

THE EFFECTS OF ZERO RATING

OECD DIGITAL ECONOMY
PAPERS

July 2019 **No. 285**



Foreword

This report on “The Effects of Zero Rating” was prepared by the Working Party on Communication Infrastructure and Services Policy (WPCISP). It examines zero rating, i.e. when a predetermined type of traffic received by consumers is not counted against the download allowance of the Internet access service. It looks at the economics and issues of zero rating and compares regulatory approaches across several countries. This paper was approved and declassified by written procedure by the Committee on Digital Economy Policy on 3 May 2019 and was prepared for publication by the OECD Secretariat. The report was drafted by Martin Cave (London School of Economics), Sam Paltridge and Verena Weber from the OECD Secretariat. The authors received contributions from Maximilian Reisch from the OECD Secretariat and WPCISP delegates regarding their country experiences. It was prepared under the supervision of Sam Paltridge and Verena Weber.

This publication is a contribution to the OECD Going Digital project, which aims to provide policymakers with the tools they need to help their economies and societies prosper in an increasingly digital and data-driven world. For more information, visit www.oecd.org/going-digital. #GoingDigital

Note to Delegations:

This document is also available on O.N.E. under the reference code:

DSTI/CDEP/CISP(2018)4/FINAL

This document, as well as any data and any map included herein, are without prejudice to the status of or sovereignty over any territory, to the delimitation of international frontiers and boundaries and to the name of any territory, city or area. The statistical data for Israel are supplied by and under the responsibility of the relevant Israeli authorities. The use of such data by the OECD is without prejudice to the status of the Golan Heights, East Jerusalem and Israeli settlements in the West Bank under the terms of international law.

© OECD 2019

You can copy, download or print OECD content for your own use, and you can include excerpts from OECD publications, databases and multimedia products in your own documents, presentations, blogs, websites and teaching materials, provided that suitable acknowledgement of OECD as source and copyright owner is given. All requests for commercial use and translation rights should be submitted to rights@oecd.org

Table of Contents

Foreword	2
Executive summary	4
The Effects of Zero Rating.....	5
Introduction.....	5
Zero rating and the economics of zero rating	5
Considerations applying to zero-rated offers	8
Zero rating and competition	8
Zero rating and sponsored data	10
Zero rating, partner choice and innovation	11
Zero rating, traffic management and consumer choice	12
Zero rating and MVNOs/resellers	13
Zero rating and roaming.....	14
Regulatory and policy approaches toward zero rating.....	15
Europe	15
The United States and Canada	20
Japan and Korea	22
Australia and New Zealand	23
Latin America.....	25
India.....	27
The effects of regulations in relation to usage across economies: some partial evidence in relation to Facebook usage	28
Conclusion	30
References	33

Tables

Table 1. Facebook traffic volume and zero rating.....	29
---	----

Boxes

Box 1. Zero rating and Facebook	7
Box 2. The WowBox in Bangladesh and its effects on creating demand for paid data	9
Box 3. BEREC Guidelines on zero rating (Paragraphs 40 to 45).....	16
Box 4. Traffic continuation to zero-rated applications once the data limit is reached. Enforcement cases in Sweden, Hungary and Portugal	18
Box 5. BEREC's 2018 Consultation on the EU Regulation and BEREC Guidelines.....	20

Executive summary

This report examines zero rating, i.e. when a predetermined type of traffic received by consumers is not counted against the download allowance of the Internet access service. It looks at the economics of zero rating and issues such as the effects of zero rating on competition and innovation. It also compares regulatory approaches across several countries.

The discussion of zero rating is embedded in wider net neutrality debates, which are often typified by disagreements over the goals the policy is intended to pursue. Some take a mainly economic approach, and focus upon the associated goals of economic efficiency and welfare maximisation. Others are more concerned, or additionally concerned, with the wider political, social or plurality issues, which arise in connection with flows of information.

In terms of economics, the welfare effects of zero rating on consumers can be favourable or unfavourable. While zero rating benefits consumers by granting unmetered access to selected services and applications, it may have the effect of entrenching dominance in either or both of the markets for communication services and for the provision of content and applications. Outcomes may vary in different markets as much depends on the situation in the particular national markets.

As the size of data caps increases, for example through increased competition or a decrease in transit prices, zero rating becomes less important as a means to attract consumers. It is important to note that, in some countries, zero rating may have been a way of transitioning to offers with larger data caps or without limit. Fostering competition at the ISP level is thus important to address potential negative effects of zero rating in the medium term.

In the OECD and elsewhere, governments are taking a number of different approaches towards zero rating. While some countries do not have specific zero rating policies and regulation, others have established network neutrality laws and regulation that cover zero rating matters. Of the countries with some form of network neutrality regulation, many take a case-by-case approach in assessing the different offers available in the national market. India has one of the strongest approaches by banning zero-rated offers and only providing some exemptions for services such as remote surgery. The findings from BEREC's consultation on the operation of the European Regulation and Guidelines, published in December 2018¹, provide a comprehensive discussion of the operation of a variety of controls on zero rating in the EU.

Regulators in markets with limited Internet Service Provider (ISP) access or content and applications competition should be vigilant and be prepared to carefully examine the effects of zero rating on competition.

The Effects of Zero Rating

Introduction

Network neutrality, sometimes shortened to ‘net neutrality’, deals with issues related to non-discriminatory treatment of Internet traffic and the ability of users of the Internet to access content and applications of their choice. The issue can be divided into two broader areas (OECD, 2015^[1]). One deals with factors that affect the ability of users to access content and applications, such as different levels of quality, degradation or blocking of access, or differential pricing. It focuses on the link between the user and the Internet Service Provider (ISP). The second area relates to commercial arrangements between network operators and content providers (CPs).

Different traffic management practices by operators, pricing models such as ‘zero rating’, and the use of ad blocking have focused the interest and actions of policy makers and regulators on the first area. This may be because the IP interconnection market has generally worked well in the face of the Internet’s rapid and diverse growth (OECD, 2013^[2]). Therefore, for the most part this document focuses on one aspect of the ‘net neutrality’ debate, by examining developments in the area of zero rating.

It must be borne in mind that net neutrality debates are often typified by disagreements over the goals the policy is intended to pursue. Some take a mainly economic approach, and focus upon the associated goals of economic efficiency and welfare maximisation. Others are more concerned, or additionally concerned, with the wider political, social or plurality issues, which arise in connection with flows of information. Such differences may explain why net neutrality debates sometimes seem to be between stakeholder groups talking at cross-purposes. Much of the analysis below takes a broadly economic approach, but countries’ policies on zero rating are often best explained when viewed through the lens of wider objectives.

Zero rating and the economics of zero rating

Zero rating occurs when a predetermined type of traffic received by consumers is not counted against a customer’s download allowance of the Internet access service, while other traffic is so counted. It first emerged on fixed broadband access after the turn of the century, particularly in countries where there were low data caps. While such caps have become much less prevalent for fixed broadband access, in most OECD countries, they are widely used for mobile broadband access services.

ISPs zero rate selected content of their own, content belonging to other network operators or content of CPs. These elements are not counted against the data caps of their mobile or fixed broadband plans. The offers include, for example, zero-rated access to social media applications, such as WhatsApp, Facebook or Twitter or to music or video streaming applications, such as Deezer, Spotify or YouTube. Some operators also offer zero-rated mobility apps including applications such as Waze, Moovit or Google Maps². Still others zero rate social services such as Childline in the United Kingdom or the ‘Siyakha’ platform for school pupils and job seekers in South Africa.

While some of the offers grant zero-rated access only to a single application, others include access to several applications of the same category or all applications from that same category. One example is the Free Basics initiative of Facebook, which acts as a platform to include

several zero-rated applications (Box 1). Another example is to zero rate entire categories of services, such as video. In the United States, one mobile provider offered zero-rated video streaming in which CPs that met certain technical requirements, with primarily lower resolution standards, had their content zero-rated by the mobile provider under certain mobile data plans. The offer enabled access to be unmetered for these participating video services. This offer might be seen as having paved the way for an unlimited offer in response to further competition in the United States.

However, it has to be emphasised that there is some disagreement over whether zero-rated offers tend to delay or, alternatively, pave the way for larger data allowances or flat rates. The more widely observed instance of zero rating arises when particular networks, such as those providing content, form an agreement with a particular ISP. The nature of the agreement varies across different jurisdictions, partly as a result of different legal and regulatory requirements and partly as a result of the commercial circumstances prevailing in different markets. Retail mobile markets are also in different states of development in ways which depend upon disposable household income, the diffusion of smart phones, popular tastes, the competitiveness of the market and so on.

Customers can also bypass reliance on their mobile ISP for transmission by accessing Wi-Fi services from other providers. The degree to which this alternative is available and used varies from country to country, but it represents a powerful alternative.

The further question is who pays for zero rating. There are three candidates, which are not mutually exclusive. A Content Provider can pay an ISP for the latter's revenue foregone, via a method known as 'sponsored content'. Alternatively, an ISP can decide not to charge for the download of predetermined content, in order to make their services more attractive. On the other hand, consumers can pay, most obviously if the ISP levies an additional charge for zero-rated options, as Vodafone does for its Vodafone Passes discussed below.

More subtly, other consumers may pay. This might occur in the following way. Zero rating is a form of price discrimination: the same or similar download services are charged both at the normal rate and at a price of zero. This gives suppliers an additional opportunity to shape their offerings in ways which take account of taste differences among consumers – allowing screening of consumers who differ in their valuation of different types of content delivered at different quality levels (Krämer and Peitz, 2018^[3]). This means that price discrimination can affect different groups of consumers in different ways. Thus users of zero-rated services might benefit from its introduction, while non-users may find that their prices rise or download limits fall. The introduction of zero rating may also involve upselling as the ISP could limit zero-rated offers to more expensive plans. The overall consumer welfare effect of such an outcome is likely to be ambiguous (Belleflamme and Peitz, 2015^[4]). Identifying such effects also faces serious difficulties.

This explains why, in most jurisdictions, such price discrimination is not automatically considered harmful economically. Rather, at competition authorities and in regulatory arenas, only a subset – “unreasonable discrimination” – is prohibited or impugned.

Box 1. Zero rating and Facebook

In recent years, Facebook has had a number of initiatives that involve elements of zero rating in some countries. One of the first was “Internet.org by Facebook”, the company’s project, together with partners, to make available unmetered data to certain services, including those from its own offerings. Founded in 2013, the app delivering services was rebranded under the name ‘Free Basics’ in 2015. This app acts as a platform for included services, which are treated in a different manner than they would be as standalone apps. In the Google Play store the app is described in the following manner:

“With Free Basics, you can connect to Facebook and other websites for free using a SIM card from a qualifying mobile operator. Stay in touch with friends and family, search for jobs, check out news and sports updates, and get health information – all without data charges.”

At the time of the launch, Facebook said that ‘Internet.org’ provided the means to introduce new users with low-incomes to explore the benefits of Internet data connection. Facebook has said that in their experience, over 50% of people who use Internet.org pay for data and accessed the broader Internet within 30 days (Internet.org, 2018^[5]).

Internet.org also attracted criticism with opponents of the scheme saying it was anti-competitive given that it resulted in some services being unmetered while users would have to pay data charges to interact with the services of rivals to those of the firms included. In 2015, for its part, Facebook endeavoured to counter this criticism by opening Free Basics to any developer meeting its technical requirements (Internet.org, 2018^[6]). Facebook said the programme was also available to all mobile operators in any particular country.

Facebook maintains a list of over 60 countries in which Free Basics is available together with the mobile operators with which they partner (Internet.org, 2018^[7]). Mexico is the only OECD country, with the partnering operators being Telcel and Virgin Mobile, an MVNO. Other countries in which there is more than one mobile operator offering the service include, by way of example, Ghana, Indonesia, Philippines, Rwanda and Thailand. Meanwhile, although they are not listed as countries with operators participating in Free Basics, there are other countries where some operators ‘zero rate’ specific services such as Facebook. Examples of these countries include Brazil, Malaysia and Vietnam (Prepaid Data SIM Card Wiki, 2018^[8]). In Vietnam, for example, Viettel zero rates Facebook and YouTube under some of its tariff options.

In some OECD countries, fixed and mobile operators have long used zero rating in their tariff plans and some include Facebook. Zero rating offers have existed longest in countries such as Australia and New Zealand where they emerged among the first fixed broadband offers (OECD, 2001^[9]). In these and other countries, Facebook Zero was a forerunner to Facebook Basics. Facebook Zero was a programme in which mobile operators offered their customers a stripped down (text only) version of its service without additional data charges. Examples of countries where this service was offered, in many ways as forerunners to wider smartphone take up, included Canada, France and Germany. Some mobile operators continue to offer zero rating of Facebook such as Orange Belgium as do some in Denmark, Hungary, Ireland, Italy, Latvia, Lithuania, Luxembourg, Poland, Portugal, Spain and Sweden.

Focussing on the interaction of CPs with ISPs, both share a common interest in maximising their combined profits over time, but they are in conflict over how to negotiate the division of that total between them. It might be conjectured, from first principles of economic analysis, that the outcome of the negotiation depends upon the definition of the product (in particular the degree of exclusive access to zero rating which the CP or ISP is willing to supply to its partner) and on the bargaining power of the two sides, which is related to the market power which they exercise in their relevant markets³ (dotecon, aetha and Oswell&Vahida, 2017^[10]).

These discussions are overlaid upon the arrangement under which ISPs (some of which are also frequently CPs) exchange traffic – on a (barter) peering basis, a paid transit basis, or in some other fashion. As described below, some ISPs and some of the relevant CPs are likely to embrace zero rating precisely because it strengthens their respective market positions. This might benefit consumers in both markets, but if either is already tainted by dominance or at risk of becoming so, then zero rating can aggravate the situation. If the ISP is also a CP, i.e. if it is vertically integrated, outcomes may be even more adverse, in particular if the provider decides to prioritise its own content over third party content.

This adds up to a combination of economic interrelations among the three relevant parties – CPs, ISPs and consumers – which is complex to fully unravel for the purposes of policy-making, even before the non-economic objectives have been added into the mix.

Considerations applying to zero-rated offers

There are many aspects of zero-rating that merit analysis. One such issue, which has not yet been investigated here in detail, is that of zero rating in emerging economies. This is embedded in the wider question of whether the use of zero rating by ISPs, sometimes in partnership with other communication platforms, may affect the evolution of a market containing actual or potential users with very low-income levels. In this regard, zero rating may also affect the emergence of content and application providers (in particular in developing countries).

Six aspects are considered here. That being said, there is no presumption made here that any of them requires any regulatory or other intervention. The evidence base for firm cross-country quantitative conclusions is in any case strictly limited.

Zero rating and competition

When evaluating the effect of zero rating on competition, it is important to highlight that the effects on competition can occur at two different levels: at the ISP (or network) level and at the level of the CP (the application level). At both levels, zero rating can potentially have both positive and negative effects.

A potentially positive effect of zero rating, at the ISP level, for example, may occur in emerging markets where bundles are often offered to users to encourage use of data for the first time. These offers may introduce consumers to the value of online services and may provide incentives for them to start buying additional data packages, thereby enhancing broadband adoption. In addition, operators offering zero-rated content may increase their market share. The WowBox in Bangladesh can be regarded as such an example (Box 2). However, zero rating may also have a negative effect on ISP competition, if it is used by an incumbent offering free access to services which might not be replicable by other ISPs.

Box 2. The WowBox in Bangladesh and its effects on creating demand for paid data

The WowBox service was launched in May 2015 in Bangladesh by Grameenphone. The app works as a distribution channel for Grameenphone and local partners. Any service within the app is zero-rated. The content subscribers can access ranges from news, sporting results, games to music streams. In addition, users get offered hotel and restaurant deals as well as specific Grameenphone offers.

If users buy services through the WowBox they can obtain credits for further data packages, which consist of either free (for instance 20 MB per week) or discounted data allowances to access the Internet. The WowBox serves thus as a platform to access some local content such as news, but also extends to a mobile commerce platform which encourages users to try out further open Internet services through either free or discounted data allowances. In less than half a year after the launch, in October 2015, the WowBox reached 1.5 million users. This user base had grown into five million users in October 2016 with over 1.5 million weekly active users.

The first numbers that Grameenphone released in October 2015 indicated that WowBox generated about 85 000 daily sales of Grameenphone service offerings with the 50MB data and 1-day Facebook data packages being the most popular offers. According to the company, over 20% of daily users purchase a data package the same day. The company further identified a positive effect in terms of average revenue per user (ARPU) when comparing WowBox users versus non WowBox users. Grameenphone announced in October 2016 that it will add additional services and features over the next months.

Sources: (Telenor Group, 2015^[11]) (Dhaka Tribune, 2016^[12])

At the level of the content and application providers (CAPs), zero rating can have implications for competition among CAPs, by offering a competitive advantage to certain providers. It can also have market-expanding effects if the zero-rated content serves as an incentive for consumers to opt for data packages to access the full Internet and thus discover other applications and websites that typically do not compete with the zero-rated apps/content.

In addition, especially in emerging economies, zero rating allows low-income groups to access certain applications without additional charge, which otherwise they may not have been able to afford. These can include access to health or educational services, knowledge platforms such as Wikipedia, local news sites or government information. A further example where zero rating is used to grant access to an important social service can be found in the United Kingdom: The website of *Childline*, a counselling service for children and young people, notes that, for subscribers to one mobile network, ‘using the 1-2-1 counsellor chat will not use up a user’s data or credit!’⁴

Nonetheless, especially in markets with insufficient competition, zero rating may have negative effects on competition between different CPs. It can, for example, support market dominance, if the content of a dominant player is zero-rated while the content of its competitors is not. Consequently, this might impede other companies from entering the market and undermine the benefit of the Internet as an open platform for innovation. Even if a dominant platform opens itself up to other services, it remains in overall control – not subject to the disciplines competition can place on behaviour.

This suggests that zero rating is likely to be a larger issue in less competitive markets and also in those with lower data caps. As the size of data caps increases, for example through increased competition or a decrease in transit prices, zero rating becomes less important for attracting end users. Fostering competition at the ISP level is thus a means of countering potential

negative effects of zero rating in the medium term. In the meantime, regulators addressing the effects of zero-rating need to be vigilant in markets with limited access or content competition. As zero-rated offers as well as market characteristics vary significantly, a case-by-case approach is warranted. This is discussed further in section 4 below with respect to the BEREC guidelines in Europe on net neutrality.

Zero rating and sponsored data

One variation of zero rating is sometimes termed sponsored data. In essence, this means that one party assumes the cost of data being exchanged for another party. There are two categories of sponsored data. The first can occur when an operator zero rates a service such as access to a specific website for a third party (i.e. not their own operator content). The second occurs when an entity reaches an agreement with an operator to zero rate data to access their content or service.

Examples of the first type, where an operator is the sponsor, can be given from Vanuatu and South Africa.

- In Vanuatu, since 2017, the Ministry of Health staff and health workers have had unmetered access to the Vanuatu Public Health Information System (Loop Pacific, 2017^[13]) (VanPHIS2) website application. This follows an agreement between the government and the two mobile operators in the country to zero rate this traffic. In this case the operators are bearing the cost of the traffic, not the government.
- In South Africa, Vodacom's 'Siyakha' platform offers zero-rated portals for school pupils and job seekers. In addition, Vodacom zero rates services to universities for students and staff who are Vodacom subscribers. By October 2017, Vodacom was providing unmetered Internet access to 19 of the 23 South African universities (Sunday Times, 2017^[14]).

The second case of sponsored data occurs when an entity such as a government or a firm pays an operator to zero rate traffic for their users or customers. Several examples can be cited here:

- In New Zealand, the Ministry of Social Development pays the three mobile operators to zero rate usage on its websites (Ministry of Social Development, 2018^[15]). The service is called 'Cheap As Data' and allows people access to online services at little or no cost from their smartphone or other digital devices. The Ministry says the cost has been removed wherever possible, though there are website add-ons that use a very small amount of user data. In most cases, they note, this will cost less than one cent per visit.
- In South Africa, financial institutions such as Standard Bank and First National Bank, have entered into agreements with all mobile carriers in that country so that interactions are zero-rated for their customers (IT News Africa, 2017^[16]; MYBROADBAND, 2017^[17]). Meanwhile, Zando, an online fashion retailer, pays Vodacom to zero rate the use of its services (BIZCommunity, 2018^[18]).

The above examples show how different entities are using zero rating for philanthropic endeavours, to meet policy objectives or for commercial gain. They are all from countries with widespread use of zero rating. It is, however, sometimes challenging to assess the main drivers for such programmes and in many cases there are no doubt multiple considerations involved. This is why a case-by-case assessment of zero-rated categories or offers against a set of principles or regulatory measures is often necessary.

Take, for example, the case where an operator or group of operators zero rate a service in the area of health or education. Such initiatives can be assessed against factors such as whether every operator in a market is involved or if a single operator may gain an unfair advantage if that initiative is not be replicated, such as in the case of an agreement with a public body. At the same time, there may also be unintended outcomes from such arrangements. In the case of the 'Cheap As Data' programme, zero-rated data is available to customers of all network operators but not to those of some MVNOs, though they may provide connectivity to users of the Ministry's services (Ministry of Social Development, 2018^[15]).

As of June 2016 the following providers were not covered with 'Cheap As Data':

- Warehouse Mobile (operating on the 2Degrees network)
- Digital Island, CallPlus/Slingshot, Compass (operating on the Spark network)
- Black+White, Orcon, M2 (operating on the Vodafone network)

The exclusion of these MVNOs is an unintended consequence of how unmetered data is technically made available in New Zealand. But this case is an example of how competitive dynamics could be influenced by a zero rating programme. This is why the capacity to replicate offers that involve the public sector is an important consideration. In the case of South Africa, the examples indicate that while not all offers are offered by every operator, there seems to be no obstacle to anyone in the market replicating the underlying partnerships. On the other hand, if hypothetically all schools and universities in any market collaborated with a single operator, this could be viewed as a barrier to effective competition by other operators.

Zero rating, partner choice and innovation

It is unnecessary to labour the point that a huge amount of innovation comes from the Internet. Net neutrality is said to enhance this effect, which goes wider than the economist's concept of dynamic efficiency. This is expressed in Recital 1 of EU Regulation 2015/2120, which states that:

'[This Regulation] aims to protect end-users and simultaneously to guarantee the continued functioning of the Internet ecosystem as an engine of innovation.'

And von Schewick (2015) writes:

'Most generally, network neutrality rules are intended to preserve the Internet's ability to serve as an open, general-purpose infrastructure that provides value to society over time in various economic and non-economic ways'. (van Schewick, 2015^[19])

A regulator making an assessment of a zero rating offer will find it hard to get reliable evidence on its likely impact either on innovation or on broader social objectives.

An ISP's choice of which CPs to offer zero rating to is presumably driven by self-interest. The study by Dotecon (2017) of zero-rating for DG Comp of the European Commission notes (at page iv) that

'there appears to be little pattern in which major applications are zero-rated across markets..... This suggests that either CAPs [content and application providers] have little influence over whether their applications are zero-rated and the decision is made by the ISPs, or that CAPs do not take a multi-country approach to the

applications they wish to be zero-rated.’ (dotecon, aetha and Oswell&Vahida, 2017_[10])

The Dotecon report also notes that explicit exclusivity of the zero-rating relationship in many cases does not seem to be either imposed on the ISP or offered by the CP. That being said, the propensity for zero-rated services to be confined to established firms likely to attract customers to the ISP must be adverse to some degree for new entrants, including innovators. As a result, competition between incumbent CPs and entrants may be chilled. On the other hand, the increased rewards of success may enhance competition among entrants. As elsewhere, establishing the influence of regulation on innovation is challenging.

One problem is that the period of operation of zero rating in any country has been short, and has been accompanied by many other changes in the working of the Internet, which affect innovation. These cover a field ranging from public subsidy to reducing the revenue threshold which the target in a proposed Internet merger must pass in order to trigger an inquiry.

Zero rating, traffic management and consumer choice

Zero rating is sometimes combined with traffic management. For example, some ISPs offer zero rating of video services under the condition that the video traffic is transmitted in standard definition (SD) quality instead of the quality achievable over the best effort Internet (e.g. high definition, HD). Technically, this is done by a selective throttling of video traffic. In this event, apart from assessing the effects of the zero rating offer as such it has to be also assessed whether the additional traffic management measure (i.e. the throttling) is admissible under the applicable net neutrality rules.

As a starting point, it is important to note that the principal idea behind net neutrality is equal treatment of all data traffic – a bit is a bit, irrespective of its content, its origin or destination. However, basic traffic management is in some instances admissible and common practice even if it requires different treatment of different categories of services (on the basis of their urgency, for example). This may justify qualitative differences in treatment of whole classes of data and prioritising real-time services (like voice). In the EU for example, net neutrality allows for such different traffic management measures if they are based on objectively different technical Quality-of-Service requirements within the general broadband access service, or for so called “specialised services” which require a better quality than achievable over the general best effort Internet (provided that the specialised service does not go to the detriment of the quality of the access service).

Before proceeding, it is worth noting some terms that are used in discussion around zero rating. Offering speed tiers is, for example, a widely used and accepted form of price/quality differentiation and is transparent to users when they choose an ISP. At the same time, the practice of decreasing speeds in an application-agnostic way when a user has exceeded a data cap is also a widely used term. In this case, an ISP, rather than cutting off service, slows the speed to users so that they can continue to receive a minimum level of service. Speed tiers and decreased speed (i.e. also the zero-rated content), in relation to exceeding data caps, are common methods to introduce price/quality differentiation and generally accepted by regulators whereas *discriminatory* throttling (i.e. in an application-specific way), degrading or blocking of selected lawful content is not acceptable. In connection with zero rating, this might mean that this form of throttling would not apply to all traffic, but only in a discriminatory way to the zero-rated traffic. This is forbidden in many countries.

The short-term effect of zero rating may expand demand on network access to some extent. Whether this actually happens can only be answered empirically. However, the possibility

raises the question of how ISPs cope with the increase in this traffic on their network. Most ISPs would probably have enough capacity in the network to be able to carry the additional data traffic. Where this is not the case, operators could expand capacity ahead of time, or simply slow everything down, while seeking to expand capacity. They could also calibrate the amount of traffic they zero-rate in accordance with their capacity, or they could offer a tariff with no quantity limit, but make everything subject to speed tiers that are applied to all traffic ('derate everything'). Finally, they can seek to improve the exchange of traffic with another network if it is the off-net source of the zero-rated content or service, by such means as using multiple exchange points deeper in their network.

ISPs can also implement some combination of the above measures. For example, an ISP could try to optimise its network capacity by selectively throttling zero-rated services. Such discriminatory throttling is forbidden in many countries, among others in the EU. For example, Deutsche Telekom provided a zero-rated offer in Germany where video traffic is throttled and transmitted in standard definition (SD) quality only. The German Regulator (Federal Network Agency) has forbidden this practice in December 2017.⁵ Deutsche Telekom has appealed this decision. Moreover, Vodafone in the United Kingdom offered a tariff which, in return for a fee, allowed customers to consume certain services without depleting their allowance, subject to the provision that the material – whatever its original form – be transmitted in standard definition, i.e. that the throttling is application specific. Following an intervention by Ofcom, this practice was abandoned.⁶

While price discrimination may expand consumption for users of zero-rated services, the flipside may be the effect it may also have for other users (e.g. smaller increases in data caps or potential price increases for those). As pointed out earlier, standard economic analysis suggests that when such changes occur, overall consumer welfare might go either up or down. It is also important to take account of possible adverse effects on the universe of CPs.

In addressing questions about the likelihood of these scenarios (as with other adverse outcomes in the two-sided markets of interest), regard must be given to the competitive environment of the ISPs. If they compete vigorously, download limits should rise, as costs fall, and the significance of zero rating should decline.

There is also the question of whether a degradation of some but not all similar services are a distortion of competition. When done by an ISP with market power in favour of its own content, it is very likely to be so. If the zero rating is combined with lower quality (and the user can choose between the two variants i.e. speed tiers), it seems less problematical on economic grounds. If it is done within an effectively competitive ISP market, in which for example one ISP zero rates service A and another ISP zero rates substitute service B, it may be dealt with better on an ex-post basis. As before, this reasoning is qualified by any consequences on CPs.

Effectively competitive markets are generally those that offer users a range of choices. In Finland, for example, users have the option of paying by speed tiers and unlimited data for all mobile broadband services. There are also other plans available with data caps. It is noteworthy that Finland has the highest data usage per mobile broadband subscription in the world.

Zero rating and MVNOs/resellers

In several jurisdictions, MVNOs, for the most part relying on commercial agreements with MNOs, enjoy in aggregate a significant minority market share of the retail market. This raises the question of whether they are able to replicate the offerings of the mobile network operators

(MNOs) on which they sit, or whether they are placed at a commercial disadvantage by zero rating. Certainly, in countries where zero rating is permitted, there are many examples of MVNOs offering plans with zero-rated elements of service, which suggests it has not been a problem in those locations. Note here that the question of the influence of zero rating on roaming separately is dealt with below.

This comes down to the question of how unlike MVNOs are from MNOs, especially in meeting the costs of zero-rating. Unsurprisingly, this depends on the nature of the contract between the two. If the MVNO simply buys wholesale services on demand, it faces a marginal cost of meeting the needs of zero-rated consumption equal to the per unit contract price for delivery, while the MNO's marginal cost is the opportunity cost of using its own network, which is mostly zero but can be higher at periods of peak congestion.⁷ If the MVNO buys capacity for a period in advance at a fixed price, however, then it faces the same variable opportunity cost as the MNO. In other words, its situation is close to that of an MNO with a given capacity.⁸

In practice, such MVNO contracts may be the exception, so the normal arrangement may be one that places MNOs in a more favourable position vis-à-vis MVNOs, which may nonetheless be obliged to match MNO zero rating offers. This will depend on the balance of negotiating strength between individual MNOs and MVNOs as well as the number of MNOs in a given market.

Overall, both MVNOs and resellers depend on an MNO in order to be able to offer a competing zero rating product. In a case where a high degree of market power is exercised by an MNO, unless an MVNO or reseller can legally request the MNO to grant it access to an unlimited data volume at a competitive price at the wholesale level (in case of MVNOs) or to grant the right to distribute the MNO's zero rating product (in case of resellers), there is a risk that competition will be abated in the supply of zero rating products. Establishing whether this occurs would have to be done on a case-by-case basis, and an intervention would have to be justified by a regulatory impact assessment.

Zero rating and roaming

When the supplier of a mobile service subcontracts its execution at the network level to a separate operator, that provision has to be incorporated in a value chain which is already quite complex. When the ISPs involved are subject to access and interconnect arrangements set and enforced by the same national regulator, there is often a ready-made regulatory framework of charges in place. In this case, an MVNO offering a zero-rated contract to an end-user will know what wholesale charge it will have to pay to provide the service. Where that wholesale price is determined by commercial agreement, the supplier has to form a conjecture as to what that price might be.

This is more complex in the case of international roaming, where wholesale and retail charges have often been high. In some cases, they may be restricted for certain country pairs covered by an international trade agreement such as the Comprehensive and Progressive Agreement for Trans-Pacific Partnership (CPTPP), but the provisions of such agreements often lack precision.

There is a very simple and effective means of eliminating this problem, which applies almost universally: excluding content downloaded abroad from the scope of zero-rated provision. Customers then retain the right to download abroad at the international roaming rate specified in their contract.

This issue is more complicated in the European Union where additional regulation is imposed by the combination of the Net Neutrality and ‘roam like at home’ Regulations. Put simply, the Commission Implementing Regulation (EU) 2016/2286 of 15 December 2016, approved in accordance with Article 6d of the Roaming Regulation, sets out that: "With the abolition of retail roaming surcharges in the Union, the same tariff conditions apply for the use of mobile services while roaming abroad in the Union and at home (i.e. in the country of the mobile subscription of the customer) (...)" (Recital 5). This is subject to a ‘fair use’ condition under which roaming customers are entitled to have access to regulated retail roaming services at domestic price during periodic travel in the Union under the same conditions as if such services were consumed domestically (Article 3).⁹ The enforcement of these rules by selected European Union national regulators is discussed in the next section.

Regulatory and policy approaches toward zero rating

This section discusses developments in zero rating in several jurisdictions, chosen to illustrate the variety of approaches. It starts with the European Union regulation of net neutrality, before discussing developments in the United States, Canada, Australia, New Zealand and Latin America with a focus on Colombia, and selected non-OECD countries.

Europe

Zero-rated offers are common in Europe and can be found in 27 countries. The offers most frequently reported by national regulators are those including music or video streaming and social networking (BEREC, 2018^[20]).

The European Union regulation of net neutrality applies to 31 countries (including EEA countries), which is why it is of particular interest. It is contained in Regulation EU 2015/2120 on Open Internet Access, which is supplemented by BEREC Net Neutrality Guidelines which came into force in 2016 (Box 3). Article 3, paragraphs 1 to 3 of the Regulation covers matters germane to zero rating. Paragraph 1 sets out the right of end-users to access and distribute information and content of their choice via their Internet access service. Paragraph 2 provides that ISPs may enter into agreements with end-users on commercial and technical conditions and the characteristics of Internet access services, provided those commercial practices do not undermine the end-users rights in the first paragraph. Paragraph 3 requires that “providers of Internet access services shall treat all traffic equally, when providing Internet access services, without discrimination, restriction or interference, and irrespective of the sender and receiver, the content accessed or distributed, the applications or services used or provided, or the terminal equipment used.” Note that there is no explicit reference to zero rating.

The BEREC Net Neutrality Guidelines on the implementation of the regulation provide guidance for national regulators on how to assess zero rating offers as a particular commercial practice. The guidelines highlight that based on the variety of zero-rated offers, national regulators should carefully analyse whether ISPs limit the exercise of rights of end-users, to what extent choice is restricted as well as the competition implications of the zero-rated offers in question. Overall, they suggest a case-by-case approach. The criteria for such a case-by-case approach are shown in Box 4. In addition, the Guidelines specify that zero rating offers where all applications but the zero-rated applications are blocked or slowed down once the data cap of the data plan is reached would infringe Article 3, paragraphs 1 and 3, as this would constitute a form of discriminatory traffic management.

Box 3. BEREC Guidelines on zero rating (Paragraphs 40 to 45)

There is a specific commercial practice called zero rating. This is where an ISP applies a price of zero to the data traffic associated with a particular application or category of applications (and the data does not count towards any data cap in place on the IAS). There are different types of zero rating practices which could have different effects on end-users and the open Internet, and hence on the end-user rights protected under the Regulation.

A zero rating offer where all applications are blocked (or slowed down) once the data cap is reached except for the zero-rated application(s) would infringe Article 3(3) first (and third) subparagraph (see paragraph 55).

The ISP could either apply or offer zero rating to an entire category of applications (e.g. all video or all music streaming applications) or only to certain applications thereof (e.g. its own services, one specific social media application, the most popular video or music applications). In the latter case, an end-user is not prevented from using other music applications. However, the zero price applied to the data traffic of the zero-rated music application (and the fact that the data traffic of the zero-rated music application does not count towards any data cap in place on the IAS) creates an economic incentive to use that music application instead of competing ones. The effects of such a practice applied to a specific application are more likely to “undermine the essence of the end-users’ rights” or lead to circumstances where “end-users’ choice is materially reduced in practice” (Recital 7) than when it is applied to an entire category of applications.

When assessing such agreements or commercial practices like zero rating in relation to Article 3(2), the assessment should take into account the aim of the Regulation to “safeguard equal and non-discriminatory treatment of traffic” (Article 1) and to “guarantee the continued functioning of the Internet ecosystem as an engine of innovation” (Recital 1) as well as Recital 7, which directs intervention against agreements or commercial practices which, “by reason of their scale, lead to situations where end-users’ choice is materially reduced in practice”, or which would result in “the undermining of the essence of the end-users’ rights”.

Recital 7 also indicates that the assessment should take into account the “respective market positions of those providers of Internet access services, and of the providers of content, applications and services, that are involved”.

When assessing whether an ISP limits the exercise of rights of end-users, NRAs should consider to what extent end-users’ choice is restricted by the agreed commercial and technical conditions or the commercial practices of the ISP. It is not the case that every factor affecting end-users’ choices should necessarily be considered to limit the exercise of end-users’ rights under Article 3(1). The Regulation also foresees intervention in case such restrictions result in choice being materially reduced, but also in other cases that could qualify as a limitation of the exercise of the end-users’ rights under Article 3(1).

Source: (BEREC, 2016^[21])

Box 4. BEREC criteria for case-by case analysis of zero-rating offers

- whether the practices circumvent the general aims of the Regulation (to “safeguard equal and non-discriminatory treatment of traffic” and to “guarantee the continued functioning of the Internet ecosystem as an engine of innovation”);
- the market positions of the ISPs and Content and Application Providers (CAPs) involved;
- any effects on end-user rights of consumer and business end-users, e.g. reductions in the range of applications available, incentives for end-users to use certain applications, or whether there is a material reduction in end-user choice;
- any effects on end-user rights CAPs, e.g. whether there is an effect on the range of content and applications which CAPs can provide, or whether they are materially discouraged from entering the market;
- the scale of the practice (e.g. the number of end-users subscribing to such an offer) and the extent to which end-users have access to alternative offers and / or other ISPs.

Source: (BEREC, 2018^[22])

A number of cases have been resolved by European regulators or courts. The Belgian regulator confirmed the lawfulness of a zero rating offer from one of its operators, which permits the zero rating of an app of the customer’s choice. It recently noted ‘particularly the fact that the impact of zero rating is not so great as to lead to a factual restriction of the end-users’ choice.’¹⁰

In 2017, the Norwegian regulator Nkom investigated zero-rated music offerings from Telenor and Telia. In both cases, Nkom has expressed concerns that the offer may have negative effects, due to the significant market position of the two ISPs and the potential impact. Furthermore, Nkom believes that zero-rating may affect the competitive conditions in the content markets and may have a direct effect on end-user behaviour. However, it was found that the scale of this type of commercial practice was limited in the market, and based on an overall assessment, Nkom found that there was no basis for issuing an order to take corrective action at that time. It continues to monitor the market conditions.¹¹

The Regulation and Guidelines have caused several European national regulators to ban some zero rating offers due to traffic management practices that infringed the Regulation. One example of such a practice includes offers that let traffic to the zero-rated applications continue after the subscriber’s data limit has been reached. Box 5 summarises examples from Hungary, Portugal and Sweden.

Other examples of zero rating cases that could potentially infringe the Regulation because of certain traffic management practices are cases that involve slowing down traffic or restricting the resolution of video traffic in the zero-rated offers.

Finally, European regulators have also assessed zero-rated offers in terms of whether they comply with the European Roaming Regulation. Examples of cases that deal with both traffic management practices and international roaming are discussed in the following.

**Box 4. Traffic continuation to zero-rated applications once the data limit is reached.
Enforcement cases in Sweden, Hungary and Portugal**

I. Sweden

In Sweden, Telia Company (Telia) launched its first zero rating offerings shortly ahead of the entering into force of the European open Internet Regulation on 30th April 2016. Telia chose to roll out a zero rating offer of an assortment of social media applications; in parallel, it launched a zero rating offer covering audio streaming applications, a range of audio books, music and web radio, for which the customer pays an additional fee of 59 SEK. The audio streaming offer is similar to the first zero rating offer ever launched in the Swedish market, namely Tre's (Hi3G's) offer of 3Musiksurf.

PTS initiated an investigation of both Telia's and Tre's zero rating offers limited to the practice of letting traffic to the zero rating offers continue after the customer loses access to the rest of the Internet once her/his general data cap is reached. PTS found this to be a violation of Article 3.3 of the Regulation, which stipulates that providers of Internet access should treat all traffic equally. Tre chose to amend its offer, only allowing the zero rating until the general data cap is reached. Telia disputed with PTS' finding. As a result, PTS issued an injunction prohibiting Telia from continuing with the zero rating after the general data cap was reached. Telia challenged the injunction and asked for a suspension, which the court allowed. On September 28 2018, the Administrative Court in Stockholm rejected Telia's appeal and ruled in favour of PTS' injunction. Telia decided not to appeal the ruling.

PTS has not at present concluded if any of the zero rating offers as such are violating the open Internet regulation - the investigation above focusing only on the traffic management in relation to Article 3.3.

II. Hungary

Article 5 of Regulation (EU) 2015/2120 requires NMHH to monitor and ensure compliance with the provisions of the EU Regulation, and to promote the continued availability of non-discriminatory Internet access services. Since the EU Regulation came into force, NMHH has launched three proceedings, one of which is described below:

Case: Unlimited access to social media sites and messaging applications

The subject of the proceeding was the additional package of a service provider offering unlimited access to certain social media sites and messaging applications. The service provider offered the specific package to pre-paid mobile phone subscriptions. It included a free-to-use 1 GB data quota, and quota-free use of content and messaging applications such as Facebook, Whatsapp, Instagram, and Viber.

NMHH concluded that the data traffic generated by these applications did not reduce the 1 GB quota for pre-paid mobile Internet subscription. When the amount of data included in the quota was exhausted, these services remained available to subscribers at the original bandwidth, without any slow-down to max. 32 Kbps download. Other data traffic was restricted by a slow-down after the quota was used up.

NMHH concluded that this violated the Regulation, which at Article 3(3) requires equal and discrimination-free treatment. NMHH banned such unlawful behaviour and ordered the service provider to discontinue the differentiation between various types of content.

III. Portugal

Another example is the 2018 July decision by the Portuguese regulator Anacom. Anacom identified zero-rated offers in the market where the ISP "takes traffic management measures to block the traffic of all applications/content after the general cap has been depleted, except for the

traffic associated with applications/content covered by the specific cap or not subject to traffic limits” (ANACOM, 2018^[23]).

The regulator concluded that this practice violates Article 3 (3) of the EU 2015/2120 Regulation “since the criteria of reasonableness that would allow the adoption of traffic management measures are neither met, nor do they fall within the exceptions provided for in the said provision” (ANACOM, 2018^[23]).

In its June 2018 report on monitoring compliance with net neutrality rules, Ofcom, in the United Kingdom, reported that: “regarding safeguarding open Internet access and traffic management, we have completed an initial review of “zero-rated” offers by Three and Vodafone, and found that they, as structured at the time of our review, do not present material competition concerns warranting intervention. We did, however, identify traffic management issues of concern. We have opened an enforcement programme to learn more about these and other traffic management practices, and sent information requests to the UK’s largest ISPs. As a result of the information received, we have opened two investigations. One of these is concerned with Three’s practice of prohibiting tethering on some tariffs and slowing down certain kinds of traffic for customers while they are roaming. The other is concerned with Vodafone’s practice of restricting the resolution of video traffic in its ‘Passes’ offer.” (Ofcom 2018, page 2). Both cases were subsequently closed by Ofcom, following receipt of written assurances from Three and Vodafone that they would bring those practices to an end.

In 2017 and 2018, the German regulator Bundesnetzagentur investigated zero-rating offers from Deutsche Telekom and Vodafone. Overall, Bundesnetzagentur found that certain aspects of the zero rating offers were not permissible, namely the throttling of video traffic (in case of Deutsche Telekom), as well the limitation of the offer to Germany (which is not in line with the EU rules on roaming in case of Deutsche Telekom as well as Vodafone). If the zero rating offers are amended accordingly, the providers can continue offering them.¹² The decisions are appealed to the courts.

In relation to zero rating and international roaming, Bundesnetzagentur has also prohibited certain aspects of the “StreamOn” add-on option offered by Deutsche Telekom under its “MagentaMobil” mobile tariff: The regulator ruled:

“All MagentaMobil tariffs with the “StreamOn” option have to be remodelled such that consumers within the European Union can benefit from the roam-like-at-home principle. The data volume of the “StreamOn” option while roaming in the EU cannot be counted against the volume allowance of the MagentaMobil tariff. The roam-like-at-home principle has to apply to all tariffs that enable roaming in the EU.”¹³

Deutsche Telekom is contesting the Bundesnetzagentur “StreamOn” decision in the Cologne Administrative Court. The offer remains available in its initial form, i.e. with traffic shaping and without extension of the zero rating plan to EU roaming, until the conclusion of the expedited proceeding (which is still ongoing). Deutsche Telekom’s position is that the offer is compliant with the Regulation because it empowers consumers to exercise their right to access the content and services of their choice in a mobile scenario.

The Portuguese regulator has also intervened with mobile operators’ zero-rated and similar tariffs where the operators included the condition that the offer is valid in the Portuguese territory, determining that this practice is not compatible with Article 6a of the Roaming Regulation mentioned earlier in the document.¹⁴ And Ofcom has concluded an investigation into net neutrality aspects of roaming services offered by mobile network Three, noting that

the network ‘has confirmed that, from December 2018 (or earlier), it will cease to restrict video quality to Standard Definition when its customers are roaming in the EU.’¹⁵

In summary, national regulators in Europe have not prohibited zero rating offers outright, but they have forbidden discriminatory traffic management measures accompanying zero rating. This includes video throttling, used by some ISPs to reduce the data volume in a network. 11 national regulators have formally assessed traffic management cases so far (BEREC, 2018_[20]). In addition, in many jurisdictions, zero rating may not persist when a customer’s data limit has been reached.

In March 2018, BEREC sought comments in a consultation on the application of the Regulation and Guidelines (Box 6). The matters which national regulators were asked to answer on a case-by case basis are complex (see Box 4), as a result of the need to conduct a (forward- and backward-looking) analysis of zero rating cases at both the CAP and the ISP level, followed by a balancing of positive and negative effects which has finally to be undertaken. It was thus timely to reflect on experience with the assessment methodology to date.

The conclusions of the *Report on the Implementation of Regulation (EU) 2015/2120 and BEREC Net Neutrality Guidelines* highlight that there is a “consistent treatment by national regulators of practices relating to the core principles of net neutrality, such as the ban on blocking of applications and discriminatory treatment of traffic”. They furthermore highlight that regulators have to carefully analyse the specific characteristics of the zero-rated offer as well as the circumstances. Overall, BEREC concludes that “the Regulation has been implemented by national regulators with adequate coherence” (BEREC, 2018_[20]).

Box 5. BEREC’s 2018 Consultation on the EU Regulation and BEREC Guidelines

In March 2018, BEREC published a consultation document on the application of the Regulation and the guidelines (BEREC 2018). In relation to zero rating, it asked for views on the following questions:

- ‘- Does the current assessment of zero rating as recommended in the Guidelines, offer sufficient protection of end-users’ rights as referred to in article 3(1) of the Regulation? Please explain.
- How could the assessment methodology for commercial practices in the Guidelines (ref. in particular to paras 46-48) be improved? Is there a need for more simplification, flexibility and/or more specification? Please provide concrete suggestions.
- In your view, did the assessment methodology for commercial practices in the Guidelines influence the development of new content and applications offered on the Internet? Please explain.
- Do you think that the current application of the Regulation and the Guidelines concerning commercial practices, such as zero-rating, sufficiently takes account of possible long term effects of such practices? If not, how could BEREC further facilitate this?’

Source: (BEREC, 2018_[24])

The United States and Canada

In the United States, the approach to net neutrality regulation has varied over time. A set of net neutrality rules, which, among other things, established a standard under which zero rating offers would be assessed, was adopted by the Federal Communications Commission (FCC) in 2015. In 2016, the FCC’s Wireless Bureau initiated investigations into whether the zero-rating

practices of several wireless service providers were consistent with these rules. After the changes in the membership of the FCC, following the 2016 elections, in February 2017 the FCC's Wireless Bureau closed the investigations into zero-rated offerings initiated under the previous regime – the new Chair stating that ‘free data plans have proven to be popular among consumers’ and that ‘they have also enhanced competition.’ (Quoted in Cullen 2017.) This was followed by the reversal of the 2015 net neutrality conduct rules, which was approved in December 2017. At the same time, the Commission retained and enhanced its 2012 transparency rule and entered into an information-sharing agreement with the Federal Trade Commission (FTC) to co-operate in protecting consumers of ISP services and noted that particular cases of anticompetitive conduct could be addressed by consumer protection and antitrust authorities.

In September 2018, California passed a net neutrality law,¹⁶ considered by some commentators to be the strictest net neutrality law in the United States. One section of the law also covers zero rating. It specifies that individual apps cannot be zero-rated, but it allows for entire categories such as music or video to be zero-rated (State of California, 2018_[25]). As such, the law states that it shall be unlawful to zero rate “some Internet content, applications, services, or devices in a category of Internet content, applications, services, or devices, but not the entire category” (Section 2, Title 15, 3101) (State of California, 2018_[25]). The law furthermore prohibits zero rating in exchange for consideration, monetary or otherwise, from a third party. Taking this approach, the law appears to avoid one of the competition challenges described in section 4.1, namely that specific apps that are zero-rated would have an advantage over apps in the same category.

After the bill was signed into law, the United States’ Department of Justice filed a lawsuit against the State of California. The lawsuit argues that California’s law is preempted (or superseded) by the Commission’s 2017 order because, among other reasons, it purports to adopt the same Internet conduct rules that the Commission expressly repealed.

In Canada, the Telecommunications Act contains two key provisions which codify net neutrality principles, which the CRTC has used to guide the implementation of its net neutrality framework and subsequent decisions. In particular, section 27(2) of the Telecommunications Act states that “No Canadian carrier shall, in relation to the provision of a telecommunications service or the charging of a rate for it, unjustly discriminate or give an undue or unreasonable preference toward any person, including itself, or subject any person to an undue or unreasonable disadvantage” and section 36 states that “Except where the Commission approves otherwise, a Canadian carrier shall not control the content or influence the meaning or purpose of telecommunications carried by it for the public.” These two provisions have provided the CRTC with broad legal authority to resolve net neutrality issues in Canada as they have arisen.

In 2015, the CRTC issued a decision to prevent certain service providers from unfairly favouring their own mobile television traffic, compared to competing services. The decision was a response to complaints against vertically integrated companies in the Canadian market who were using mobile apps to make their own video content available at very low prices compared to the data usage cost for downloading the same amount of video from another CP (CRTC, 2015_[26]).

In 2017, the CRTC acted on complaints about a network operator’s offering of zero-rated plans and launched a proceeding to investigate whether such practices violated net neutrality rules. The CRTC’s systemic study of this issue led it to rule on differential pricing practices, declaring that both wired and wireless ISPs should treat all data that flows across their networks equally, regardless of the content, with regard to these types of pricing practices.

This has prevented ISPs from exempting particular applications from a user's monthly data plan, or setting different prices for similar products and services.

The CRTC has three main concerns with differential pricing: (i) it can allow ISPs to serve as gate-keepers to influence what content users choose to access, (ii) it can give an unfair advantage to well-established CPs at the expense of smaller innovators, and (iii) it can detract from the competitiveness of small ISPs, as they may be less able to attract well-known CPs to partner with. The CRTC anticipates that its decision will further encourage ISPs to compete on price, quality, speed, and data allowances (e.g., larger and/or unlimited data caps), rather than by treating certain content differently.

The CRTC follows section 27(2) of the *Telecommunications Act* in assessing whether a particular practice involves an undue or unreasonable preference, and has established four evaluation criteria to guide the industry, and help assess acceptable differential pricing practices:

- the degree to which the data is being treated equally regardless of its nature or source,
- whether the offering is exclusive to certain customers or certain CPs,
- the impact on Internet openness and innovation, and
- whether there is financial compensation.

Time-of-day zero-rating (e.g., unlimited downloads at a certain time of the day), and account management related functions (e.g., checking usage or paying your ISP bill) were found to be two examples of differential pricing practices that do not cause concerns and will be permitted (CRTC, 2017^[27]).

At the same time as the 2017 framework decision, the CRTC used the new framework to determine that exempting a specific streaming service from mobile data caps was unjustly discriminatory under s. 27(2) of the *Telecommunications Act* (CRTC, 2017^[28]).

In September 2018, as part of its ongoing monitoring and compliance activities, the CRTC announced that it was reviewing certain ISP practices that fall within Canada's net neutrality framework, including zero-rating. In particular, the CRTC is seeking specific information from a number of ISPs on their Internet traffic management and zero rating practices, including information on any measures used, their impacts on different types of Internet traffic, and how the measures are disclosed to consumers.

Japan and Korea

Academic research in Japan, from March 2018, has suggested the first zero rating offer in that country for mobile services "...was a plan that was introduced in June 2015 by an MVNO, a subsidiary of a photo supply shop, to provide free access to its photo-printing site (Jitsuzumi, 2018^[29]).” Since then, the research indicated, zero rating has been introduced primarily by MVNOs rather than MNO's in Japan. The research further categorised these MVNO offers into three types of zero rating: "...offers of free access to operator-owned application sites, free distribution of a parent firm's IP-video, and free access to third-party applications, such as SNS and video-streaming sites (Jitsuzumi, 2018^[29]).” The researcher concluded the reason MNOs had not responded to the MVNOs was uncertain. The study said the lower visibility of MVNOs was one reason they had brought zero-rated offers to the market in an effort to attract customers but, at the time of writing, MNOs had not felt the need to respond with similar offers. Since then, the situation changed as *Softbank Mobile*, an MNO, started introducing

price plans including zero-rated offers. The report advises policy makers in Japan to continue their approach of welcoming increased competition from MVNOs and only reviewing their stance on permitting zero rating if potential anti-competitive practices materialised. Motivated by the fast changing environment around telecommunication networks, Japan in October 2018 introduced a "study group on network neutrality". The effect of zero rating will also be discussed within this study group.

The Ministry of Science and ICT in Korea has no regulation to preclude zero rating and all MNOs in that country offer zero-rated elements in their services. These zero-rated elements include, by way of example, music, shopping, video, navigation and gaming services. Nevertheless, the Korean Communications Commission or the Korean Fair Trade Commission may intervene in the form of ex-post regulation on a case by case basis, if zero rating practices cause anti-competitive problems.

Australia and New Zealand

In Australia and New Zealand, zero rating has long been prominent for both fixed and mobile services. That being said, its influence has become less relevant over time as data caps for Internet access have increased or offers have become unlimited. Around the turn of the century, in those countries that had flat rate or unlimited dial-up services, such as in Australia and New Zealand, there was a strong preference from network operators to metre data usage over the emerging fixed broadband access services. This was at a time when neither country had sufficient competition to discipline these prices (OECD, 2001^[30]).

In New Zealand, Telecom New Zealand (TNZ), the incumbent telecommunication operator, faced little competition from alternative infrastructure with cable broadband only available in a very limited footprint. Nor was TNZ required to provide unbundled local loops with New Zealand being one of the final OECD countries to introduce this measure. Likewise, in Australia, Telstra owned both the traditional telecommunication network and the largest cable broadband network also limiting cross platform competition. Moreover, the regulatory frameworks were misaligned with the promotion of competition. New Zealand, following liberalisation, in the absence of an industry regulator, largely relied on general competition law with any pro-competitive initiatives stymied when taken to court by the incumbent. Meanwhile in Australia, the ACCC issued a Competition Notice to Telstra alleging it had engaged in anti-competitive peering practices in 1998. Following commercial peering agreements between Telstra and the then three largest Internet access providers, the ACCC later decided to revoke the notice. In 2003, the ACCC conducted an inquiry into whether an interconnection service should be declared under Part XIC of the then Trade Practices Act 1974 (now the Competition and Consumer Act 2010). After undertaking a consultation process, the ACCC made a decision not to declare the service due to a lack of empirical information. Instead the ACCC issued a record keeping rule that required providers to report information enabling the ACCC to better monitor the market. Against this environment, zero rating emerged as both a competitive and anti-competitive tool.

In New Zealand, in 2001, one of TNZ's initial DSL access services (Jetstart) was offered at 128 Kbps for unlimited data while access to the company's own gaming service was at 4 Mbps with unlimited data. Higher speeds were available to TNZ's customers with other offers but these services incurred metered charges (e.g. one offer was capped at 400 MB with each additional MB priced at USD 0.13) while data usage continued to be unmetered to TNZ's own game servers. In other words, TNZ's customers could access its own services at faster speeds and for no additional cost but users wishing to reach the games servers of other providers paid for data usage.

By 2004, some of the largest ISPs in New Zealand (initially TelstraClear and then TNZ) decided to withdraw from the country's two largest IXPs (OECD, 2006^[31]; NZ Herald, 2004^[32]). Smaller ISPs and large CPs, such as Radio New Zealand and 'Trade Me', an auction and online-classified advertising site, were invited to pay transit to reach the larger ISPs' customers instead of having a direct peering relationship. The larger ISPs said this reflected the increased costs of providing connectivity while the content companies believed their costs were being unreasonably raised due to monopoly power (InternetNZ External Peering Group, 2007^[33]). In response, the content companies increased their local peering with smaller ISPs, to which they would have otherwise had to pay larger players transit to reach, as well as establishing off shore servers to deliver traffic to ISPs that did not peer locally and better serve customers in international markets. This had the effect of raising costs for the larger ISPs, which had to haul domestic traffic back from overseas servers because commercial agreements could not be reached for domestic exchange.

The effects of these changes on the New Zealand Internet market meant that online listeners to Radio New Zealand received a higher quality of service if their ISP peered domestically. In addition, the changes reduced the costs for the ISPs, which peered directly with large CPs, meaning they could pass on the benefits through zero rating services to their customers. In December 2006, the New Zealand government, unsatisfied with the lack of competition, passed legislation to introduce local loop unbundling (NZ Herald, 2006^[34]). In the following year, smaller ISPs began to follow TNZ's lead by offering broadband plans with zero-rated elements to take advantage of their local peering arrangements.

In May 2007, for example, an ISP called Orcon launched the 'O Zone', which contained a number of its own and popular domestically based services that could be used without their customers incurring data charges (Scoop News, 2009^[35]). By so doing, Orcon and other ISPs were following TNZ's lead to zero rate certain services. They used peering as a means to lower the cost of providing that unmetered traffic.

New Zealand's mobile operators have also used zero rating from time to time. In 2014, for example, the largest mobile operator called Spark began zero rating Facebook and Twitter as part of some of its tariff plans (Waring, 2014^[36]). Meanwhile, in June 2016, the New Zealand government entered into agreements with the country's three MNOs to offer zero-rated traffic to the content of the Social Development Ministry (Pullar-Strecker, 2016^[37]). The agreement means that traffic is zero-rated to the Ministry's website and apps. This enabled, for example, users to book appointments, check their entitlements or declare wages without this counting against their data caps.

In Australia, emerging ISPs such as Internode, iiNet and TPG all began to offer zero rating to CPs willing to peer with them from the Australian Broadcasting Corporation to Apple's iTunes. For their part the established players such as Telstra and Optus, began to purchase the online rights to stream the most popular sporting codes (Kermond and Battersby, 2011^[38]). They then zero-rated this traffic as part of a bundle purchased by a user for fixed and mobile services.

Today, zero rating is a long accepted practice in both Australia and New Zealand for fixed and mobile services but it is becoming less relevant as data caps increase or unlimited tariff plans are offered. In New Zealand, by 2017, there had been an increase in unlimited plans associated with retail providers using that country's national broadband network. When New Zealand's national fixed broadband network was introduced there were less than 5% of users with unlimited plans. By 2018 this had increased to 71% (Broadband.Govt.NZ, 2018^[39]). For mobile services New Zealand operators have also introduced unlimited tariff plans. In 2017, for example, Spark a mobile operator lowered the price of its unlimited offer to USD 53 per

month (Spark, 2017^[40]). This tariff had been launched a year earlier for USD 113 per month (Corner, 2016^[41]). Spark's two mobile network rivals, Vodafone and 2Degrees, also offer unlimited mobile services. This means that zero-rated offers, such as the one Spark had for Facebook and Twitter, are no longer to the forefront of attracting customers.

In Australia, the country's National Broadband Network (NBN) has also had an influence on zero rating as it became more widely deployed in recent years. This was most evident when Netflix launched in both Australia and New Zealand in early 2015 (Bulbeck, 2015^[42]). In New Zealand, this led to a spike in the already evident trend towards unlimited fixed broadband offers being taken up by users. In Australia, on the other hand, a number of ISPs sort to gain a competitive advantage by zero rating Netflix. One example was iiNet and its brands such as Internode (PC World Australia, 2015^[43]). Here, as in earlier years direct peering relations were a key ingredient in enabling ISPs to offer zero-rated services. In the case of iiNet and Internode, for example, Netflix needed to be accessed via the company's own unmetered site or the zero rating could not be applied.

Since then, however, Australian ISPs using the NBN have substantially increased their data caps or begun offering unlimited fixed broadband services. Thus, while companies such as Telstra still have zero-rated content under some plans they also offer unlimited data (Telstra, 2018^[44]). The zero-rated content includes sports for which the company has exclusive online rights, its own video on demand and streaming content as well as the services of partners such as Apple Music. On the other hand, ISPs such as iiNet have 'grandfathered' zero rating services saying the offers of unlimited data make zero rating unnecessary (iiNet, 2018^[45]). Today iiNet and its new owner TPG charge by speed tier over the NBN rather than data usage.

The experience in Australia and New Zealand indicate that zero rating was largely a transitory feature of both markets and decreased in influence as competition increased. It had elements that were competitive and anti-competitive in both markets but these depended on insufficient competition at one or more points of various value chains.

Latin America

In Latin America, several countries have worked on legislation and regulation in the broader area of net neutrality and with implications for zero-rated offers. Colombia, for example, has implemented policies and regulation in this respect. The underlying basis for more specific laws on net neutrality is the general ICT law 1341 of 2009, which mandates the Colombian State to promote an efficient delivery of services, content and applications and insure free and fair competition. Law 1450 of 2011 contains one article on net neutrality and gives the Colombian regulator, the CRC, the mandate to develop regulation on net neutrality providing Internet users unrestricted access to applications, services and lawful content.

Based on this mandate, the CRC issued Resolution 3502 of 2011. Net neutrality principles of this resolution entail a) non-arbitrary discrimination, b) free choice, c) transparency, d) free access to information, e) QoS, and f) content blocking for security reasons. Regarding QoS, the resolution allows ISPs to perform QoS management only in such a way that services to users are not degraded. Regarding f), the resolution ensures that ISPs cannot discriminate, restrict or block the right of Internet users to send, receive or use any content.

In recent years, several mobile operators, including MVNOs and MNOs, have sent official requests to the regulator to assess whether different zero-rated offers they intended to launch complied with the law and regulation on net neutrality. In one case, an operator proposed to design and offer a plan for workers in low- to medium-income groups who needed to commute to undertake their work and required certain mobile applications to increase their productivity.

It planned to zero rate banking and financial inclusion apps, corporate email and chat apps, and language training apps. The customer target group included professional groups such as shopkeepers, sellers of different products, and taxi drivers. In another case, an operator planned to zero rate a social networking and entertainment app.

In both cases, the CRC assessed the planned zero-rated offers along four dimensions: (i) the legal and regulatory framework, (ii) the technical implementation, (iii) effects on the market and competition and (iv) the effects on the users of the offer. For both cases, the CRC concluded that the zero rating plans were not found to be arbitrarily discriminatory and complied with its 3502 Resolution of 2011 on net neutrality. The regulator, however, noted that in general the more open zero-rated offers are for other content and application companies to join that offer, the smaller the risk would be to violate Resolution 3502. In addition, the regulator highlighted that operators have an obligation to inform users about the limitations of zero-rated offers in order to avoid users getting an impression that the apps of the zero-rated offer constitute the entire Internet, which is one criticism of zero-rating brought forward by some stakeholders.

Overall, zero-rated offers have become very common in Colombia. The large majority of Colombian operators include zero-rated access to WhatsApp and Facebook in their post- and prepaid mobile offers. Some of these packages include data caps on the zero-rated offers (e.g. 250 MB for Facebook) while others grant unlimited access. Notably, a couple of Colombian operators zero rate mobility apps which are particularly valuable for both taxi drivers and consumers in large Colombian cities where congestion is a daily phenomenon and where these apps are very popular among mobile phone users. Typically, these applications are characterised by a larger consumption of data compared to the other zero-rated apps in the country. At least three operators in the Colombian market are providing zero-rated access to Waze and one operator includes Google Maps and Moovit in addition to Waze and grants 20 GB of zero-rated access to these mobility apps. In addition, a new form of sponsored data has emerged in Colombia termed “data rewards”. Marketing companies and application providers use service firms such as Aquito¹⁷, Opari¹⁸, and Datami¹⁹, to reward their potential consumers with mobile data that is added to their accounts and that can be used to consume any type of content.

In Brazil, a law was passed in 2014 which systematised its approach to Internet governance, including net neutrality.²⁰ In 2017, its competition authority, CADE, dismissed a charge of violation of net neutrality through the offer of instant messaging applications based on a zero rating model against the four main operators in the mobile market. CASDE supported the view of the regulator ANATEL that the practice would have no adverse impact on concentration in the sector, but might instead increase competition and innovation. Following this decision, zero rating offers, which had first emerged in 2010, multiplied, amounting to one third of the total, including some MVNOs.²¹

Chile was the first country to pass a net neutrality law, following various controversies over the restriction of rival services in the previous decade. The interventions included the restrictions on zero rating, from 2014. However, these are not absolute: zero rating may be forbidden only in respect of customers who have exhausted their data limit (and can therefore only access zero-rated material) (Marsden, 2016^[46]).

More generally, a study of broadband in Latin American (and some Caribbean) countries (Viezens and Callorda, 2016^[47])²² examines zero rating plans in a number of places, with the following results:

“In 15 of the 19 countries from which data were collected, there is at least one zero rating plan variant. Considering operators by country, 21 operators in the region, of the 46 about which data were gathered, offer some variant of zero rating. Whatsapp and Facebook are included in the zero rating offers in 14 of the 15 countries and Twitter in 10. Other applications considered in ZR plans are Skype, LinkedIn, Instagram, Wikipedia and email, but their relative importance is very low.”

Turning to emerging economies more broadly, Helani Galpaya (Galpaya, 2017^[48]) cites a study of eight countries in the Global South that found that zero-based data plans existed in each of them. Commonly offered plans include social media and email and other popular content. A study covering five African countries found Facebooks Free Basics and Wikipedia to be the most commonly zero-based content. Facebook claims that Free Basics is available in 11 Asian countries and more than 23 African ones.

Galpani concludes that the best approach is for policy makers to eliminate the worst known harms, such as arise where an ISP has significant market power, but otherwise cautiously to allow zero rating, while monitoring markets to detect other detrimental outcomes.

India

The Telecoms Regulatory Authority of India (TRAI), by contrast, adopted a forthright opposition to zero rating in February 2016, by banning zero-rated offers through its Regulation - entitled *Prohibition of Discriminatory Tariffs for Data Services* (TRAI, 2016^[49]) following a series of consultations with stakeholders, from 2015 onwards. This intervention preceded an increase in competition in the mobile market triggered by the entry of Reliance Jio, which has seen data prices tumbling fast. Subsequently, and following a consultation on the provision of free data for rural residents, the TRAI concluded (TRAI, 2016^[50])

“In order to bridge the affordability gap for the persons residing in rural areas and to support Governments efforts towards cashless economy by incentivising digital means, the Authority recommends that a scheme under which a reasonable amount of data say 100 MB per month may be made available to rural subscribers for free.

The cost of implementation of the scheme may be met from USO [the Universal Service Obligation Fund]

The scheme for free data must be TSP-agnostic, must not involve any arrangement between the TSP and the aggregator/content provider and should not be designed to circumvent the [2016 Prohibition]’

In November 2017, the TRAI in its *Recommendations On Net Neutrality* re-affirmed its general position on discrimination and zero rating (TRAI, 2017^[51]). In addition, in July 2018, the Indian Department of Telecommunications (DoT) took a decision to adopt the recommendations proposed by TRAI, which more broadly prohibit ISPs from engaging in “any form of discrimination or interference” in the treatment of online content. As a result, ISPs are precluded from “blocking, degrading, slowing down or granting preferential speeds or treatment to any content” (The Wire, 2018^[52]). DOT noted at the time that some services would be exempt from the application of these ‘net neutrality’ rules, and therefore zero rating would be allowed for services such as those for remote surgery, autonomous vehicles and enterprise-wired networks created through leased lines (The Wire, 2018^[52]).

The effects of regulations in relation to usage across economies: some partial evidence in relation to Facebook usage

The different approaches taken by authorities towards the use of zero rating raise the question of how they have affected the growth and use of the Internet in different economies. One possible source of evidence concerns the spread of Facebook and Whatsapp in a substantial number of jurisdictions. Most of the available information has come from surveys or ad hoc examples provided by proponents, critics or disinterested researchers on the use of zero rating. However, data is available for the growth in the use of Facebook as measured in traffic volume across different economies. Much of this information is proprietary to Facebook though the company does provide a window on the usage of data. A list of economies, updated daily, ranks economies by the volume of data used. For the avoidance of doubt, it should be recognised that these data, covering an individual content supplier, cannot be conclusive. Nonetheless, given the significance and universality of Facebook, they may be indicative.

On the 6th September 2018, users in the United States generated the most data when using Facebook, followed by India, Brazil, Vietnam and Thailand (Table 1).

There are undoubtedly many factors explaining why users in some economies use Facebook more than others. The cost of access is only one element (and a very important one) and it seems reasonable to assume that elements such as unlimited tariffs and zero rating contribute to higher levels of usage.

The United States and India have among the largest populations of Internet users and media reports say they are also the two largest locations for Facebook users (Kemp, 2017^[53])²³. Together with the widespread use of unlimited pricing in the United States, for fixed and wireless services, this larger user base readily explains their position. Meanwhile, Internet access has burgeoned in India since 2016 following the entry of Reliance Industry's 4G mobile service called Jio.

In its first two years of operation, Jio added around 230 million subscriptions, many for people getting their first smartphone. The two-year anniversary of its launch occurred on 5th September 2018, by which time the average price of data was said to have fallen to USD 0.20 per GB from more than USD 3.50 per GB (News18, 2018^[54]). As a result, India is said to be the largest consumer of mobile data in the world and Jio the largest individual network in terms of data transfer. Facebook has undoubtedly benefited from the increased competition between mobile operators in India, given that it has driven increased penetration and data usage. While Facebook was hoping to contribute to this through Free Basics, effective competition has lifted usage for all providers of OTT services in ways few could have predicted prior to the launch of Jio and at a time when zero rating was eliminated.

Beyond the United States and India, there are indications that zero rating may have been a major factor in the use of Facebook in Brazil, Vietnam, Thailand, Malaysia and Mexico.

Table 1. Facebook traffic volume and zero rating

Ranking based on traffic volume for Facebook.

Rank	Economy	Zero Rating of FB	Zero Rating Whatsapp	Facebook Zero	% of World Pop	Internet users per 100 inhabitants, based on ITU for the year 2017
1	United States				4.3	76.18
2	India				17.8	29.55
3	Brazil	Yes	Yes		2.7	60.87
4	Vietnam	Yes	Yes		1.3	46.5
5	Thailand	Yes	Yes		0.9	52.89
6	Germany		Yes	Yes	1.1	84.4
7	United Kingdom			Yes	0.9	94.78
8	Malaysia	Yes	Yes	Yes	0.4	80.14
9	Mexico	Yes	Yes		1.6	63.85
10	Japan				1.7	90.87
11	France			Yes	0.86	80.50
12	Canada				0.49	91.16
13	Saudi Arabia			Yes	0.44	80.08
14	Belgium	Yes			0.15	87.68
15	Chinese Taipei				0.31	79.75
16	Australia	Yes			0.32	86.54
17	Greece		Yes	Yes	0.15	69.09
18	Argentina				0.59	70.97
19	Russia	Yes	Yes		1.91	76.01
20	Ecuador	Yes			0.22	57.27
21	Peru	Yes			0.43	48.73
22	Netherlands				0.23	93.20
23	Portugal	Yes	Yes		0.14	73.79
24	Romania	Yes	Yes		0.26	63.75
25	Switzerland		Yes		0.11	93.71

Note: Internet users data for Argentina, Canada, Chinese Taipei and Greece are for 2016 instead of 2017.

Source: Facebook (2018), IPv6, https://www.facebook.com/ipv6/?tab=ipv6_country, data extraction 6th September 2018.

In Malaysia, the use of Facebook is also very prominent. The Malaysian Communications and Multimedia Commission has reported that in 2016 some 21.9 million people in that economy used one or more social media platforms with 97.3% saying they owned a Facebook account (MCMC, 2017^[55]). Even so, given its smaller population in relation to other economies in the top ten, it might be expected to generate less Facebook traffic. In Malaysia, operators such as ‘U Mobile’ offer plans with unmetered data to Facebook, as well as for other services owned by the company such as Instagram and Whatsapp (U Mobile, 2018^[56]).

One of the drivers for the use of Facebook in Thailand and Vietnam appears to be its use by SMEs reaching out to their customers. In 2018, Facebook said that over 51 million Thais access the platform every month, and over 34 million Thai people access Facebook every day. Furthermore, some 33 million Thais access Facebook daily via their mobile devices. In Thailand, there are said to be around 2.5 million SME pages on Facebook, with as many as 40 million people connected to these pages. At the same time, there are estimated to be some 100 million people outside of Thailand connected to Thai SME pages (Pornwasin, 2018^[57]; Pornwasin, 2018^[58]).

One of the ways SMEs have benefited from improved Internet access in Southeast Asia has been the ability to start online businesses on platforms such as Facebook. In Vietnam, in the first quarter of 2017, for example, businesses started on Facebook were said to have employed 2.3 per cent of the population of working age (i.e. 1.1 million people) (Van Dat, 2017^[59]).

Overall zero rating has been used by Facebook and its mobile partners as a tool to promote data usage and strengthen their positions in those markets. The ranking of economies such as Brazil, Vietnam, Thailand and Malaysia tends to indicate this has been successful. At the same time, India provides an example where Facebook's approach has not been used. Instead, increased competition between mobile operators has benefited all OTTs and users by increasing Internet access and data usage to unprecedented levels in that country. This is one reason why it is challenging to disentangle the influence of zero rating in Brazil, Vietnam, Thailand and Malaysia. All these economies have relatively high numbers of mobile network operators competing in these markets. They all have four or more national MNOs as well as, in some of these economies, regional MNOs.

Conclusion

The effects of zero rating can be very diverse and depend heavily on the circumstances of individual countries. An overall judgement on the economic consequences of zero rating is difficult for two reasons: the lack of systematic and internationally comparable data on the scope of zero rating; and the difficulty of disentangling the effects of zero rating in any market place from those of other factors that influence economic outcomes such as the extent and nature of competition and the level of take-up of services.

This means that when zero rating offers are being assessed, case by case analysis is almost indispensable. Thus zero rating offers may induce increased broadband adoption in countries with lower take-up rates, but they can also increase the market share of an already dominant ISP or CP. With respect to consumer choice, the line between desirable outcomes and adverse effects is also very thin: Zero rating can simultaneously allow some customers to discover new applications and websites with the free access with which they are provided, and encourage others to stick to applications and websites that are zero-rated. The balance between these two effects may depend on the underlying affordability of access to content in any country.

It is thus not surprising that the different approaches which regulators and policy makers around the world are taking to zero rating exhibits substantial variation. While there are jurisdictions with either none or almost no specific measures towards zero rating, others impose strict rules or even categorical bans on zero rating offers. It is desirable that regulators and policy makers are alive to both the benefits and the risks associated with zero rating practices, and that in deciding their approach they have regard to the level of competition in both content and ISP markets.

A final complicating factor is that while this report has focussed on analysing the economic effects of decisions on zero rating, they also have significant consequences in other dimensions, including the extent of digital divide, the delivery of public services such as education and health, and the plurality of information and media sources. These issues have been partially addressed in other OECD publications, as for example in (OECD, 2019^[60]), where the non-economic risks and benefits of online platforms, which are among among zero-rated services, are explored.

Notes

¹ Available at https://berec.europa.eu/eng/document_register/subject_matter/berec/reports/8318-berec-report-on-the-outcome-of-the-consultation-on-the-evaluation-of-the-application-of-regulation-eu-20152120-and-the-berec-net-neutrality-guidelines

² <https://etb.com/docs/Terminos-y-Condiciones-Moviles-ETB.pdf>.

³ But note that Dot-Econ's analysis of zero rating for DG Comp of the European Commission concluded that exclusivity requirements did not appear to play a major role in zero rating negotiations (Dotecon 2017, page iv).

⁴ <https://www.childline.org.uk/get-support/contacting-childline/>.

⁵ Bundesnetzagentur, decision of 15 December 2017, cf. press release: https://www.bundesnetzagentur.de/SharedDocs/Downloads/EN/BNetzA/PressSection/PressReleases/2017/171215_Streamon.pdf?__blob=publicationFile&v=4

⁶ See https://www.ofcom.org.uk/about-ofcom/latest/bulletins/competition-bulletins/all-closed-cases/cw_01219

⁷ It may take the time of day use pattern of its CPs into account when selecting them for zero-rating

⁸ This is why the EC may require an undertaking to offer this form of contract to MVNOs from mobile companies seeking to merge; it is supposed better to replace the MNO lost as a result of the merger.

⁹ For a fuller discussion of these interactions, see Anacom, Draft Decision on zero-rating and similar commercial practices in Portugal, February 2018, pp. 29-42.

¹⁰ BIPT, Annual Report regarding Net Neutrality Monitoring in Belgium (period from 1 May 2017 - 30 April 2018), Version in English, p. 16.

¹¹ Nkom, Net neutrality in Norway, Annual Report 2018, Version in English, pp. 4-6.

¹² Bundesnetzagentur, decision of 15 December 2017, cf. press release: https://www.bundesnetzagentur.de/SharedDocs/Downloads/EN/BNetzA/PressSection/PressReleases/2017/171215_Streamon.pdf?__blob=publicationFile&v=4; Bundesnetzagentur, press release of 15 June 2018, cf. https://www.bundesnetzagentur.de/SharedDocs/Downloads/DE/Allgemeines/Presse/Pressemitteilungen/2018/20180615_Vodafone.pdf?__blob=publicationFile&v=3

¹³ Bundesnetzagentur Press release, 'Bundesnetzagentur ensures net neutrality - certain aspects of "StreamOn" are prohibited,' 15 December 2017.

¹⁴ Anacom, Decisão relativa a práticas comerciais de zero-rating e similares em Portugal, 2018

¹⁵ https://www.ofcom.org.uk/about-ofcom/latest/bulletins/competition-bulletins/all-closed-cases/cw_01218

¹⁶ California Civil Code Division 3, Part 4, Title 15. See: SB-822 Communications: broadband Internet access service: http://leginfo.legislature.ca.gov/faces/billTextClient.xhtml?bill_id=201720180SB822

¹⁷ <http://www.aquto.com/>

¹⁸ <https://opari.io/>

¹⁹ <http://www.datami.com/>

²⁰ Information provided by ANATEL.

²¹ Information provided by ANATEL.

²² Available at <https://idl-bnc-idrc.dspacedirect.org/bitstream/handle/10625/55822/IDL-55822.pdf?sequence=1&isAllowed=y>, pp 18-20.

²³ July 2017 data

References

- ANACOM (2018), *Decision on zero-rating and similar commercial practices in Portugal*, https://www.anacom.pt/streaming/DecZeroRating03072018_UK.pdf?contentId=1458337&fileId=ATTACHED_FILE (accessed on 10 October 2018). [23]
- Belleflamme, P. and M. Peitz (2015), *Industrial organization : markets and strategies*, Cambridge University Press. [4]
- BEREC (2018), *Consultation paper on the evaluation of the application of Regulation (EU) 2015/2120 and the BEREC Net Neutrality Guidelines*, BoR (18) 33;, https://berec.europa.eu/eng/document_register/subject_matter/berec/public_consultations/8012-consultation-paper-on-the-evaluation-of-the-application-of-regulation-eu-20152120-and-the-berec-net-neutrality-guidel (accessed on 8 April 2019). [24]
- BEREC (2018), *Report on the implementation of Regulation (EU) 2015/2120 and BEREC Net Neutrality Guidelines*, https://berec.europa.eu/eng/document_register/subject_matter/berec/reports/8256-report-on-the-implementation-of-regulation-eu-20152120-and-berec-net-neutrality-guidelines (accessed on 8 April 2019). [20]
- BEREC (2018), *What is zero-rating?*, http://berec.europa.eu/eng/netneutrality/zero_rating/ (accessed on 10 April 2018). [22]
- BEREC (2016), *BEREC expert workshop on IP-Interconnection in co-operation with the OECD*, BEREC, http://berec.europa.eu/eng/events/berec_events_2016/139-berec-expert-workshop-on-ip-interconnection-in-co-operation-with-the-oecd (accessed on 10 April 2018). [65]
- BEREC (2016), *BEREC Guidelines on the Implementation by National Regulators of European Net Neutrality Rules*, http://berec.europa.eu/eng/document_register/subject_matter/berec/regulatory_best_practices/guidelines/6160-berec-guidelines-on-the-implementation-by-national-regulators-of-european-net-neutrality-rules (accessed on 10 April 2018). [21]
- BIZCommunity (2018), *Zando launches zero-rated shopping for Vodacom subscribers*, <http://www.bizcommunity.com/Article/196/394/175364.html> (accessed on 10 October 2018). [18]
- Broadband.Govt.NZ (2018), *Broadband Deployment Update*, <https://broadbandmap.nz/> (accessed on 15 October 2018). [39]
- Bulbeck, P. (2015), *Netflix Sets Australia, New Zealand Launch Date*, <https://www.hollywoodreporter.com/news/netflix-sets-australia-new-zealand-778820> (accessed on 11 October 2018). [42]
- Cave, M. (2017), “What kind of Net Neutrality Regulation Does Mexico Want? | Competition Policy International”, *CPI Latinoamerica*, Vol. February, <https://www.competitionpolicyinternational.com/what-kind-of-net-neutrality-regulation-does-mexico-want/> (accessed on 11 April 2018). [64]
- Corner, S. (2016), *Spark ups mobile data quotas, adds Spotify Premium and Lightbox*, CIO New Zealand, <https://www.cio.co.nz/article/606314/spark-ups-mobile-data-quotas-adds-spotify-premium-lightbox/> (accessed on 11 October 2018). [41]

- CRTC (2017), *Telecom Decision CRTC 2017-105*, <https://crtc.gc.ca/eng/archive/2017/2017-105.htm> (accessed on 8 October 2018). [28]
- CRTC (2017), *Telecom Regulatory Policy CRTC 2017-104*, <https://crtc.gc.ca/eng/archive/2017/2017-104.htm> (accessed on 8 October 2018). [27]
- CRTC (2016), *Telecom Regulatory Policy CRTC 2017-104*, <https://crtc.gc.ca/eng/archive/2017/2017-104.htm> (accessed on 10 April 2018). [63]
- CRTC (2015), *Broadcasting and Telecom Decision CRTC 2015-26*, <https://crtc.gc.ca/eng/archive/2015/2015-26.htm> (accessed on 8 October 2018). [26]
- De Luca, S. (2017), *Recent decisions on zero rating offers across the EU*, Cullen International, <http://www.cullen-international.com/asset/?location=/content/assets/news/regulatory-news/recent-decisions-on-zero-rating-offers-across-the-eu---culleninternational---flashreport-flteep20170016.pdf/recent-decisions-on-zero-rating-offers-across-the-eu---cul> (accessed on 11 April 2018). [62]
- Dhaka Tribune (2016), *5 million users opt for WoWBox lifestyle*, <http://www.dhakatribune.com/business/2016/10/06/5-million-users-opt-wowbox-lifestyle/> (accessed on 10 April 2018). [12]
- dotecon, aetha and Oswell&Vahida (2017), *Zero Rating Practices in Broadband Markets, Report for DG Comp*, European Commission, Brussels, <http://ec.europa.eu/competition/publications/reports/kd0217687enn.pdf>. [10]
- Galpaya, H. (2017), “Zero-rating in Emerging Economies”, *PAPER SERIES*, Vol. 47, https://www.cigionline.org/sites/default/files/documents/GCIG%20no.47_2.pdf (accessed on 11 October 2018). [48]
- Gungl, J. and J. Godfrey (2018), *Public debriefing 36th BEREK Plenary Meeting*, https://berec.europa.eu/eng/document_register/subject_matter/berec/download/0/8258-berec-chair-presentation-during-the-publ_0.pdf (accessed on 10 October 2018). [68]
- iiNet (2018), *Freezone FAQ*, https://iihelp.iinet.net.au/Freezone_FAQ (accessed on 11 October 2018). [45]
- Internet.org (2018), *Free Basics: Myths and Facts*, <https://info.internet.org/en/blog/2015/11/19/internet-org-myths-and-facts/> (accessed on 9 October 2018). [6]
- Internet.org (2018), *Mobile Operator Partnership Program*, <https://info.internet.org/en/story/mobile-operator-partnership-program/> (accessed on 9 October 2018). [5]
- Internet.org (2018), *Where we’ve launched*, <https://info.internet.org/en/story/where-weve-launched/> (accessed on 9 October 2018). [7]
- InternetNZ (2017), *State of the Internet 2017: The State of the Internet in New Zealand*, <https://internetnz.nz/sites/default/files/SOTTI%20FINAL.pdf> (accessed on 11 October 2018). [69]
- InternetNZ External Peering Group (2007), *Issues regarding Internet peering and interconnection in New Zealand*, <http://old.internetnz.net.nz/issues/archive/other/peeringreport.pdf> (accessed on 11 October 2018). [33]

- IT News Africa (2017), *Standard Bank Announces Data Free Mobile Banking* | IT News Africa – Africa’s Technology News Leader, <http://www.itnewsafrika.com/2017/07/standard-bank-announces-data-free-mobile-banking/> (accessed on 10 October 2018). [16]
- Jitsuzumi, T. (2018), *Zero-Rating and Net Neutrality in the Mobile Market: The Case of Japan*, TPRC 46, <http://dx.doi.org/10.2139/ssrn.3138491>. [29]
- Kang, C. (2018), *Justice Department Sues to Stop California Net Neutrality Law* - The New York Times, the New York Times, <https://www.nytimes.com/2018/09/30/technology/net-neutrality-california.html> (accessed on 8 October 2018). [67]
- Kastrenakes, J. (2018), *California governor signs nation’s toughest net neutrality bill into law* - The Verge, The Verge, <https://www.theverge.com/2018/9/30/17913712/california-net-neutrality-bill-signed-law-jerry-brown> (accessed on 8 October 2018). [66]
- Kemp, S. (2017), *India overtakes the USA to become Facebook’s #1 country*, https://thenextweb.com/contributors/2017/07/13/india-overtakes-usa-become-facebooks-top-country/#.tnw_anNteeku?mod=article_inline (accessed on 11 October 2018). [53]
- Kermond, C. and L. Battersby (2011), *Online spoils go to Telstra in AFL’s \$1.2b broadcast rights deal*, The Sydney Morning Herald, <https://www.smh.com.au/business/companies/online-spoils-go-to-telstra-in-afls-1-2b-broadcast-rights-deal-20110428-1dz3t.html> (accessed on 11 October 2018). [38]
- Krämer, J. and M. Peitz (2018), “A Fresh Look at Zero-Rating Final Report”, *Centre on Regulation in Europe (CERRE)*, http://www.cerre.eu/sites/cerre/files/CERRE_ZeroRating_FinalReport.pdf (accessed on 10 April 2018). [3]
- Loop Pacific (2017), *Digicel and TVL agree to provide free access to web-based Public Health information System for MoH Health Workers*, <http://www.loopvanuatu.com/vanuatu-news/digicel-and-tvl-agree-provide-free-access-web-based-public-health-information-system> (accessed on 9 October 2018). [13]
- Marsden, C. (2016), “Comparative Case Studies in Implementing Net Neutrality: A Critical Analysis of Zero Rating”, *SCRIPTed*, Vol. 13/1, pp. 1-39, <http://dx.doi.org/10.2966/scrip.130116.1>. [46]
- MCMC (2017), *Internet Users Survey 2017*, Malaysian Communications and Multimedia Commission, <https://www.mcmc.gov.my/skmmgovmy/media/General/pdf/MCMC-Internet-Users-Survey-2017.pdf> (accessed on 11 October 2018). [55]
- Ministry of Social Development (2018), “Cheap As Data”, <https://www.workandincome.govt.nz/about-work-and-income/our-services/cheap-as-data/index.html> (accessed on 10 October 2018). [15]
- MYBROADBAND (2017), *FNB banking app now zero-rated on mobile networks*, <https://mybroadband.co.za/news/banking/217490-fnb-banking-app-now-zero-rated-on-mobile-networks.html> (accessed on 10 October 2018). [17]
- News18 (2018), *Reliance Jio Turns 2: A Look Back at How The Company Has Impacted Telecom Services in India*, <https://www.news18.com/news/tech/reliance-jio-turns-2-a-look-back-at-how-the-company-has-impacted-telecom-services-in-india-1868377.html> (accessed on 11 October 2018). [54]

- NZ Herald (2006), *Telecom ordered to open up lines*, [34]
https://www.nzherald.co.nz/business/news/article.cfm?c_id=3&objectid=10415202 (accessed on 11 October 2018).
- NZ Herald (2004), *Juha Saarinen: Paying the price of peer pressure*, [32]
https://www.nzherald.co.nz/technology/news/article.cfm?c_id=5&objectid=3569738 (accessed on 11 October 2018).
- OECD (2019), *An Introduction to Online Platforms and Their Role in the Digital Transformation*, OECD Publishing, Paris, <https://dx.doi.org/10.1787/53e5f593-en>. [60]
- OECD (2015), *OECD Digital Economy Outlook 2015.*, OECD, Paris. [1]
- OECD (2013), *Internet Traffic Exchange: Market Developments and Policy Challenges*, OECD Publishing, <https://doi.org/10.1787/5k918gpt130q-en>. [2]
- OECD (2006), *Internet Traffic Exchange: Market Developments and Measurement of Growth*, [http://www.oecd.org/officialdocuments/publicdisplaydocumentpdf/?cote=DSTI/ICCP/TISP\(2005\)11/FINAL&docLanguage=En](http://www.oecd.org/officialdocuments/publicdisplaydocumentpdf/?cote=DSTI/ICCP/TISP(2005)11/FINAL&docLanguage=En) (accessed on 11 October 2018). [31]
- OECD (2001), *The Development of Broadband Access in OECD Countries*, OECD, Paris, <https://www.oecd.org/sti/ieconomy/2475737.pdf> (accessed on 9 October 2018). [9]
- OECD (2001), “The Development of Broadband Access in the OECD Countries”, *OECD Digital Economy Papers*, No. 56, OECD Publishing, Paris, <http://dx.doi.org/10.1787/233822327671>. [30]
- PC World Australia (2015), *iiNet gets set to put Netflix in its quota-free zon*, [43]
<https://www.pcworld.idg.com.au/article/569359/iinet-gets-set-put-netflix-its-quota-free-zone/> (accessed on 11 October 2018).
- Pornwasin, A. (2018), *A giant leap for social Commerce*, [58]
http://www.nationmultimedia.com/detail/Startup_and_IT/30350506 (accessed on 11 October 2018).
- Pornwasin, A. (2018), *Facebook vows to boost its investment in Thailand*, The Nation, [57]
<http://www.nationmultimedia.com/detail/Corporate/30345471> (accessed on 11 October 2018).
- Prepaid Data SIM Card Wiki (2018), *Vietnam*, <http://prepaid-data-sim-card.wikia.com/wiki/Vietnam> (accessed on 9 October 2018). [8]
- Pullar-Strecker, T. (2016), *Ministry responds to call for free access from smartphone-owning beneficiaries* | *Stuff.co.nz*, <https://www.stuff.co.nz/business/industries/81341141/Ministry-responds-to-call-for-free-access-from-smartphone-owning-beneficiaries> (accessed on 11 October 2018). [37]
- Scoop News (2009), *Orcon's O Zone offers free data downloads*, [35]
<http://www.scoop.co.nz/stories/BU0905/S00822.htm> (accessed on 11 October 2018).
- Spark (2017), *Spark offers unlimited mobile data for under \$20 a week*, [40]
<https://www.sparknz.co.nz/news/cheapest-data-ever/> (accessed on 11 October 2018).
- State of California (2018), *Senate Bill - SB-822 Communications: broadband Internet access service*, [25]
https://leginfo.legislature.ca.gov/faces/billTextClient.xhtml?bill_id=201720180SB822 (accessed on 8 October 2018).

- Stocker, V. et al. (2017), “The growing complexity of content delivery networks: Challenges and implications for the Internet ecosystem”, *Telecommunications Policy*, Vol. 41/10, pp. 1003-1016, <http://dx.doi.org/10.1016/J.TELPOL.2017.02.004>. [61]
- Sunday Times (2017), *Vodacom announces free internet access for university students*, <https://www.timeslive.co.za/news/sci-tech/2017-10-04-vodacom-announces-free-internet-access-for-university-students/> (accessed on 10 October 2018). [14]
- Telenor Group (2015), *WowBox reaches 1.5 million users*, <https://www.telenor.com/media/inside-telenor/2015/wowbox-reaches-1-5-million-users/> (accessed on 10 April 2018). [11]
- Telstra (2018), *Telstra - What content can I access without using my monthly data allowance?*, <https://www.telstra.com.au/support/category/broadband/manage/bigpond-unmetered-sites> (accessed on 11 October 2018). [44]
- The Wire (2018), *India Approves New Net Neutrality Rules, Signs off on New Telecom Policy*, <https://thewire.in/tech/india-approves-new-net-neutrality-rules-signs-off-on-new-telecom-policy> (accessed on 11 October 2018). [52]
- TRAI (2017), *Recommendations On Net Neutrality*, https://www.trai.gov.in/sites/default/files/Recommendations_NN_2017_11_28.pdf (accessed on 10 April 2018). [51]
- TRAI (2016), *Prohibition of Discriminatory Tariffs for Data Services Regulations*, https://traigov.in/sites/default/files/Regulation_Data_Service.pdf (accessed on 10 April 2018). [49]
- TRAI (2016), *Recommendations on Encouraging Data usage in Rural Areas through Provisioning of Free Data*, https://www.trai.gov.in/sites/default/files/Recommendations_19122016.pdf (accessed on 10 April 2018). [50]
- U Mobile (2018), *Free Unlimited Data for Facebook, Instagram and Twitter*, <https://www.u.com.my/plans/data-services/app-onz> (accessed on 11 October 2018). [56]
- Van Dat, L. (2017), *Vietnam’s Business Owners Are Loving Facebook*, Bloomberg, <https://www.bloomberg.com/news/articles/2017-11-07/vietnam-relies-on-once-banned-facebook-to-kick-start-businesses> (accessed on 11 October 2018). [59]
- van Schewick, B. (2015), “Network Neutrality and Quality of Service |”, *Stanford Law Review*, Vol. 67/1, <https://www.stanfordlawreview.org/print/article/network-neutrality-and-quality-of-service/> (accessed on 10 April 2018). [19]
- Viezens, M. and F. Callorda (2016), *The Digital Divide in Latin America: Broadband Price, Quality and Affordability in the Region*, IDRC CRDI, <https://idl-bnc-idrc.dspacedirect.org/bitstream/handle/10625/55822/IDL-55822.pdf?sequence=1&isAllowed=y> (accessed on 11 October 2018). [47]
- Waring, J. (2014), *Spark offers 1GB of free access to Facebook, Twitter*, Mobile World Live, <https://www.mobileworldlive.com/featured-content/home-banner/spark-offers-1gb-free-access-facebook-twitter/> (accessed on 11 October 2018). [36]