data is simply an adaption of this practice to the telecommunication sector.

MMTC draws a distinction between zero-rated content and sponsored data and compares the latter to toll-free calling, where the recipient is paying for the call.

In MMTC's view, zero-rating is the result of ISPs meeting consumer demand for data-heavy content, whilst facing capacity constraints; it is a form of product differentiation aimed at meeting divergent needs.

In relation to zero-rating in the US, MMTC observes that *"free data in the mobile broadband space is still evolving. Service providers are continually adjusting each of their programs in an effort to expand offerings, attract more partners, and cater to new consumer demands. But overall, these programs are proving to be enormously popular with consumers. One recent survey, for example, found broad acceptance and use of these services – 84% of adults said they would be 'extremely/somewhat likely to try a new online service if it is a part of a free data offering,' while 85% reported they were 'extremely/somewhat likely to use more data if it didn't count against their monthly data usage."*

The benefit of zero-rating arise from:

- helping to close the digital divide and bringing more people online;
- bolstering the use and improving the experience of mobile broadband connections;
- encouraging experimentation with mobile business models;
- supporting innovation in the mobile ecosystem; and
- further empowering mobile customers.

Lyons (2016b),
'Innovations in
Mobile Broadband
Pricing'

Lyons argues that the FCC net neutrality rules harm innovation in the US market and impede the types of experimentation that has occurred in other markets. Vertical agreements can have a positive influence on innovation and competition and should not be discouraged. Furthermore, as consumers access the Internet through multiple devices, the need for each device to offer the same service is mitigated.

Lyons provides an overview of the development of the net neutrality debate in the US, including a history of the legal proceedings (in particular Verizon vs FCC) and the net neutrality rules established by the FCC: no blocking, no throttling, and no paid prioritization. These 'bright line' provisions are supplemented with a 'catch-all' standard that requires that broadband providers do not *"unreasonably interfere with or unreasonably disadvantage (i) end users' ability to select, access, and use broadband Internet access service or (ii) edge providers' ability to make lawful content, applications, services, or devices available to end users."* Lyons comments that although the rules *"promote innovation by Internet-based edge providers, the rules inhibit innovation by the broadband providers."*

As a result of these rules, while ISPs are able to vary the quantity (through usage based pricing) and quality (through different download speeds) they are unable to vary the service itself. Lyons discusses the innovations that have been enabled by allowing companies to differentiate services, such as:

- voice-plus and social media plans offering free social media or email to encourage take-up of mobile broadband, aimed to encourage users to upgrade to full access;
- "feature phone access" partnerships with optimised free low bandwidth content to use on "feature phones" that are largely no longer used in developed countries (such as Facebook Zero and Google Free Zone);
- co-marketing and cross-promotional agreements, under which ISPs form partnerships with certain edge providers (such as Telus and Skype in Canada, Axis and Viber in Indonesia and WhatsApp and 3HK in Hong Kong). Lyons notes that these partnerships are often with competitors of the ISPs traditional offerings (voice and text messaging), and are natural developments in the telecommunications market, emblematic of the move from traditional voice and text to data. Lyons also describes the partnership between

Opera Software and 130 mobile operators, where the included Opera Mini browser reduces the amount of data consumed when surfing the web. Opera Web Pass, which is available through the browser, allows users to purchase short term access in time slots as well as only for specific sites, and users can also view adverts to earn more access.

- premium content and carrier upselling, involving partnerships between ISPs and content providers that offer exclusive or preferred access to content (such as the Swapables product by Orange in France, offering free access to certain TV, news and music streaming services, or discounted Deezer with T-Mobile in the Netherlands). This type of product is particularly popular in Denmark where every ISP offers a package that includes music streaming. Lyons also notes that carriers have begun to innovate in offering new add-ons to broadband, such as home-security monitoring systems; and
- equipment subsidies, such as the 'strategic alliance' between Bell Canada and Clearwire under which Clearwire rolled out its wireless broadband service in the US naming Bell Canada as its 'exclusive strategic partner for VoIP and other IP services in the US'. Bell Canada invested \$100million in Clearwire to deploy network architecture.

In relation to the United States, Lyons refers to the soon-to-be (at time of writing) Verizon FreeBee program, T-Mobile's Simple Choice Plan with its Music Freedom product and AT&T's Sponsored Data program. Lyons suggests that "[t]hese agreements are valuable to carriers seeking to develop the other side of the two-sided market for broadband access. And they can be valuable for participating Internet edge providers as well, as a way to differentiate their content from that of their rivals online." He also describes the activities of Syntonic, a startup that has developed a means of giving application-specific bandwidth to devices. This has been used to launch AT&T's 'Freeway app', offering zero-rated access to certain content. "Companies ranging from large edge providers like Expedia to small startups like BBA Studios are using Freeway to deliver content to loyal customer bases and to find new customers by allowing them to sample that content without cost." Syntonic's innovative software has also enabled the launch of 'On-Ramp Educational Services', where school districts can distribute 4G laptops that can only be used to access curriculum content and applications.

Lyons then considers how existing net neutrality rules in the US would be applied to these innovations. Innovative products "most at risk under the Open Internet rules are those involving only partial web access, such as voice-plus or social media plans," but it is unclear whether zero-rated products and sponsored data violate the "no unreasonable interference/disadvantage" rule. "More promisingly, the 2015 rules seem to create a space for experimentation with targeted services and specialized devices such as Syntonic's On-Ramp

Educational Service and its proposed business-oriented solutions."

Lyons also notes that the FCC net neutrality rules will not apply to a list of services including wired devices used for the "internet of Things", e-readers, heart monitors and energy sensors (although the FCC will respond to complaints as necessary). Nonetheless net neutrality rules and uncertainty surrounding them can discourage potential innovation.

Lyons argues that while in part net neutrality concerns are rooted in vertical agreements and possible foreclosure, anti competitive foreclosure is unlikely and vertical agreements can be pro-competitive. This is because attempts by ISPs to foreclose a particular product or prevent access to other content will result in consumers switching to other ISPs offering full access. Moreover, vertical agreements can promote competition by reducing search costs and *"may allow companies to share resources and leverage one another's strengths, which can achieve greater operational efficiencies and reduce costs."* Where products are bundled, this differentiation can help smaller ISPs compete with larger ISPs and new startups to break into a market. Vertical agreements allow for more product differentiation, possibly improving consumer welfare, increasing competition and meeting diverse and niche consumer preferences. In some cases this can improve access: *"[b]y offering a lower-quality product at a lower price point, broad-band providers could extend service to those who cannot afford, or otherwise do not wish to buy, full broadband access at the market rate."*

Concerns about foreclosure might arise where markets are not particularly competitive, but the FCC has repeatedly found that the US ISP market is highly competitive. The mobile broadband market is however approaching maturity and firms should be expected to respond to the differentiated demand from users. As Lyon argues, the market needs more flexibility to meet these demands. This is particularly the case in mobile broadband where ISPs need to deal with capacity constraints.

Ultimately, Open Internet rules should focus on benefits for the consumer. While the FCC ought to watch the ISP market carefully to prevent anti competitive practices, policies that are overly restrictive of innovations between ISPs and edge providers could block the development of products that enhance consumer welfare.

Howell and Layton (2016), Evaluating the Consequences of Zero-Rating: Guidance for Regulators and Adjudicators

Howell and Layton set out a series of questions that could help in the evaluation of zero-rating practices, given that these are left to a case-by-case analysis under the FCC's Open Internet Order, and involve complex trade-offs. This is not least because many of the interactions in the internet ecosystem take place over multi-sided platforms, with the associated complexities in defining relevant markets and establishing market power as well as assessing welfare impacts of particular practices and interventions.

The authors start by positioning zero-rating within the context of the net neutrality debate, noting that:

- the concepts of neutrality and non-discrimination are neither synonymous nor substitutable, and that discriminatory pricing and product differentiation can be important for ensuring that the full benefits of the internet are realised;
- there is de-facto prioritisation of traffic by virtue of the fact that customers who pay for faster speeds take priority in traffic queues;
- acceptance of capped data plans appears to accept that service provision cannot be application-agnostic, as consumers wanting to use data-intensive applications will choose plans with higher caps;
- attempts to provide 'safe harbours' for zero-rating practices, as in the BEREC guidelines, are unlikely to provide a trade-off of various objectives; and that
- claims that net neutrality principles are needed to 'save the internet' by preventing changes in the way in which ISPs can charge and users can pay for services have not demonstrated the economic benefits from preventing change.

Howell and Layton note that there is comparatively little analysis of the effects (and in particular the alleged harm) of zero-rating practices in the economic literature, with a focus on the potential for ISPs essentially to charge 'termination fees' to content providers, which could be motivated by a desire to:

- favour particular content (in collusion with content providers);
- foreclose competition in content markets;
- exploit market power to appropriate surplus from content providers; or
- fund capacity expansion needed to support higher bandwidth demand.

Much of the literature focuses on specific areas of the internet ecosystem, and it is only very recently that the literature has considered the entire ecosystem in a simple model that covers the key interactions between internet users, content providers, advertisers and ISPs, starting from simple assumptions and adding complexity through introducing assumptions about levels of competition, substitutability of different types of content, consumer heterogeneity etc. These models show that the impact of different constraints on pricing flexibility and net neutrality constraints depends critically on factors such as differentiation between content providers and consumers.

On the basis of these models, Howell and Layton identify a number of factors that are crucial for assessing the effects of zero-rating, namely that

- demand for internet access is derived from demand for applications, which implies that – unless ISPs are also providers of applications – they have no incentive to restrict the range of services available); that
- customer demand is very heterogeneous, which implies that demand for internet access reflects differences in application preferences and that multi-part tariffs are likely to be important for the efficient recovery of costs; and that
- the impact of zero-rating has to be assessed against the differentiation between different content (so that zero-rating in itself is unlikely to lead to foreclosure unless applications are close substitute and therefore small price differences can have large demand impacts).

This suggests that the first question that should be asked when assessing zero-rating practices is *"[w]hat very close or perfectly substitute applications accessible over the ISP's connection, costing the same to deliver, are likely to be foreclosed by the zero-rated application(s)?"*

Whilst a ban on zero-rating could prevent the foreclosure of some homogenous applications, one needs to acknowledge that the absence of price signals might result in inefficient over-investment in application variety. For example, there may be differences in the cost of supplying otherwise homogenous services, and it would be efficient if the higher-cost service were foreclosed. Thus, the second question would be whether *"usage of the zero-rated applications actually cost the ISP less than equivalent usage of non-zero-rated applications?"*

The third question focuses on customer heterogeneity and asks whether *"zero-rated access to a subset of applications primarily intended to increase the number of individuals using the internet?"* This acknowledges that in the face of such heterogeneity differential pricing and product differentiation can substantially increase take-up, which in turn will create benefits from network effects.

To the extent that the choice of plan and the usage of applications in the presence of zero-rated offers provides information about consumer heterogeneity, the practice could both create entry barriers (by making existing applications more attractive to customers) and reduce them (by providing information about customer heterogeneity). This means that a fourth question is: *"[w]ho has requested that an instance of zero-rating be investigated?"* A request from existing ISPs, content providers or internet users could suggest that a ban rather than the practice could be an entry barrier.

The last question focuses on the role that zero-rating can play in terms of facilitating experimentation and switching. If the application is offered to users free of charge (and funded by advertising), then the application provider cannot use pricing to incentivise users to try and potentially switch to using the

application. By contrast, application providers levying usage charges have a direct pricing tool. Thus, the fifth question is whether *“consumers of the zero-rated application and its rivals make payments to applications providers separate from their payments to ISPs?”*

As Howell and Layton note, the list of questions is neither complete nor exhaustive, but they should help focus attention on those aspects of zero-rating that are likely to be material for its impact on welfare.

A.2 Predominantly critical

*Ramos (2014),
Towards a
Developmental
Framework for Net
Neutrality: The Rise
of Sponsored Data
Plans in Developing
Countries*

Ramos focuses on the potential boost to internet access in developing countries that zero-rating is argued to bring and asks whether a net neutrality requirement could play an instrumental role in promoting broadband development.

He finds that *“though sponsored data plans may appear advantageous for end-users, specially heavy users of specific applications, this [sic] plans may actually lead to unintended consequences for the expansion of the mobile application sector in developing countries, as they may empower market concentration, restrict local innovation and, ultimately, reinforce economical dependency cycles that contributes to deteriorate local innovation in peripheral countries, accruing technological innovation at developed-countries firms.”* The analytical framework is based on the concept of the ‘dependency cycle’, which holds that the reason for under-development is the *“inability of developing countries to generate their own technological progress.”*

Ramos provides an overview of sponsored data plans (Facebook Zero, Twitter Access, Google Free Zone and Wikipedia Zero). While information about potential payments between the CAP and the mobile carrier are not available for the first three, Wikipedia Zero is explicit about not paying its partners. Ramos also mentions specific services and applications developed by operators such as Oi in Brazil, which provide access to streamed music that will not be counted towards the contractual data caps. Again, there is no information about payments made between the carriers and the CAPs that are included in the zero-rated offer.

Ramos then points out the importance of CAPs such as Facebook and Google in developed as well as developing countries, which he later claims to indicate that sponsored data plans may lead to *“market concentration and the persistence of monopolistic situations that may undermine the local IT industry and raise entry barriers for innovators that may compete with incumbents shielded with sponsored data plans strategies.”* He argues that allowing ISPs to pick winners and losers will distort the process of innovation.

In relation to the impact of zero-rated offers on users, Ramos poses a trade-off between connecting more people to an 'internet' that comprises a few websites and might result in social exclusion, or requiring that the 'internet of the poor' is the same as the 'internet of the rich' which would avoid such social exclusion but potentially connect fewer people.

Against this background, Ramos then claims that *"from a developmental perspective, an unreserved ban on sponsored data plans may be more crucial for the development of the internet industry and connectivity standards in a developing country than any other alternatives, provided that the costs associated with this choice can be equalized with other development policies that can foster this field."*

*Drossos, A (2015),
'The real threat to the
open Internet is zero-
rated content',
prepared for World
Wide Web
Foundation*

Drossos claims that zero-rating has spread rapidly in 2014 from emerging markets to the more developed markets in Europe and North America, with at least 92 zero-rated offers in OECD countries by November 2014: *"By late 2014, non-discriminatory neutral mobile internet access, free from zero-rating, was confined mainly to Scandinavia. Elsewhere in OECD 36 mobile operators were zero-rating their own data- hungry mobile video services while 10 operators were zero-rating their own mobile cloud storage services. Among the handful third party services that got zero-rated were Google's YouTube & subscription film store, HBO's GO mobile film store, music streaming apps such as Spotify and Deezer, WhatsApp, Facebook and Twitter."*

Drossos considers zero-rating to be *"blunt anti-competitive price discrimination designed to favour mobile operators' own or their partners' services"*, creating *"an offer consumer can't refuse."* The claim is that even in emerging markets where even the smallest data plans are unaffordable the zero-rating of applications such as Facebook that are not particularly data-intensive would cause consumer and competitor harm, and that in OECD markets where mobile broadband packages are cheaper the practice focuses on more bandwidth-hungry applications such as video streaming, with data caps (and prices for additional data, if exceeding caps is possible at all) limiting the scope for watching non-zero-rated content to between two and five hours per month.

Drossos states that zero-rating is particularly harmful where *"ISPs collective set low volume caps"*, which would seem to imply tacitly collusive behaviour and are a *"benign threat"* in markets where data volumes are unlimited or data caps are generous.

Referring to the arguments made in an open letter by 36 US academics to the FCC calling for a ban on all forms of paid prioritisation, Drossos argues that permitting zero-rating would lead operators to set lower data caps, claiming to have seen evidence of such behaviour from several operators in OECD countries. A ban of zero-rating would provide incentives for reducing the price of access to the open internet. In support, Drossos refers to the doubling of data caps by KPN in the Netherlands – a country in which zero-rating is banned, claiming

that this is *"the first empirical evidence of the pro-competitive benefits of real net neutrality rules that ban zero-rating or other forms of price discrimination."*¹⁷¹ (albeit without any evidence to link KPN's decision to the ban on zero-rating).

Moore T and C
Rossini (2015)
*Exploring Zero-
Rating Challenges,
Views from Five
Countries*

Moore and Rossini start from the observation that zero-rating is a billing practice rather than a network management practice and requires that there are data caps set at a level that would be binding. The 'archetypal' zero-rating model involves CAPs *"striking an arrangement with companies like Verizon and T-Mobile to exempt their data from caps or metering where the payment from the application provider to the network is intended to offset lost revenues from the customer."*

Moore and Rossini provide a brief description of a number of zero-rating models, including mCent, Internet.org and Wikipedia Zero, and appear to accept that these can be beneficial, but state that the *"clear benefits of providing even limited access at an affordable price must be balanced against the potential harms both to those individual receiving access and the macro effects on the internet and competition as a whole."* The harmful effects are more difficult to discern, but are related to dissuading governments and others from *"working towards solutions to affordable full access"* leaving users permanently with limited access to walled gardens. Although there may be good arguments for limited exceptions from services counting towards data caps (such as public sector information about safety, education services etc.), *"these exceptions need to be narrowly construed to not undermine the concept of net neutrality. Alternatively, defining the limitations of the exception might be so difficult, that zero-rating should be prohibited because the exceptions swallow the rule."*

Moore and Rossini then provide a detailed case studies of five countries where zero-rating has been the subject of regulatory controls (such as Chile) or where a potential ban was being considered at the time (e.g. India), looking in particular at the implications for services such as Internet.org.

van Schewick (2015)
*'Network Neutrality
and Zero-Rating'*

Van Schewick notes that zero-rating has become the *"next frontier in the net neutrality debate"* as the practice has spread from developing countries to developed markets where it is not explicitly prohibited (even where regulators have publicly stated that zero-

¹⁷¹ In a separate Rewheel/Digital Fuel Monitor flash research note, the decision by KPN to double mobile data caps on its SIM-only smartphone tariffs is linked to KPN's introduction of its 'TV Everywhere' service (http://dfmonitor.eu/downloads/Banning_zerorating_leads_to_higher_volume_caps_06022015.pdf)

rating violates net neutrality principles, as in Austria, Germany and Norway).

According to van Schewick, net neutrality rules aim “to prevent network providers from distorting the playing field among applications or classes of applications, and from interfering with users’ choices regarding the use of the network”, and although some argue that zero-rating is less harmful than other forms of discrimination such as throttling because non-zero-rated traffic is treated in the same manner technically, its discriminatory effects are the same: *“Evidence suggests that zero-rating has a powerful effect. For example, in a study commissioned by CTIA, [n]early three-quarters of respondents (74%) report that they would be more likely to watch videos offered by a new provider if the content did not count against their monthly limit. When Slate experimented with zero-rating and ‘told some would-be listeners that the podcast wouldn’t count against the data plans on their smartphones [...] users were 61% more likely to press play.”* Therefore, zero-rating is a powerful discrimination tool and – like technical discrimination – may be used in different ways, ranging from zero-rating all applications in a particular class without charging the respective CAPs, zero-rating only selected applications, and zero-rating applications for which the CAPs make payments. These three approaches should be evaluated separately.

Van Schewick argues that zero-rating in exchange for payments from the CAP (such as AT&T’s sponsored data programme) can harm start-ups, who cannot afford to pay for zero-rating, and thus will not have an opportunity to compete and be heard. Alleged benefits in terms of ISPs investing the revenues they earn from charging CAPs for zero-rating in improved networks and lower prices are highly speculative and depend on the competitiveness of the ISP market – and in any case, as CAPs will have to recover the cost of paying for zero-rating in some form, the user will ultimately have to pay the price. Last but not least, she argues that ISPs have an incentive to lower data allowances, which harms users and CAPS who do not pay for zero-rating.

Therefore while CAP-sponsored zero-rating may in rare cases lower the price for mobile internet access (though users may pay the price in different ways), it harms startups and small businesses, limits free expression, and leads to lower data caps. This suggests that the practice would clearly have to be banned under the FCCs’ principle that it is *“not willing to allow practices that are bound to harm users, innovation and free speech in the hope that this might potentially lead to lower prices or more deployment.”* The ban on paid-for zero-rating should be categorical, regardless of whether the sponsoring arrangement would apply to a particular application, selected applications or all applications in a particular class.

Zero-rating practices without charges to the CAP might relate to the ISP’s own application (e.g. Comcast’s XFINITY App for the Xbox), on third-party applications (such as messaging over the top three

social messaging applications, as is common in Latin America). In van Schewick's view, the first variant is clearly anti-competitive. The second variant would still harm start-up innovation and free speech as even if data requirements are low, users will prefer the zero-rated applications over non-zero-rated ones and ISPs will zero-rate applications that they believe appeal most to their customers.

The claimed benefit in reduced access cost is illusory as the cost is rolled into the price of the data plan or – in the case of free use of data to selected applications even without a data plan – into the price of the voice subscription. According to van Schewick it would be better to offer low-cost access options to the full internet rather than zero-rated access to some content: *"Plans that offer consumers the ability to use Facebook for "free" aren't free. They don't meet the needs of minorities or other underserved communities who need access to the full Internet. If ISPs really want to help these communities, they have alternatives that are equally cost-effective, but that do not similarly restrict users to a walled garden, distorting competition and user choice in the process."*

Lastly, the harm from zero-rating all applications in a particular class may be less obvious, but the practice is nevertheless harmful, and even if there might not be a strong case for an outright ban, the practice should be reviewed under general conduct rules.

*van Schewick (2016)
T-Mobile's Binge On
Violates Key Net
Neutrality Principles'*

Van Schewick argues that T-Mobile's Binge On product *"violates key net neutrality principles and harms user choice innovation, competition and free speech online ... [and] is likely to violate the FCC's general conduct rule"*. The service allows T-Mobile to choose which content succeeds and which does not, which violates net neutrality, distorts competition, limits user choice, stifles free expression and harms innovation.

Van Schewick also suggests that advertising of the Binge On product violates the FCC's transparency rule, as it promises unlimited video streaming without disclosing that not all video streamers are part of the program and that even the zero-rated content is no longer available once customers have reached their data cap.

T-Mobile's product gives a competitive advantage to the zero-rated services users have a greater incentive to watch zero-rated videos than videos that count towards their fixed cap (citing the same CTIA evidence as in van Schewick (2015)). Where consumers are uncertain as to how much data watching video content will consume, they will prefer a service that does not count against their cap.

Binge On directly limits user choice since users can access unlimited amount of content available on Binge On but their cap limits the

amount of non-zero-rated content. *"Choosing between unlimited video from Netflix and less than 9-30 minutes¹⁷² a day (depending on the cap) from a non-Binge On provider is not a real choice."*

Furthermore, for video producers the choice between video distribution platforms is distorted, as they will prefer services that are included in the Binge On service. The advantage enjoyed by video distribution platforms included in the Binge On service, and the videos shown on them does not result from being more desirable but from the decisions by T-Mobile.

Van Schewick notes that although T-Mobile claims its program to be open to all video streaming providers, the technical requirements of the program discriminate against certain content providers: *"Binge On allows some providers to join easily and creates lasting barriers for others, especially small players, non-commercial providers, and start-ups."* T-Mobile naturally chose to add the most popular content first when deciding which video content services to include at the launch of the product and to add subsequently. Van Schewick notes that, at the time of writing, the majority of video services included were commercial, and that selecting which services to include, even with the best of intentions, means that T-Mobile stifles free expression and *"hurts T-Mobile's subscribers as listeners, making it harder for them to benefit from the breadth and depth of video content on the Internet."* ISPs picking the different kinds of speakers and different types of speech that make it through to consumers violates net neutrality.

In relation to claims that any discriminatory effects would be only temporary (as any legal video streaming provider can join the program without payment), van Schewick argues that the technical requirements are *"substantial and establish real hurdles to joining the program"* and exclude certain innovative streaming providers and providers who use encryption. Many video content providers will have to work with T-Mobile to determine if their product meets the technical requirements of the Binge On product, which entails substantial efforts. For such providers *"Binge On not only increases the costs of innovation, but also delays their ability to compete on an equal footing."* This violates the FCC net neutrality rule, which is aimed to ensure that companies can *"innovate without permission"*.

Van Schewick refers to the history of T-Mobile's Music Freedom program (a zero-rated music streaming program precursor introduced by T-Mobile) to argue that these concerns are not merely hypothetical. Over a period of two years, the program has gone from including 7 providers to including 40, but this is *"only a*

¹⁷² Van Schewick estimates the amount of video not available on Binge On a user could watch on the lowest and highest qualifying capped data plans.

fraction of the more than 2,000 licensed online radio streaming services in the US... Some smaller services had to wait 1½ years to be included; some never heard back from T-Mobile at all."

Even if T-Mobile were eventually able to include all video content on the Binge On program, first mover advantages, economies of scale and network effects mean that having to wait to become part of the program can *"translate into a lasting competitive disadvantage"*.

In addition, in an economy where all applications compete for the users' time, Binge On advantages video streaming relative to other types of applications. Van Schewick notes that the FCC's no throttling rule prohibits technical discrimination between classes of applications, and argues this should also apply to zero-rating.

According to van Schewick, Binge On has set a dangerous precedent. Since the introduction of Binge On, similar offers were introduced by other ISPs, and it will become harder for video streaming services to keep up. *"As more zero-rating programs emerge, providers will need to work with ISPs around the world, adjusting their service to each ISP's idiosyncratic requirements."* This will be more difficult for smaller video streaming services. It could also harm competition between ISPs as larger and more popular streaming services will prioritise working with larger ISPs to reach the largest possible customer base.

A.3 Balanced view

Marini-Balestra, and Tremolada (2015), 'The EU debate on net neutrality, What about zero rating?'

The authors discuss zero-rating in the context of net neutrality, whose aim they consider to be *"to limit harmful or anti-competitive discrimination on the part of network operators (internet service providers or ISPs) by assuring that all traffic on the internet is treated equally, thus prohibiting ISPs from blocking access to specific content and from charging different tariffs for the use of online services and applications."* They note that whilst net neutrality *"has ensured the rapid and widespread diffusion of the internet by postulating that online content should circulate freely in the network according to the principle of 'best effort'"* if applied broadly the principle may hamper investment because it restricts the ability of ISPs to profit from providing the infrastructure on which OTT providers 'free-ride'.

Whilst anti-net neutrality conduct is primarily associated with blocking or throttling of particular types of traffic or creating 'fast lanes', zero-rating can have a similar effect as *"services excluded from the zero-rating framework become less attractive, because they eat into the customer's maximum data allocation."*

Zero-rating might not necessarily have the benefit of increasing demand for access to the open internet and mean that customers

will be kept inside a 'walled garden' (in particular if they are not particularly well informed), and may result in ISPs trying to introduce tighter data caps to create artificial scarcity which they can then exploit by charging a premium for 'fast lanes'. However, unlike throttling or blocking, zero-rating does not create direct obstacles to accessing any online content, and thus would seem to be less obviously harmful. It is nevertheless important to *"remain heedful about potential anti-competitive practices, assessing whether any consumer harm arises from such pricing conduct."*

The authors consider that zero-rating traffic could in certain conditions be seen as anti-competitive price discrimination in favour of the operator's own services or those provided by its partner(s). This would seem to be particularly relevant in relation to data-intensive services (such as video). However, zero-rating does not *"pose a particular threat in competitive markets where internet access prices are inexpensive and volumes are essentially unlimited. Conversely, the foreclosing impact of zero-rating is likely to be particularly detrimental in internet access markets where ISPs allow for low-volume caps."*¹⁷³

Marini-Balestra and Tremolada then compare the approaches taken to net neutrality and zero-rating in the US and Europe, focusing primarily on whether paid prioritisation (of which zero-rating may be one particular instance) should be the subject of a per-se ban or whether a rule-of-reason approach should be adopted. The authors note that a number of US scholars have called for *"a ban on paid prioritization on competition grounds"* while also holding that *"competition enforcement would fail to prevent the other competition problems linked to paid prioritization, namely excessive access charges ... or ... low monthly bandwidth caps."* In contrast, others have held that such a ban could curb conduct that is potentially pro-competitive and that a rule-of-reason approach would be preferable as it enables enforcers to take account of the economic impact of certain practices. Overall, the authors believe that a per-se ban is not justified, and that *"potential competitive concerns, if any, can be better addressed depending on the individual case involved, focusing on the record rather than on hypothetical cases, concentrating on companies for which there is an established finding of dominance, and carrying on a precise investigation on the conduct's effects, e.g. that zero-rating resulted in the foreclosure of rivals."*

¹⁷³ It is worth noting that this appears to be primarily a statement about the conditions in which zero-rating is likely to have an impact on consumer behaviour rather than necessarily a market impact.

Oxera (2016), Zero rating: free access to content, but at what price?

This brief overview highlights the intrinsic relationship between zero-rating and the presence of data caps (“if an end-user has an unlimited data allowance (as is the case for many fixed broadband tariffs”), there is no additional benefit of the zero-rated offer”) and points out that therefore zero-rated offers are more common for mobile broadband services which, owing to underlying bandwidth constraints, are more likely to have data caps.

In terms of benefits, Oxera lists free access for users to content, and increased internet usage, which in turn gives rise to positive network effects (e.g. in relation to user-generated content). In addition, zero-rating could facilitate entry of content providers (who might be able to reach critical mass by agreeing a zero-rating deal with an ISP that will increase take-up and visibility of their services) and promote competition between ISPs, for whom zero-rating plans are a way of differentiating their services.

On the other hand, zero-rating might raise concerns about foreclosure of CAPs upstream, or of ISPs downstream, which depend on the nature of the relationship between CAP and ISP (i.e. whether CAP and ISP are vertically integrated, or where they are separate, whether zero-rating is the result of a commercial agreement between them) and on the relative market positions.

ISP foreclosure concerns are strongest where zero-rating involves exclusive access to must-have content. At the CAP level, zero-rating obviously runs contrary to the principle that all online content should be treated equally by ISPs (leaving consumers entirely free to access what they want, when they want) even in the absence of any market impact, but there could also be foreclosure concerns where:

- zero-rating applies to traffic to a particular CAP rather than to a particular type of content;
- data caps are tight (and the mitigating effects of WiFi offload are limited);
- a large proportion of the target customers of a particular CAP are potentially affected by the zero-rated offer (noting that even for global CAPs the relevant markets may be national)

In concluding, Oxera notes that potential anti-competitive effects should be weighed against efficiency benefits, and that competition law may well not be picking up all instances where the practice raises legitimate concerns, as in the absence of a commercial agreement between CAP and ISP there would be no scope for intervention under article 101 TFEU and the conditions for bringing a case under article 102 TFEU may create too high a hurdle.

Stallman and Adams (2016), Zero Rating: A Framework for Assessing Benefits and Harms

Stallman and Adams contrast the extreme perspectives of zero-rating as a discriminatory pricing practice that “violates net neutrality’s core tenet of content and application agnosticism” and as an efficient form of price discrimination benefiting ISPs, edge

providers and users, noting that zero-rating should be regarded as a commercial practice that is “in varying degrees of tension with net neutrality... but may confer benefits that outweigh the potential harm caused by this tension.” They aim to set out a factors that are helpful in determining whether specific arrangements create benefits and minimise “inconsistencies with or harm to net neutrality” (which implies that the authors accept net neutrality as an objective in itself).

Stallman and Adams also focus on mobile broadband plans given that justifications for usage-based pricing are clearer than in the case of fixed connections and zero-rating is more prevalent. They consider that the main case for zero-rating is that it may spur broadband adoption, but that there are potential downsides, and that there are a number of factors (both factor specific to the respective zero-rating plans and external factors) that affect the balance of costs and benefits.

In relation to upstream content, there are concerns about market distortions as edge providers may be excluded from preferential arrangements or be forced to change their content/service to be able to benefit (e.g. where zero-rating is conditional upon the edge provider offering lower-bandwidth versions of its services). In this context, the degree of exclusivity and any underlying sponsorship arrangements are relevant considerations, as is the degree of competition amongst ISPs.

From the perspective of users, the main concern is related to loss of control over the content and services they access, and therefore the choice that effectively remains over zero-rated content, availability and cost of metered content and transparency of zero-rating arrangements are the over-riding concern.

Existing levels of broadband deployment and adoption, competition and digital literacy affect the extent to which zero-rating creates an “on-ramp” to full internet access or creates a walled garden.

As Stallman and Adams note, many of these factors are inter-related, and there is no clear-cut set of conditions for ‘approved’ zero-rating arrangements. Also, there is insufficient data about the impact of zero-rating on user behaviour and broadband adoption.

Overall, the authors argue that:

- there should be no exclusive or affiliate-only arrangements, and sponsored data arrangements should be discouraged;
- edge providers should not be required to degrade their service or sacrifice security or user privacy in order to be eligible for participation in a zero-rating arrangement;
- the terms of the arrangements (both in relation to edge providers and users) should be transparent;

- where used to drive broadband adoption, zero-rating should be accompanied by both technical assistance for content providers and digital education for users.

Stallman and Adams also point out that regulators should be clear about how and according to what criteria they would assess zero-rating practices.

Saenz (2016), 'The Effect of Zero-Rating on Mobile Broadband Demand: An Empirical Approach and Potential Implications'

Saenz develops a regression model to analyse the effect of zero-rating on the demand for mobile broadband, showing that zero-rating increases consumer surplus. Though there is a wide range of arguments that suggest that zero-rating can have detrimental effects, and Saenz acknowledges that his analysis focuses only on one side of the market, he considers that the results suggest a cautious attitude towards regulatory restrictions on the practice.

The author provides a review of the literature dealing with the various arguments for and against zero-rating, focusing "*sponsored data plans ... characterized by commercial agreements between Internet service providers ... and content providers and/or applications.*" The main argument in support of these plans is that they are drivers of broadband access while at the same time dealing with the costs and externalities that arise from growing traffic volumes.

Being combined with data caps, zero-rating is part of a congestion management tool, and its role needs to be understood in the context of multi-sided markets where ISPs operate a platform that links final users and content providers, and the question arises who should pay for congestion on the network. ISPs engage in traffic management practices that potentially allow them to charge content providers. While ISPs argue that not being able to charge CAPs "beyond their broadband fees creates disincentives for the ISPS to invest in capacity to avoid congestion problems", the content providers claim that "*not having to incur additional payments to guarantee speed and quality ... has allowed great dynamism in terms of technological innovation.*"

In general terms, zero-rating can drive broadband penetration (which in turn would foster innovation and competition on the internet), but has been criticised for favouring certain applications and content. This might be a concern in relation to the objective of media diversity if it implied that customers did not have access to certain types of content.

Zero-rating also gives rise to price discrimination, which in turn can have both positive effects (broadening access) and distort competition.

In any case, the impact of zero-rating on demand is an important factor in establishing the costs and benefits associated with the practice. In order to establish this impact, Saenz presents a regression model in which the difference in mobile broadband demand (measured as mobile data traffic on 3G and 4G networks)

between 2014 and 2012 is expressed as a function of differences in price, income, platform competition and cost conditions as well as a dummy variable indicating the presence of zero-rating¹⁷⁴ (which is also interacted with income). The model is estimated on the basis of observations from 16 countries.¹⁷⁵

Price is measured in terms of revenues per megabyte¹⁷⁶, and income is measured as GDP per capita (converted in to PPP-adjusted USD). Platform competition is proxied through the HHI and cost conditions are captured through population density. The zero-rating variable was based on the time at which popular zero-rated applications or websites such as Facebook Zero, Twitter Zero, and Google Free Zone (as well as initiatives such as Free Basics) started being offered in the different countries of the sample.

Saenz finds that zero-rating has a positive impact on traffic volume (significant at the 10% level) but that the effects of zero-rating are weaker with growing income (significant at the 1% level), suggesting that zero-rating pushes traffic volumes and could be responsible for almost USD9bn of consumer surplus.

Marsden (2016),
'Comparative Case
Studies in
Implementing Net
Neutrality: A Critical
Analysis of Zero
Rating'

Marsden looks at the implementation of net neutrality regulation (with a focus on zero-rating) in Brazil, India, Chile, Norway, Netherlands, Slovenia, Canada, United States and the European Union as a whole. The case studies cover the period from 2003-2015. Marsden finds "*limited political and administrative commitment to effective regulation thus far*" and proposes a regulatory framework going forward.

Marsden differentiates between 'negative' and 'positive' net neutrality. 'Negative' net neutrality is concerned with throttling and blocking of content while 'positive' net neutrality is related to the practice of treating certain content favourably in comparison to other traffic. While 'negative' net neutrality is largely accepted as an objective, 'positive' net neutrality is "*a much more contested topic, and where download limits apply or ill-defined 'Specialized Services' carry the zero-rated content, this concept of zero rating will be heavily contested.*"

In Norway calls for net neutrality (following an ISP blocking the traffic of the state broadcaster) resulted in implementation of 'co-regulation', where legislation permits regulation, but the regulator has refrained from taking action because of effective self-regulation.

¹⁷⁴ The model also includes an interaction term involving zero-rating and income.

¹⁷⁵ China, Denmark, Germany, Greece, Guinea, Hungary, Italy, Lithuania, Moldova, the Netherlands, Portugal, Russia, Singapore, South Africa, Spain and Sweden

¹⁷⁶ In order to address endogeneity, the author uses the average prices in the other countries as an instrumental variable.

Guidelines were introduced in 2009, with annual stakeholder meetings to ensure the rules are working. In 2013, these guidelines become formal and in 2014 zero-rating was proclaimed to violate net neutrality. Net neutrality rules appear to be working and are unchallenged. Marsden notes that this is not a typical example (and is characteristic of Scandinavian social democracy).

The Netherlands was the first European country to prohibit discriminatory traffic management, with only the following exceptions: *"[a] to minimize the effects of congestion, whereby equal types of traffic should be treated equally; [b] to preserve the integrity and security of the network and service of the provider in question or the terminal of the end-user; plus to stop spam and enforce legal requirements."* The move was triggered by the public outcry caused by an ISP trying to block WhatsApp. Implementation of the regulation took three years. Marsden references Van Eijk (2014) who found that the impact of the ban of zero-rating on the price of mobile broadband was unclear.

Slovenia introduced a strict net neutrality law in 2013 following four main rulings against zero-rating. The law was introduced following a complaint by the Electronic Communications Council: *"in July 2014 alleging Telekom Slovenije violated net neutrality with zero-rated products. Telekom Slovenije from 2013 provided free data for video channel HBO and UEFA Champions League football, then later the music streaming service Deezer. AKOS also found against Si.mobil (the largest mobile ISP) for zero-rating cloud storage service Hanger Mapa. TS and Si.mobil were instructed to stop zero rating. In the second pair, bans were imposed against a zero-rated mobile TV service and web portal provided by AMIS (Mobia TV) and Tusmobil (Tuskamra), respectively."* However football and cloud storage is still zero-rated by Telecom Slovenije (although the operator stopped the practice with HBO). Marsden notes that Ziga Turk, Minister for Communications, suggested that *"implementing net neutrality in a nation with such a weak regulator would prove very difficult"* and AKOS indeed needed to fight against considerable industry lobbying. Marsden also notes that Telekom Slovenije and Si.mobile increased their data caps and offered new products since the ban on zero-rating.

Chile introduced the first net neutrality law in 2010 and subsequent regulation for zero-rating was introduced in 2014. The law bans ISP practices that *"arbitrarily distinguish content, applications or services based on the source or ownership thereof"* and the major ISPs were told to cease zero-rating. However, as enforcement relies on self-reporting concerns have been raised about effectiveness of the regulator in monitoring the issue. The ban was lifted from Wikipedia Zero because of its not-for-profit status, and ISPs are allowed to zero-rate as long as it is part of a data plan and zero-rated content is no longer accessible once the cap of the plan is reached, making the matter more complex than a simple ban would be.

Net neutrality legislation was pushed in Brazil following the concerns about “*foreign surveillance of telecoms and Internet traffic (specifically her own communications)*” raised by the President Rousseff. The net neutrality law states “[*t*]he party responsible for the transmission, switching or routing has the duty to process, on an isonomic [equality before the law] basis, any data packages, regardless of content, origin and destination, service, terminal or application,” must “act with proportionality, transparency and isonomy” and “offer services in non-discriminatory commercial conditions and refrain from anti-competition practices.” Marsden notes the implementation was controversial and confused - at the time of writing consultations were being carried out to address concerns over implementation of the law. In practice, zero-rating is not regulated and ISPs have introduced a number of zero-rated products.

The Net neutrality debate in India has been extensive and contentious with the Prime Minister amongst other stakeholders changing sides, and with the 2015 consultation on the subject attracting over a million emails, focused mainly on zero-rating. At the time there were three zero-rated products on offer in India, including Internet.org offered by Reliance, Airtel. Initial suggestions by an Indian government committee proposed only banning Internet.org but permitting local zero-rating variations. Uproar over Internet.org pushed Facebook to make the terms of Internet.org more transparent and available to all developers. The regulatory response addressed these concerns stating that “*if the need arises, the government and the regulator may step in to restore balance to ensure that the internet continues to remain an open and neutral platform for expression and innovation with no [IAP], or for that matter any content or application provider, having the potential or exercising the ability to determine user choice, distort consumer markets or significantly controlling preferences based on either market dominance or gatekeeping roles.*” At the end of 2015 TRAI requested Reliance to end its partnership with Internet.org, and subsequent regulations banned all forms of zero-rating.

Canada introduced net neutrality rules in 2009 but did not enforce them until 2015. Marsden notes that the regulator was inconsistent and implementation was chequered. Zero-rating is not a common practice and is not ‘definitively’ banned, though the Canadian regulator had banned the zero-rating of Bell’s mobile TV application and Videotron’s unlimited music streaming service. The decision was appealed on the ground that the regulator should not be permitted to implement the ban through the Telecommunications Act based on the definition of the mobile TV application as a broadcasting service.

In the United States, the FCC introduced net neutrality rules in 2015 (following difficult implementation of the 2010 Order and legal proceedings with Verizon) insisting on “*no blocking, no throttling, no paid prioritisation.*” Marsden suggests that although it should be prohibited under the ‘no paid prioritisation’ rule zero-rating

continues to be a common practice. Marsden notes that “[a]s previously in the mergers of Bell Atlantic into Verizon and formation of AT&T in 2005/6 and Comcast/NBC Universal in 2011, the US government has found itself most able to enforce net neutrality with decisions inserted into merger approvals.” For example, the merger of DirecTV into AT&T prohibited zero-rating. In July 2015, the FCC announced that it would deal with zero-rating in a case-by-case manner.

In the wider European Union, “complete confusion over zero rating and Specialized Services existed amongst governments, European institutions and regulators in 2016.” In 2009 the EU introduced ‘lite’ rules on throttling and blocking that were aimed at preventing ‘negative’ net neutrality. In 2013, an Open Internet Regulation was proposed by the EC. Following failed attempts to make amendments the original Regulation became law in April 2016. The law does not however mention zero-rating or Specialised Services, and it is left to guidelines developed by BEREC to interpret the regulation for implementation by NRAs.

The framework proposed by Marsden relies on telecoms regulators for the organisation of consultations and further research on transparency of traffic management practices. Marsden appears to be sceptical of the benefits of zero-rating, and considers that it should be treated as a short-term exception to net neutrality) and that it must not be exclusive, but that de minimis exceptions in relation to the share of take-up of zero-rated offers should be in place.

Carrillo (2016),
*‘Having Your Cake
and Eating It Too?
Zero-Rating, Net
Neutrality and
International Law’*

Carillo aims to overcome the “clash of dogmas” with the “sanctity of net neutrality principles” on one side and the “imperative to close the digital divide or respect free markets” that characterises much of the debate over zero-rating by looking at the practice as a conflict of rights. Employing a human rights law framework that uses a balancing test of factors, including necessity and proportionality, to determine whether, on the whole, freedom of expression is advanced or not in a particular context, he looks at different models of zero-rating practices and the national contexts in which they are implemented across a range of countries (focusing on Zambia, Chile and the United States).

Similarly to Moore and Rossini (2015) and Oxera (2016) Carrillo differentiates between models of zero-rating by the commercial arrangement and the scope of zero-rated content (single-site or service zero-rating such as Wikipedia Zero, Google Free Zone or Facebook Zero; sponsored data; compound zero-rating providing access to a bundle of selected sites and services; and ‘faux’ or non-selective zero-rating, where limited amounts of free data is offered to users in exchange for meeting certain conditions, such as viewing an advertisement or downloading an application.

Carrillo looks at net neutrality legislation and indicators such as internet access penetration, GDP, development indices and indices

on democracy, freedom and corrupt for a sample of countries, highlighting the substantive differences in market conditions and painting “a broad but useful panorama of the different domestic settings in which zero-rating takes place around the world.” Looking in more detail at three countries (Zambia, Chile and the United States), he finds that the approach taken to net neutrality regulation well matches local conditions.

Zambia is poor but growing rapidly. The country has particularly low connectivity with a high tax burden on Internet access and poor infrastructure that arises from its lack of access to submarine cables. Zambia has no net neutrality legislation and was chosen for the first rollout of Internet.org (including Facebook, Messenger, search sites, news sites, Wikipedia and a wealth of health, rights and education websites) in 2014 with Airtel.

Chile has some of the most affordable internet access in South America and relatively high penetration. It was the first country in the world to introduce a net neutrality law in 2010 that prohibited zero-rating, pleasing net neutrality advocates while others argued it would “hamper the growth of Internet access in the country.” Carrillo notes that

The US, in turn, is the most developed in terms of access to the internet and has a set of ‘brightline’ net neutrality rules (no blocking, no throttling, no paid prioritisation). Zero-rating is evaluated on a case by case basis. Carrillo does not observe any barriers to Internet access in the US.

Carillo argues that while most of the debate about zero-rating focuses on its economic, social and technical implications of zero-rating, the practice ought to be assessed within the context of international human rights law. Net neutrality – the requirement that “[t]here should be no discrimination in the treatment of Internet data and traffic, based on the device, content, author, origin and/or destination of the content service of application”¹⁷⁷ - is seen as an interpretation of the human right to freedom of expression in the digital realm.

Human rights law may be invoked on either side of the zero-rating debate. Opponents of zero-rating can argue that zero-rating limits the ability for free expression and that differentiation in handling traffic compromises people’s rights to receive or impart information

¹⁷⁷ Joint Declaration on Freedom of Expression and the Internet issued by the United Nations Special Rapporteur on Freedom of Opinion and Expression; the Organization for Security and Cooperation in Europe (OSCE) Representative on Freedom of the Media; the Organization of American States (OAS) Special Rapporteur on Freedom of Expression; and the African Commission on Peoples and Human Rights’ Special Rapporteur on Freedom of Expression and Access to Information

freely. Proponents of zero-rating can argue that zero-rating promotes freedom of expression through enhancing access.

Carrillo then discusses the key exceptions in the human rights laws that are considered relevant to the evaluation of zero-rating. A developing country with limited connectivity could use concept of "legitimate aim" for permitting or promoting zero-rating. Zero-rating may create benefits from improved connectivity that are so substantial that the practice, *"though discriminatory for economic reasons, might still constitute a 'legitimate differentiation' under human rights law"* provided it meets the other elements of the exceptions regime test, i.e. it must be necessary and proportionate. There may be alternatives that support the same goals, and the benefits must be balanced against discrimination or potential harms to freedom of expression. These factors are largely contextual and Carrillo emphasises the importance of assessing zero-rating within the context of a particular market. For example, *"[i]n the Zambian context, it is therefore possible to argue from a human rights law perspective that, in light of the country's deep connectivity crisis, the benefits in terms of increased access offered by Internet.org/Free Basics, although limited to select services, still outweigh the disadvantages of that zero-rating practice, making it an appropriate, and thus proportional, measure under the circumstances."* In other contexts, however, the conclusion may be less clear. In Chile, where connectivity is higher and more affordable it would therefore be unclear whether zero-rating could be justified under a human rights law assessment.

A.4 Usage-based pricing

Odlyzko et al. (2012), Know Your Limits: Considering the Role of Data Caps and Usage Based Billing in Internet Access Service

Odlyzko et al. provide a general discussion of usage based pricing, its history and its implications. They also aim to establish principles for the *"responsible implementation of usage based pricing"*, on the basis that *"usage-based pricing can be used for both productive and destructive ends. Sometimes these ends are intentional. Other times, they are a byproduct of other goals or even a lack of careful consideration."*

Describing the trend towards usage based pricing, they authors note that the practice is much more prevalent in mobile compared with fixed broadband offerings.

The benefits of usage based pricing are linked to the efficient management of scarcity when demand grows faster than new capacity can be deployed. Charging users based on their usage provides incentives for users to limit consumption to the most valuable services, and incentivises providers to develop less bandwidth-hungry alternatives to their services. As Odlyzko et al. note, where usage based pricing is introduced as a traffic management tool, zero-rating plans are potentially troubling as

they effectively suspend the disciplining effects of usage charges. More generally, it is not clear that usage-based pricing in the form currently deployed (e.g. through data caps) will be effective in managing network congestion, noting that congestion is often a temporal phenomenon and monthly data caps do not necessarily limit usage during peak times.

The authors note that simple cost-based pricing rules are difficult to implement as marginal costs are not particularly well defined for broadband networks where there are substantial upfront costs but marginal usage within capacity limits has little or no cost. It is also important to acknowledge that the link between usage and costs is affected by the organisation of supply – for example, using content distribution networks that cache content closer to the user removes the extent to which usage could result in congestion of the backbone where capacity is shared rather than dedicated.

Contrasting usage-based pricing with flat rates, the authors point out that flat rates may have similar effects to insurance by smoothing out potential variations in cost that would occur under usage based pricing over time, and that they remove the need to track usage and reduce ‘mental accounting costs’, so that revenues are often higher under flat rates than under usage-based pricing.

Overall, usage-based pricing should be implemented in a transparent and sufficiently granular manner to be suitable as traffic management tools. In particular, usage-based pricing should not become a substitute for investment and technological improvements and thus support artificial scarcity.

*Nevo, et al. (2015),
Usage based pricing
and demand for
residential
broadband*

Nevo et al. estimate demand for residential broadband from subscribers facing a three-part tariff that specifies a monthly subscription, a data cap and a per-GB charge for any data consumption above the cap. In such a setting, the marginal price for usage is zero up to the cap, but forward-looking subscribers will take into consideration a shadow price of usage, which depends on the time in the billing cycle and the proportion of the allowance already used.

Based on a dynamic model of inter-temporal utility maximisation and a dataset obtained from an (US) ISP that contains hour-by-hour Internet usage for roughly 55,000 subscribers facing different price schedules, the authors “*estimate a (finite horizon) dynamic choice model. . . . Specifically, we solve the dynamic problem for a large number of subscriber types, once for each type. We then estimate the distribution over these types by matching moments recovered from the data to those predicted by a weighted average of the optimal behavior of the types.*” On the basis of these estimates, the authors can then specify:

- consumers' willingness to pay for an increase in speed by one Mbps (which is between \$0 and \$5 per month, with an average of \$2.03);
- the average consumer's willingness to pay for an increase in the usage allowance (\$0.36 per month for an additional GB, which suggests that marginal content has relatively low value)

This in turn permits calculation of usage and welfare under alternative hypothetical plans, which demonstrates that *"usage-based pricing is effective in lowering usage, without reducing consumer welfare significantly, because it mostly removes content with relatively low value. Generally, usage-based pricing shifts surplus from consumers to providers. The magnitude, as well as the effect on total welfare, depends on how the prices of the unlimited plans are set."*

Last, the authors estimate take-up, usage and welfare if users were presented with an unlimited plan with a one Gbps connection. Whilst such a plan would create substantial surplus from usage, which is not reflected in the fees typically charged for such connections (e.g. \$70 for Google Fibre in Kansas). This suggests a substantial gap between the social case for upgrades to fast fibre and the business case, with the difference between social and private incentives to invest being quite robust.

The usage data show a sharp increase in usage over time, with the median subscriber more than doubling usage from 9 GBs in May 2011 to over 20 GBs in May 2012 and the average subscribers usage increasing from 23 to 40GB. There is also *"substantial heterogeneity in usage: the 25th percentile household used less than 6 GB per month in May 2012, while the 75th percentile consumed almost 9 times as much. During this period, approximately 39% of aggregate traffic is online video, 35% is web traffic, 14% is peer- to-peer activities, and the remainder is largely comprised of gaming activities, software updates, and cloud-based and music-streaming services."* Unsurprisingly, usage varies considerably over the time of the day, and is strongly asymmetrical with 90% of traffic being download. The mean share of the allowance used is below 50%, and less than 10% exceed their allowance. Over the period from May 2011 to May 2012 only 0.13% of subscribers had chosen a dominated plan (i.e. a plan for which a cheaper alternative with no slower speed would have been available), though this percentage is much higher (almost 7.5%) when looking at a single billing month. Considering usage behaviour over the billing cycle, Nevo et al. report that *"collectively, our results provide support for the hypothesis that subscribers are forward looking. Consumers are responsive, in an economically meaningful way, to variation in the shadow price of usage both within and across billing cycles."*

Annex B National laws, regulation and case-law on zero-rating

B.1 United States

Although the U.S. had a head start in the public debate on net neutrality, the country's current regulatory regime governing zero-rating is still open to interpretation and legal uncertainty. From a regulatory perspective, net neutrality issues, also including zero-rating, are governed by the FCC's Open Internet Order (the "Order"), adopted on 26 February 2015 and applying from 12 June 2015.¹⁷⁸

Briefly, the Order lays down three "Bright Line Rules" for broadband access providers, which prohibit:

- (a) blocking of access to legal content, applications, services, or non-harmful devices;
- (b) throttling, (*i.e.*, impairing or degrading lawful Internet traffic) on the basis of content, applications, services, or non-harmful devices, and
- (c) paid prioritization, *i.e.*, "directly or indirectly favor[ing] some traffic over others, including through use of techniques such as traffic shaping, prioritization, resource reservation, or other forms of preferential traffic management, either (a) in exchange for consideration (monetary or otherwise) from a third party or (b) to benefit an affiliated entity."

On its face, the prohibition of paid prioritization would seem to also extend to zero-rating. However, this is not the case – and zero-rating continues to be offered and is indeed fairly common in the US. The FCC has decided it would be inappropriate to apply a bright line rule to flatly prohibit or approve all zero-rating plans (which the FCC refers to as "sponsored data plans"). Instead, it has reached the following conclusion in paragraph 152 of the Order:

"We are mindful of the concerns raised in the record that sponsored data plans have the potential to distort competition by allowing service providers to pick and choose among content and application providers to

¹⁷⁸ Report and Order on Remand, Declaratory Ruling, and Order, In the Matter of Protecting and Promoting the Open Internet, available here: https://apps.fcc.gov/edocs_public/attachmatch/FCC-15-24A1.pdf.

feature on different service plans. At the same time, new service offerings, depending on how they are structured, could benefit consumers and competition. Accordingly, we will look at and assess such practices under the no-unreasonable interference/disadvantage standard, based on the facts of each individual case, and take action as necessary."

This standard is discussed in paragraphs 133-137 of the Order and is defined as requiring that:

"Any person engaged in the provision of broadband Internet access service, insofar as such person is so engaged, shall not unreasonably interfere with or unreasonably disadvantage (i) end users' ability to select, access, and use broadband Internet access service or the lawful Internet content, applications, services, or devices of their choice, or (ii) edge providers' ability to make lawful content, applications, services, or devices available to end users. Reasonable network management shall not be considered a violation of this rule."

There are several factors the FCC is going to rely on it applying this standard, including end-user control; competitive effects; consumer protection; effect on innovation, investment, or broadband deployment; free expression; whether the practice in question is "application agnostic"; and whether it conforms to best practices and technical standards adopted by open, broadly representative, and independent Internet engineering, governance initiatives, or standards-setting organization. The outcome of any assessment based on such broadly defined criteria seems very discretionary. In June 2015, FCC described a process for its grant of an "advisory opinion", upon request, on a future zero-rating or other plan's compliance with net neutrality rules. The FCC may later rescind such opinions, but without retroactive effect.

The reasons for legal uncertainty do not end here. According to the FCC, the "no-unreasonable interference/disadvantage standard" is based on Section 706 of the Communications Act (among other provisions), but the FCC has also reclassified broadband providers as "Title II telecommunications carriers." For background, these US-specific technicalities go back to the January 2014 decision of the U.S. Court of Appeals for the D.C. Circuit in *Verizon v. FCC* which invalidated the FCC's net neutrality rules at the time. However, the court gave the FCC two options to regulate net neutrality: (a) rely on Section 706 of the Communications Act to impose restrictions on broadband networks to promote net neutrality, as long as such restrictions do not amount to "common carrier" obligations or (b) reclassify broadband providers as "Title II" common carriers. The FCC has relied on both of these legal bases in its Order, but this has been challenged by broadband providers before the US courts. A

Federal Appeal Court decision has upheld the FCC rules, but this was again challenged by the broadband providers, who are asking for an “*en banc* hearing” (i.e., before the entire bench) before the U.S. Court of Appeals.

Last but not least for present purposes, it should be clear from the above that antitrust considerations, as such, play a limited role, as just one among several possible criteria guiding the FCC’s case-by-case assessment of zero-rating. The FCC has referred, in this context, to the incentives broadband providers have “*to interfere with and disadvantage the operation of third-party Internet-based services that compete with the providers’ own service.*”¹⁷⁹ In examining the effect on competition of a given zero-rating practice, the FCC will thus also review the extent of the relevant entity’s vertical integration as well as its relationships with affiliated entities. But outside such a situation (which is not necessarily an issue in zero-rating practices), the FCC does not seem to anticipate antitrust issues.

Outside this broadly defined and still uncertain framework for regulatory intervention by the FCC, zero-rating practices do not yet seem to have called for “pure” antitrust interventions by the US antitrust authorities (the FTC and the DOJ) or courts. The bar for a real antitrust case in this context is high: the US Supreme Court has repeatedly affirmed that vertical agreements are generally legitimate in the absence of market power.¹⁸⁰

Merger reviews can provide an opportunity for antitrust authorities to request remedies that are defined on a more discretionary basis. Thus a condition for the approval of AT&T’s acquisition of DirecTV in 2015 was that AT&T should not favour DirecTV shows over other content in connection with AT&T customers’ broadband data plans. Even in that case, however, the obligation was based on the FCC’s policy under its Order, rather than US antitrust rules or the HSR Act.

B.2 Canada

The legal position on zero-rating in Canada is work-in-progress. Canada’s main net neutrality rules are Section 27(2) (no unjust discrimination) and Section 36 (no interference with content) of the Telecommunications Act, which pre-date the Internet. Zero-rating seems to be less common, and has not been clearly prohibited.

¹⁷⁹ Order, paragraph 140.

¹⁸⁰ *Leegin Creative Leather Prods. Inc. v. PSKS, Inc.*, 551 U.S. at 898; *State Oil Co. v. Khan*, 522 U.S. 3, 17–19 (1997).

A possible leading precedent has arisen in the Videotron “Unlimited Music” case, which is currently pending before the courts. Once resolved, it could help clarify the rules. The service, made available to subscribers on Videotron’s more expensive wireless plans, “zero-rates” usage of certain music streaming platforms which, by December 2016, included 17 different applications, such as Apple Music, Spotify, Google Play Music, Stingray Music, Bandcamp, Tidal and Napster. Partly in response to complaints against this service, the Canadian Radio-television and Telecommunications Commission (CRTC) has announced that it is going to investigate different pricing practices for wired and wireless data plans by way of a public hearing starting on 31 October 2016.

The public hearing has not, reportedly, led to any solid conclusions, but has given various stakeholders an opportunity to express their opinions on the subject of differential pricing.¹⁸¹

The eventual outcome of the Videotron controversy is likely to depend on Canada-specific issues of unbundling broadcasting ownership, broadcasting vs. telecoms rules and competence, and the role of Canada’s national content policies.

Canada’s antitrust authority, the Competition Bureau, released its response to this CRTC consultation on 29 June 2016.¹⁸² As regards zero-rating, the Bureau made the following comments:

- Zero-rating is one among different types of differential pricing. In certain circumstances, differential pricing can harm competition by (i) preventing the launch of innovative new services, and distorting competition “for” the market. While this type of differential pricing benefits some and injures others, on balance, it has an overall negative effect because of the economic harm (*i.e.*, deadweight loss) it generates.
- Differential pricing that does not favour affiliated content is a legitimate form of competition that should not be prohibited. When an ISP favours unaffiliated content, it does so in an effort to enhance its competitive offering to entice consumers to switch to its Internet services from competing services. According to the Bureau, this is competition at work.
- Other types of differential pricing that do not affect competition should also be permissible. For example, zero-

¹⁸¹ See <http://mobilesyrup.com/2016/12/01/videotron-adds-apple-music-to-its-unlimited-music-service/>

¹⁸² See <http://www.competitionbureau.gc.ca/eic/site/cb-bc.nsf/eng/04113.html>. For the full text, see <http://www.competitionbureau.gc.ca/eic/site/cb-bc.nsf/eng/04108.html>.

rating applications that enable consumers to monitor data usage is only problematic if an ISP does so in order to favour its affiliated application versus a third-party option. Similarly, zero-rating services during a particular time period is also unlikely to harm competition, unless it somehow confers an advantage on affiliated content.

B.3 India

India's negative response to zero-rating has been largely a policy reaction to its very public conflict with Facebook. Three zero-rated options were being offered in 2015, by both Internet.Org, owned by Facebook using the Reliance network, and Airtel (the largest mobile IAP in India with 226 million customers at April 2015). Facebook's Internet.Org is a "walled-garden" service, offering free access to a limited number of websites, which Facebook has rolled out in several less developed countries.

Internet.Org turned out to be particularly controversial in India, amid public pressure for at least *ex ante* control of all zero-rating. Although Facebook made the terms of Internet.Org more transparent in May 2015, its partnership with Reliance for the delivery of Internet.Org was suspended on 24 December 2015 by Reliance, based on a request from the regulator, TRAI. Facebook then tried to raise the tone, but this has evidently backfired and the resulting regulations ban zero-rating by both Freebasics via Reliance, as well as domestic network Airtel's own zero-rated offer. Those offers that subscribers have already received are permitted to continue for six months (to August-September 2016).

B.4 Norway

Norway has followed a "co-regulatory" approach to net neutrality, based on a collective agreement on a set of guidelines between the telecoms regulator (Nkom) and ISPs, content providers and consumer organizations. Compliance with these guidelines has been voluntary, but the Norwegian ISPs have followed them since 2009, thus providing neutral Internet access except as regards certain traffic management techniques.

In a blog post on 18 November 2014,¹⁸³ Frode Sørensen, Senior Advisor at Nkom, commented that zero-rating would be infringing

¹⁸³ Available on <http://eng.nkom.no/topical-issues/news/net-neutrality-and-charging-models>.

the above guidelines. He then added: *"There are of course arguments in favour of zero-rating that make the method seem quite fair. As consumers, we may find it advantageous that we do not have to pay (extra) for a particular type of traffic. Nevertheless, zero-rating lead to selected traffic from the Internet service provider itself or affiliated providers being favoured above other traffic. And this is exactly the kind of situation net neutrality aims to avoid – allowing the Internet service provider to decide how we use the Internet. Instead, the Internet should remain an open, neutral platform for all types of communication."*

Therefore, it can be assumed that, for the time being at least, Norway belongs to the "hard core" of pro-net neutrality European countries that effectively ban zero-rating. This may need to be reviewed in the near future, to align the country's regime with Regulation 2015/2120 and its interpretation by BEREC. Under the circumstances, this renders a discussion of the possible implications of zero-rating under competition law in Norway redundant. In any event, the substance and interpretation of that law would normally be similar to those in other EU countries, and strongly influenced by the Commission's relevant views.

B.5 The Netherlands

The Netherlands were the first European country to formally introduce mandated net neutrality, in 2012, through Section 7.4a, paragraph 3 of the Dutch Telecommunications Act, which entered into force on 1 January 2013. Pursuant to this provision, providers of Internet access services may not make tariff levels of Internet access services dependent on the services and applications provided or used via these services.

More recently, ministry guidelines have clarified that zero-rating is illegal in the Netherlands, but that this might be partly incompatible with the new draft (at the time) EU legislation, *i.e.*, Regulation 2015/2120 on open Internet access.

By decision of 18 December 2014, the Dutch Authority for Consumers and Markets (ACM) imposed fines on KPN and Vodafone, for violation of the national net neutrality rules. More precisely, ACM imposed a €250,000 penalty on KPN for blocking various online services, including Internet calls on its free Wi-Fi hotspots, and thus preventing consumers from using these services. The ACM also imposed a fine €200,000 fine on Vodafone for influencing its subscribers' behaviour by zero-rating them for the data they used to watch the pay TV channel HBO via an

application.¹⁸⁴ This was done through the Vodafone Red subscription, which was combined with a free HBO GO application the subscriber could use for 90 days.

Of the two cases, therefore, only the Vodafone case concerned zero-rating. It was decided based on the straightforward net neutrality obligation of Section 7.4a and a relatively simple analysis, without a need to look further for any antitrust issues, theories of harm, etc. The ACM held that by offering the HBO GO proposition, Vodafone had made the tariffs of internet access services dependent on the services and applications provided via these services. Consumers were paying a different average price for Internet access per MB used when using the HBO GO service as compared to the price they were paying for Internet access without this service. This was sufficient to constitute a violation of Section 7.4a, paragraph 3 of the Dutch Telecommunications Act.

So far, Dutch net neutrality rules have been generally considered stricter and less flexible than the regime introduced through Article 3 of Regulation 2015/2120 and the BEREC Guidelines. The Netherlands have recently introduced changes to the Telecommunications Act that purport to implement Regulation 2015/2120,¹⁸⁵ but the key provision on net neutrality, namely Section 7.4a(3), remains unchanged,¹⁸⁶ which arguably raises a question of this provision's compatibility with EU law.

Apparently relying on this potential inconsistency and the supremacy of EU law, T-Mobile launched its "Music Freedom" service on 10 October 2016, which allows zero-rated access to more than 40 music services.¹⁸⁷ Immediately thereafter, the ACT announced that it was going to investigate Music Freedom's

¹⁸⁴ See <https://www.acm.nl/en/publications/publication/13765/Fines-imposed-on-Dutch-telecom-companies-KPN-and-Vodafone-for-violation-of-net-neutrality-regulations/> and <https://www.acm.nl/en/publications/publication/14310/Fine-on-Vodafone-for-violation-of-net-neutrality-rules/>.

¹⁸⁵ "Wet van 12 oktober 2016 tot wijziging van de Telecommunicatiewet ter uitvoering van de netneutraliteitsverordening" (Stb. 2016, 409) , available here: <https://zoek.officielebekendmakingen.nl/stb-2016-409.html>.

¹⁸⁶ "Aanbieders van internettoegangsdiensten stellen de hoogte van tarieven voor internettoegangsdiensten niet afhankelijk van de diensten en toepassingen die via deze diensten worden aangeboden of gebruikt." ("Providers of Internet access services shall not make their charges for Internet access services dependent on the services and applications which are offered or used via said services.")

¹⁸⁷ For the full list of the available music services see here: <http://www.t-mobile.com/offer/free-music-streaming.html>.

compatibility with the Telecommunications Act's net neutrality rules.¹⁸⁸

At this stage, both sides seem keen to obtain a precedent-setting authoritative clarification on the extent to which Dutch legislation may preserve its strict net neutrality rules. Eventually, the dispute may need to be resolved before the EU Court of Justice.

None of the reported zero-rating cases in the Netherlands seems to have been argued based, in whole or in part, on competition law arguments and concerns.

B.6 Slovenia

Slovenia is the other EU country with net neutrality legislation, found in Article 203 of the Electronic Communications Law 2012. In particular, its paragraphs 3 to 5 provide that:

"(3) Network operators and internet service providers shall make every effort to preserve the open and neutral character of the internet such that they do not hinder, withhold or slow down internet traffic at the level of individual services or applications, or take measures to degrade these services or applications, except in the event of:

- 1. urgent technical measures to secure the undisturbed operation of networks and services (e.g. avoidance of network congestion);*
- 2. urgent measures to preserve the integrity and security of networks and services (e.g. removal of undue excessive load on a transmission medium/channel);*
- 3. urgent measures to restrict unsolicited communications under Article 158 of this Act;*
- 4. a court decision.*

(4) The measures referred to in points 1, 2 and 3 of the preceding paragraph must be proportionate, non-discriminatory, subject to a time-limit and carried out to the extent necessary to achieve their objectives.

(5) Services provided by network operators and internet service providers may not be based on services or applications offered or used via internet access services."

In July 2014, the National Council for Electronic Communications complained against zero-rating practices before AKOS (Slovenia's

¹⁸⁸ See the relevant press release on <https://www.acm.nl/en/publications/publication/16467/ACM-to-investigate-T-Mobiles-new-service/>.

telecom NRA) and Slovenia's competition authority (Slovenian Competition Protection Agency). In its non-binding decision, the competition authority held against a *per se* prohibition of zero-rating, as potentially detrimental rather than beneficial for consumers. Instead, it argued for an assessment of the legality of such offers based on their effects.

By contrast, AKOS adopted four decisions against zero-rating, between 24 January and 20 February 2015. The first two prohibited the offering of certain zero-rated services by Telekom Slovenia and SI Mobile. The two other decisions were directed against a zero-rated mobile TV service and web portal provided by AMIS (Mobia TV) and Tušmobil (Tuškamra), respectively.

The ISPs concerned launched appeals before the Administrative Court against these decisions, which they won, on 12 July 2016. The court reportedly held that AKOS misinterpreted the Electronic Communications Law: the latter required network operators and Internet service providers to preserve the open and neutral nature of the Internet and not restrict, delay or slow down Internet traffic at the level of individual services or applications. However, this did not extend to a blanket prohibition of different tariffs for different services. Further, AKOS ignored the economic analysis of the Competition Authority, which the Court considered pertinent. The cases were therefore referred back to AKOS for a renewed assessment based on these considerations.

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