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Via Email

Dear Ms. Kotwal:

I appreciate the opportunity to submit the following comments in the Consultation on Differential Pricing for Data Services.¹ The paper initiating the Consultation asks whether TRAI should permit Telecom Service Providers (TSPs) to engage in differential pricing and, if so, whether any regulatory restrictions should be imposed. In fact, differential pricing is something of a misnomer, since that term suggests that different end users are being charged different prices for the same service. A similar critique applies to the tendency in European debates to refer to service differentiation as positive or negative price discrimination. A more appropriate term would be service differentiation, since TSPs vary the services being offered and charge the same price to every end user purchasing that service plan.

The analysis is complicated by the fact that different TSPs are using service differentiation for two distinct but sometimes overlapping purposes. The first approach treats service differentiation as a transitional step targeted towards those who are not currently Internet users, such as Facebook's Free Basics. These packages offer low-cost or no-cost basic services designed to entice nonusers into beginning to use the Internet with the expectation that these users will eventually trade up to full Internet service. These packages play a critical role in countries like India, where increasing Internet adoption remains a central goal.

The second approach uses service differentiation to target subsegments of existing Internet users, such as T-Mobile's Binge On, which permits users to watch an unlimited amount of premium video without having that traffic charged against their data caps. These packages tend to be premium add-ons to prepaid data plans and serve to differentiate offerings of a new entrant from those of the existing players. These packages play an important role in more established markets by opening a new dimension along which to compete aside from price and network size.

Economic theory suggests multiple ways in which service differentiation can benefit consumers and encourage Internet adoption. On the demand-side, service differentiation

¹ The author acknowledges and thanks Facebook for its financial support for these comments.

addresses what surveys reveal is the major obstacle to adoption—the fact that the majority of nonadopters do not see the value of an Internet connection—by showcasing high value apps that showcase the benefits of adoption. Service differentiation also reflects the growing heterogeneity of the demands that end users are placing on the network and can enable TSPs to create consumer value by providing offerings better tailored to what consumers want. As demand becomes more diverse, offering an increasingly diverse set of service offerings is TSPs' natural response.

On the supply-side, service differentiation promotes competition by broadening the number of ways that TSPs can compete. Offering service-specific plans targeted at key subsegments of the population can allow new entrants to survive even when they suffer from disadvantages in cost and network size. Conversely, prohibiting service differentiation would limit the dimensions of competition to price and network size, considerations that tend to favor the largest players. Service differentiation also responds to the technical realities of mobile broadband by reflecting the fact that certain services can be provided more cost effectively than others as well as how expensive it can be to support every application over every connection.

These insights are confirmed by a review of the policies that different countries around the world have adopted with respect to service differentiation. Although press reports claim as many as a dozen countries have banned zero rating, a close analysis reveals that only four countries have pursued enforcement actions against zero rating plans. Of those four, three clearly did not categorically ban the practice, and the fourth may not have either and has been overridden by subsequent legislation enacted by the European Union. These enforcement actions tend to be applied more vigorously against service differentiation plans based around proprietary services than to service differentiation plans based on services provided by third parties. They also tend to reflect the fact that service differentiation is primarily the province of smaller providers attempting to challenge well-entrenched incumbents.

An analysis of competition policy reveals that ex ante prohibition of service differentiation would be inappropriate. The circumstances identified by the theoretical literature under which a degree of coordination between services and conduit can harm consumers are stylized and limited. Moreover, surveys of the empirical literature indicate that vertical integration is usually benign or beneficial and conclude that consumers would be better off if regulators did not bar vertical restraints. Competition policy has long recognized that ex ante prohibition is appropriate only for practices that are well established and well understood. When practices are novel and in a state of flux, as is the case with service differentiation, consumer welfare and innovation would be better served by an ex post regime that places the burden on the party challenging the practice to provide empirical evidence of harm. The economic literature also suggests the propriety of recognizing certain safe harbors (e.g., lack of market power, nonexclusively, and nonproprietary services) that should immunize TSPs from liability. A review of the alternatives proposed by the Consultation Paper reveals that they are unlikely to be as effective.

I. DEMAND-SIDE CONSIDERATIONS

Service differentiation also responds to demand-side considerations. First and foremost, the applications and services featured by a TSP can provide strong, tangible motivation to nonadopters who do not see the need for an Internet subscription. In addition, service

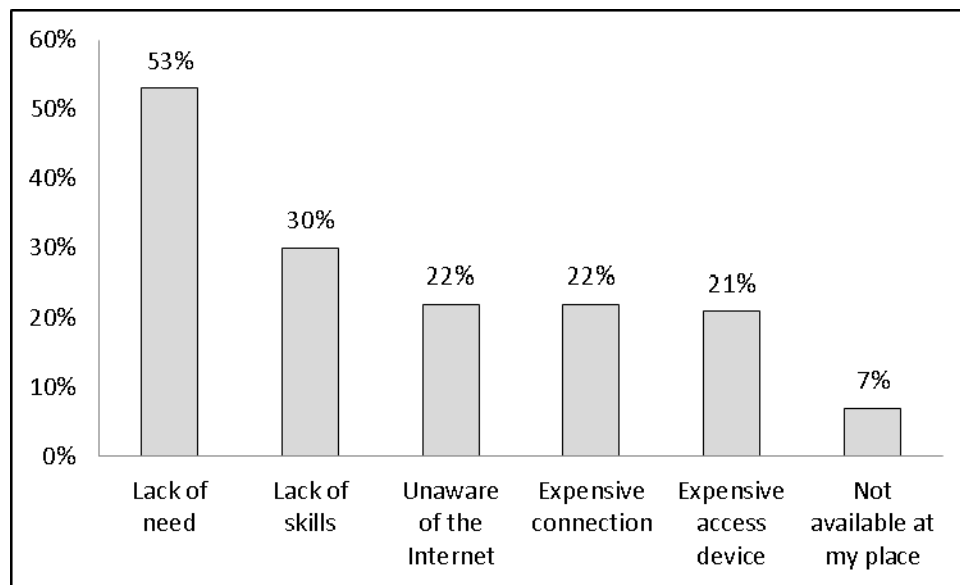
differentiation reflects the fact that the universe of Internet users is becoming increasingly diverse and that different consumers are likely to want different bundles of services. From this perspective, service differentiation may be nothing more than the natural outgrowth of TSPs attempts to respond to the increasing heterogeneity of consumer demand.

A. Demonstration of the Value of an Internet Connection

Service differentiation represents one of the most effective ways to overcome what has emerged as the most significant obstacle to broadband adoption. Surveys have repeatedly shown that the primary reason that most nonadopters choose not to subscribe to the Internet is that they do not see the value in doing so (European Commission 2013; Ofcom 2013; Zickuhr 2013; World Economic Forum 2015). A survey of U.S. nonadopters conducted by the staff of the U.S. Federal Communications Commission and Connected Nation, an organization specializing in connecting rural communities, revealed that two-thirds of nonadopters would not subscribe to the Internet at any price (Carare et al. 2015).

These findings have been confirmed in India. A recent World Economic Forum report cited a Boston Consulting Group study revealing that primary reason for nonadoption is the perceived lack of need to do so. This finding was robust across the more and less affluent segments of society.

Figure 1 – India: Reasons for Nonadoption



Source: World Economic Forum (2015, 19), citing 2014 BCG CCI India study.

These results underscore that making network access more available and less expensive is not enough. Any adoption strategy must also focus on providing clear demonstrations of the value of an Internet connection. By featuring key apps, such as WhatsApp, Wikipedia, and social media, service differentiation can make the benefits of an Internet connection tangible to nonadopters. The empirical studies presented at the recent Internet Governance Forum in Brazil

provided an eloquent demonstration of service differentiation's potential to overcome these demand-side obstacles to Internet adoption. These studies indicated that half of all subscribers to zero-rated services upgraded to a full data plan within thirty days.

B. The Increasing Diversity of the Internet

Another force driving the emergence of service differentiation is the increasing diversity of Internet users (see generally Yoo 2012a). Debates over Internet policy tend to be framed by the way the network existed in the mid-1990s, when the Internet became a mass-market phenomenon. At that time, the Internet was used by a small number of *users* to run a limited number of *applications* over a narrow range of *technologies* interconnected through a fairly simple set of *business relationships*. In short, the Internet was a plaything used by academics and tech-savvy early adopters to send email and browse the web over a personal computer connected to a telephone line. The user population and the primary applications were sufficiently uniform that the logical approach is to design a single network optimized for what people wanted.

Technological and economic change has rendered each of those statements obsolete. The number of Internet users has exploded, which in turn has increased the diversity of the ways that the network is being used. Applications are no longer dominated by simple file transfer applications, such as email and web browsing. Instead, interactive and real-time applications, such as VoIP and video have become increasingly important.

The fact that end users, applications, technologies, and business relationships on the Internet are becoming more heterogeneous suggests that the natural response is for the network to become more diverse as well. Indeed, increasing specialization is a common phenomenon as industries mature. In addition, different groups of users tend to use different clusters of apps. These differences in taste lead to variations in the services offered. As a result, service-specific plans are becoming increasingly common in India and other countries around the world. A recent industry study observed how TSPs are becoming increasingly app centric and are starting to regard OTT service providers as friends and not foes. As many as 85% of TSPs offer value-based plans based around premium services (Allot Communications 2014).

This diversification can create real benefits for consumers. Creating more specialized and lower cost services better tailored to what particular subgroups of users want provides real economic benefits. A brief analysis of developments in the UK offers some useful insights. British DSL provider PlusNet uses deep packet inspection (DPI) to divide the data stream into multiple different levels of priority, providing the highest service to VoIP and online gaming. In so doing, PlusNet has served as a model of public disclosure, explaining what it is doing to prioritize traffic, why connection speeds vary in particular cases, and offering meaningful guidance as to expected speeds during different times of day. Targeting its services in this manner has enabled PlusNet to win numerous industry awards for the quality of their network connections and for customer satisfaction (Yoo 2012b).

Other British TSPs have followed suit. Only one of the providers operating in the UK offers unmanaged access to the Internet. All of the others engage in some form of application-specific management (Cooper 2013). The benefits of such service differentiation are illustrated by the following thought experiment. Suppose instead that all of these TSPs had offered identical services providing unmanaged access to the entire Internet. The availability of a surfeit of me-too offerings would provide little benefit to Internet users and would deprive users with clear

preferences for certain applications of the opportunity to subscribe a service better crafted to their desires.

The ability to use service differentiation to target subsegments is illustrated nicely by T-Mobile. Zero rating streaming music (Music Freedom) and streaming video (Binge On) has tremendous appeal to younger customers. Indeed, one might regard the unlimited text plans that have now become the staple of the market as a classic example of service differentiation.

This growing diversity underscores the benefits of permitting TSPs to offer a range of services and prices instead of restricting them to providing a uniform product at a single price point (Kroes 2012). Indeed, in such a dynamic world, changes in the services offered may prompt competitors to make changes in response. For example, most mobile phone plans today offer unlimited SMS text messaging as a matter of course. Given the commonness of the practice and the benefits to consumers, such plans are not seen as objectionable in any way. But suppose that a company offers the same bundle of no-incremental-cost text messaging services, but chooses to do so via an Internet-based service such as WhatsApp. Too great hostility towards service differentiation could lead regulators to invalidate such a practice, as happened in Chile, even though the provider in that case was arguably simply trying to match the services being offered by its competitors.

Such demand-side service differentiation is completely compatible with the nondiscrimination mandate associated with traditional tariff regulation. The textbook definition of discrimination is a price differential for the same product that is not justified by differences in product quality or cost (see, e.g., Tirole 1988, 133-34; Scherer and Ross 1990, 489). Tariff regulation simply requires that every service plan be available to every interested end user. It has always permitted TSPs to create different classes of service and to charge different amounts for them. Such differentiation is the natural outgrowth of consumer demand that is becoming increasingly diverse.

II. SUPPLY-SIDE CONSIDERATIONS

The benefits that service differentiation can create in stimulating demand for Internet adoption and in delivering greater value to consumers is mirrored by potential benefits on the supply side. Service differentiation can offset the tendency towards natural monopoly that has long been the central policy problem posed by network industries and promote competitive entry notwithstanding the cost advantages enjoyed by the incumbents. Service differentiation also provides ways to deal with the problems stemming from the reality that bandwidth is limited.

A. Service Differentiation as a Way to Mitigate Economies of Scale

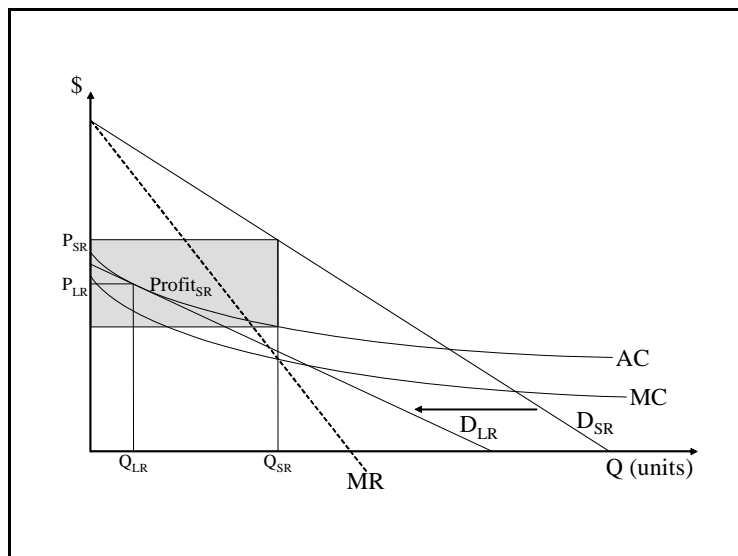
The traditional justification for regulating network industries is the presence of scale economies that are not exhausted even when the entire industry output is produced by a single firm. The traditional source of scale economies is the need to undertake large, up-front capital investments. Large fixed costs give the largest firms a decisive economic advantage. The ability to spread the cost of those up-front investments over a larger customer base allows them to underprice their smaller competitors. Eventually, the cost advantage enjoyed by the largest player widens to the point where it is able to drive all of its competitors out of the market. In that case, even markets that are initially competitive are doomed to collapse into monopolies.

The other force supposedly driving markets for telecommunications networks toward monopoly is network economic effects.² Network economic effects exist when the value of a network is determined by the number of people connected to it and the network becomes more valuable as more people become part of it. Because the value of telecommunications networks increases with the number of people attached to them, they have long been regarded as a paradigmatic case in which network economic effects arise. Because the network becomes more valuable as it becomes larger, network economic effects are often described as creating demand-side economies of scale that also tend to favor the largest networks.

What has been largely overlooked is how allowing networks to differentiate themselves can also alleviate the economies of scale associated with declining average costs (see generally Yoo 2005). It is the fact that price is the only dimension along which firms can compete that gives the largest players their decisive advantage. A different equilibrium can result if competitors are allowed to compete along dimensions other than price. If so, a smaller player may be able to survive notwithstanding lower sales volumes and higher unit costs (and thus higher prices) by tailoring its network towards services that a subsegment of the market values particularly highly. The greater value provided by the differentiation of the network allows a specialized provider to generate sufficient revenue to cover its up-front costs even though its volume is significantly smaller than that of the leading players.

How product differentiation can mitigate the tendency towards natural monopoly caused by significant fixed costs is most easily understood through the theory of “monopolistic competition” pioneered by Edward Chamberlin (1962). Monopolistic competition adopts the same assumptions as the standard natural monopoly model except for two: it allows for the possibility of new entry and it relaxes the assumption that competing products constitute perfect substitutes.

Figure 2 – Short-Run and Long-Run Equilibrium Under Monopolistic Competition



² For the seminal articles, see Rohlfs (1974); Katz and Shapiro (1985); Farrell and Saloner (1985); David (1985); and Arthur (1989).

In the short run, firms engaged in monopolistic competition set price in exactly the same manner as monopolists. Should the resulting equilibrium price exceed average cost, the producer may earn short-run supracompetitive profits. Were products undifferentiated, this short-run equilibrium would be stable. Because competition would be restricted to a single dimension — price — further entry would be futile, since scale economies would allow the producer with the highest volume to seize the entire market.

Allowing for the possibility of product differentiation causes the short-run equilibrium to become unstable. New producers can enter despite cost disadvantages by offering a product with attributes that differ from those offered by the incumbent. Entry by a new product causes the demand curve confronting existing products to shift inwards, as some customers shift their purchases to the new product. Under classic Chamberlinian monopolistic competition, entry by other variants continues until all of the supracompetitive returns have been dissipated, which occurs when the demand curve becomes tangent to the average cost curve.

The result is an equilibrium in which multiple players co-exist despite the presence of unexhausted economies of scale. Even though entrants may operate at a cost disadvantage vis-à-vis their larger rivals, they are able to survive by offering products designed to appeal to a smaller subsegment of the customer base. Conversely, preventing product differentiation could cause the market to devolve into a natural monopoly. Such differentiation is particularly critical for Mobile Virtual Network Operators (MVNOs). Because MVNOs lease all network elements from one of the existing TSPs, they cannot differentiate in terms of the network. The only dimension available for attracting customers aside from price is by emphasizing particular services.

At the same time, service differentiation can ameliorate the demand-side economies of scale created by network economic effects. If the smaller network is optimized for particular functions that a particular subgroup of end users values particularly highly, those end users may be willing to join the smaller network notwithstanding the presence of network economic effects. The increase in value provided by network diversity can dominate any reductions in value resulting from market size (Katz and Shapiro 1985, at 106; Farrell and Saloner 1986b).

So long as consumer preferences are sufficiently heterogeneous, network diversity can mitigate whatever demand-side economies of scale exist by virtue of network economic effects in much the same manner as it mitigates the supply-side economies of scale created by fixed costs. In addition, to the extent that different groups of end users derive utility from adopting one standard over another, network diversity can increase welfare by allowing end users to consume network services that lie closer to their ideal preferences.

The presence of multiple, incompatible networks may thus reflect nothing more than the network owners' attempts to satisfy the underlying heterogeneity in consumer demand. Prohibiting service differentiation threatens to preempt this potential solution by narrowing the dimensions along which firms can compete. Forcing providers to compete solely on the basis of price and network size would reinforce the advantages enjoyed by the largest players.

B. Service Differentiation as a Way to Reduce and Reflect Differences in Cost

Service differentiation may reflect real differences in cost. Consider for example zero rating plans that provide no-cost access to video services. To the extent that the content being downloaded is cached locally, once the content is prepositioned in the cache, the traffic

associated with that video will not have to pay transit to any other network. The lower prices paid for accessing such services may reflect real differences in cost. Under these circumstances, it would be potentially discriminatory not to zero rate access to those services.

Service differentiation may also reflect the fact that building networks is costly. Constructing larger networks requires more capital, which in turn increases the cost of service. For fixed-line networks, the ability to add capacity is constrained only by the physical space in the conduits and the rights of way. For mobile broadband, bandwidth is constrained in large part by the amount of spectrum that the government chooses to allocate, which means that adding capacity is not always a feasible solution. It is for this reason that regulators find it unproblematic that some Internet access providers in airports and other similar locations provide free access to only part of the Internet while restricting certain high bandwidth uses.

It is for this reason that some connections do not offer the full range of IP-enabled services. A familiar example is that Internet access on airplanes and trains often do not support all applications, because a small number of users running video would rapidly exhaust all of the available capacity. Similarly, programs such as Free Basics exclude video and full resolution graphics. As noted below in the discussion of the Netherlands, these high-volume applications can serve as a useful proxy for apportioning the available bandwidth (Yoo 2006).

Another consideration that causes some applications to be supported instead of others are the cost and limitations of modern mobile devices. A significant percentage of data-enabled phones sold today are not true smart phones. Instead, they are feature phones that offer a more limited amount of functionality at a cheaper price. The result is that certain applications may not run in certain environments. Under these circumstances, the differences in services supported may go hand in hand with saving money on devices.

* * *

These theoretical considerations underscore the fact that zero rating can often encourage Internet adoption and promote consumer welfare. These theoretical insights have been confirmed by empirical studies of zero rating. These scholars uniformly conclude that zero rating is often beneficial and that categorically banning zero rating would likely be a mistake (see, e.g., Elaluf-Calderwood 2015; Futter and Gillwald 2015; Galpaya 2015; Galperin 2015).

III. POLICIES WITH RESPECT TO SERVICE DIFFERENTIATION IN OTHER COUNTRIES

Economic theory thus provides a wealth of reasons why service differentiation may actually benefit consumers. The consumer benefits are further illustrated by the fact that 55% of TSP offer application-centric plans and 49% of all TSPs offer some form of zero rating (Allot Communications 2014).

This section moves past pure theory to examine the specific cases in which some nation has engaged in an enforcement action against a TSP that was offering zero rating. Interestingly, most countries have taken a relatively permissive approach with respect to zero rating. The result is enforcement actions are relatively rare. Although some media reports have claimed as many as a dozen countries have banned zero rating, a close review of the actual record reveals this to be an overstatement. In the case of seven countries (Finland, Iceland, Estonia, Latvia, Lithuania, Malta, Japan), the claim that these countries have supposedly banned zero rating are based on a misunderstanding (see, e.g., Guha and Aulakh 2015; Bode 2015a; Kivuva 2015). These articles

appear to have misread a report from *Digital Fuel Monitor* (2014) reporting that zero rating had not been deployed in those countries (see Meyer 2014b for a correct characterization of this data). The lack of zero rating plans appears to be more the result of lack of interest by TSPs than from the active discouragement of regulators. Other countries claimed to have banned zero rating (Norway, Germany) have simply discouraged the practice without taking any formal action.

That leaves only four countries that have brought enforcement actions against zero rating plans (Chile, Canada, Slovenia, and the Netherlands). These comments will also review the regulatory history in these countries as well as the situation in the United States.³ Although these countries are sometimes claimed to have banned all forms of zero rating (see, e.g., Savetheinternet.in Coalition 2015), a close review of the actual record reveals this to be a mischaracterization. Three of these countries clearly did not adopt categorical bans and instead explicitly recognized that some forms of zero rating are permissible, and the actions taken by the two European countries have been superseded by subsequent EU legislation. Interestingly, the enforcement actions tend to focus on attempts to zero rate proprietary services and have had the unfortunate tendency to fall the most heavily on smaller providers attempting to challenge the incumbents.

A. United States

The United States was home to the first complaint filed with a communications regulator about a zero rated service. This complaint was rendered moot when a court invalidated the U.S. Federal Communications Commission's (FCC's) first attempt to regulate network neutrality. Since then, U.S. policy has adopted a circumspect stance with respect to zero rating, although regulators may be starting to show more interest.

1. 2010 Open Internet Order

The first zero rating complaint was brought in January 2011 against MetroPCS under the Open Internet Order adopted by the U.S. Federal Communications Commission in 2010. At issue was whether MetroPCS's plan permitting users to access YouTube without having that traffic count against their data cap violated the discrimination rule.

As of the end of 2010, MetroPCS was the fifth largest wireless provider in the U.S. With less than 3% market share, MetroPCS was almost twelve times smaller than market leaders AT&T and Verizon. In the markets in which it operated, MetroPCS controlled significantly less spectrum than its national rivals, which limited its ability to support video. The inability to support popular video applications such as YouTube put MetroPCS at a competitive disadvantage.

Despite being a relatively small provider, MetroPCS became the first U.S. provider to offer 4G Long Term Evolution (LTE) service in September 2010. Because video delivered to mobile devices does not require the same resolution as full-sized television screens, MetroPCS was able to reduce the bandwidth needed by using Real Time Streaming Protocol (RTSP) to compress the video signal. In this way, MetroPCS was able to offer limited video in markets in

³ The discussion of the U.S. example draws from Yoo (2012b). The discussion of the Slovenian, Dutch, and Chilean examples draws from Layton and Elaluf-Calderwood (2015).

which it possessed only 10 MHz or even 1.4 MHz of spectrum when the recommended implementation requires 40 MHz.

Unable to offer service through a true smartphone, MetroPCS opted to deploy LTE through the Samsung Craft, a less expensive, but more limited device known as a feature phone that employed an operating system known as Binary Runtime Environment for Wireless (BREW). Providers of many popular applications, including Flash and other web plug-ins, did not regard the BREW platform as sufficiently widespread to justify creating a version compatible with BREW.

MetroPCS self-consciously specializes in offering low-cost plans that provide more limited features than its competitors. As Tom Keys, MetroPCS's chief operating officer, stated when launching LTE, "We didn't build this network or this device to be all things to all people" (Fitchard 2010). Requiring that all of MetroPCS's service plans support all applications on equal basis would have made it impossible for them to compete in this manner. The feature phone platform faced real technical limitations that effectively prevented MetroPCS from supporting all forms of video. Indeed, many CODECS did not have media players capable of running on BREW.

On January 3, 2011, MetroPCS revised its 4G LTE service plans. Most notably for purposes of these comments, its lower-end plans allowed unlimited YouTube access at no additional cost. One week later, a group of advocacy groups submitted a letter complaining that the MetroPCS plans that provided free unlimited access to YouTube plans while subjecting other video services such as Netflix to data caps violated the FCC's 2010 Open Internet Order.

As an initial matter, it is hard to see how any business practice implemented by a firm with less than 3% market share could hurt consumers or competition. Moreover, in an era where creating greater competition in wireless networks remains a major policy goal, service differentiation permitted MetroPCS to compete in LTE even though it controlled less spectrum than its rivals.

The FCC's determination not to act on any enforcement actions while the legal challenge of its 2010 Open Internet Order was pending before the courts meant that it did not take any action on this complaint. MetroPCS was subsequently acquired by T-Mobile in October 2012. The issue was mooted by the judicial invalidation of the 2010 Order by *Verizon v. FCC*, 740 F.3d 623 (D.C. Cir. 2014).

2. 2015 Open Internet Order

After the 2010 Order was struck down, the FCC enacted a new Open Internet Order in February 2015. In order to avoid meeting the same fate as the 2010 Order, the new 2015 Order assiduously avoided framing its prohibitions in terms of discrimination. Instead, the 2015 Order established three bright-line rules against blocking, throttling, and paid prioritization. The FCC also adopted a general standard banning unreasonable interference and unreasonable disadvantage, to be evaluated on a case-by-case basis.

In so ruling, the FCC specifically declined to categorically prohibit zero rating, which it called sponsored data. Because the record was mixed regarding the relative merits of the practice, the FCC balanced the potential to distort competition against the ways new service offerings could benefit consumers and opted to address zero rating on a case-by-case basis (FCC 2015, ¶ 152).

In June 2014, while the proceeding that led to the 2015 Open Internet Order was still ongoing, T-Mobile launched its Music Freedom program that permits subscribers to stream music without having that traffic count against their data caps. Notably, T-Mobile receives no fees from any content providers for this service and has opened it to any music streaming service that can satisfy the technical requirements. At the time, T-Mobile was the fourth largest mobile provider in the U.S. With 12% market share, T-Mobile was less than half the size of market leaders Verizon and AT&T.

On November 10, 2015, T-Mobile launched a new zero rating program called Binge On, which permits subscribers access to video services without having that traffic count against their data caps by optimizing the screen resolution to 480p. Again, this program was available to any video service that met the technical requirements. T-Mobile later introduced free music streaming to its MetroPCS customers through a program called Music Unlimited as well as the ability to watch three times as much video through a program called Data Maximizer.

T-Mobile's zero rating program did not appear to raise many concerns for U.S. regulators. At a November 19, 2015, press conference, FCC Chairman Thomas Wheeler called Binge On pro-competitive and innovative, although he pledged to continue to monitor its impact (Eggerton 2015). That same day, Comcast launched a video streaming service called Stream that for \$15 would not count against subscribers' data caps.

The FCC has begun to examine these zero rating practices more closely. On December 16, 2015, the FCC issued letters to Comcast and T-Mobile to make sure the regulator had all of the facts about their programs. On January 4, 2016, the Electronic Frontier Foundation complained that T-Mobile was applying its optimization techniques to all video and not just to streaming services enrolled in Binge On (Gillula 2016). Given that this is applied to all forms of video, just as some wireless ISPs block all forms of video altogether, it is unclear whether the practice would violate any legal prohibition.

It is too soon to determine what the result of these investigations will be. For purposes of these comments, it suffices to note that as of today, U.S. regulators have not brought an enforcement action against any form of zero rating, and they certainly have not adopted any categorical prohibition of the practice.

B. Chile

Chile is a prime example of a country that is often mistakenly claimed to have banned all forms of zero rating. In April 2012, Virgin Mobile began offering service as an MVNO operating on Movistar's network. It offered unlimited access to WhatsApp to its customers who purchased a data plan. By the end of 2014, it had become the fifth largest mobile provider in Chile with a market share of 1.3%.

Chile takes great pride in being the first country to have adopted a network neutrality law on August 2010. On January 29, 2013, the advocacy group, Neutralidad Sí, claimed that free access to WhatsApp violated Chile's network neutrality law and was harming competing message services, such as Line and Telegram. In February 21, 2013, Subsecretaria de Telecomunicaciones (SUBTEL), the Chilean regulator, rejected the claim, noting that the legislation permits TSPs to manage traffic so long as doing so does not impact competition and concluding that Virgin Mobile's plan did not prevent subscribers from accessing other applications. After a further exchange, SUBTEL closed the complaint.

The situation changed with the accession of network neutrality advocate Pedro Huichalaf as head of SUBTEL in March 2014. SUBTEL issued Circular No. 40 on April 14, 2014. Although this is sometimes described as a categorical ban of zero rating, SUBTEL did not ban all forms of zero rating. Instead, it simply banned zero rating programs that did not include all apps of a similar nature. Implicitly, this order sanctioned zero rating schemes that granted free access to all of one kind of app.

The debate over zero rating came to a head once again on July 23, 2014, when the Wikimedia Foundation and Wikimedia Chile sent a letter to SUBTEL explaining how their zero rating service, Wikipedia Zero, operates and seeking clarification on whether Circular No. 40 would apply to it. Huichalaf saw a clear difference between the type of zero rating offered by Wikipedia and the type of promotional offers previously banned by SUBTEL. He further emphasized that the Circular was not a law or a regulation, but rather an invitation to companies to end the practice or to provide the same benefits to all traffic of the same class. He further clarified that the Circular was directed toward the practice of bundling social media apps with voice and data and was not a general ban on zero rating. He saw a clear difference between the type of zero rating offered by Wikipedia and the type of promotional offers previously banned by SUBTEL (SUBTEL 2014a ; Welinder and Schloeder 2014). SUBTEL's actions have proven controversial. Advocacy groups criticized the lack of punishment imposed on the TSPs as too lenient. They have also complained that the approval of Wikipedia Zero represents a double standard.

SUBTEL's approval of Wikipedia Zero plainly shows that Chile has not categorically banned zero rating. Simply put, Chile regards some forms of zero rating as permissible and other forms as problematic. In particular, zero rating plans appear to pass legal muster so long as they are open to all similarly situated applications, which is the case with T-Mobile's Music Freedom and Binge On as well as Facebook's Free Basics.

That said, the invalidation of Virgin Mobile's plan seems regrettable. With only 1.3% market share, Virgin Mobile trailed market leaders Movistar (39%), ENTEL PCS (33%), and Claro (24%), as well as fellow new entrant Nextel (1.7%) (SUBTEL 2015). Virgin Mobile's small size makes it inconceivable that its actions could have harmed consumers. Moreover, as a new entrant, the company must provide customers with some reason to choose it above its more established rivals. Because MVNOs necessarily must use the same network as the incumbent, they cannot differentiate on download speeds or service availability. Instead, they may only differentiate on non-network parameters, such as marketing and customer service.

C. Canada

Canada engages in fairly extensive regulation of TSPs, subjecting them to common carrier regulation and wholesale unbundling. Despite (or perhaps because of) this more heavy-handed approach to regulation, Canadian regulators have adopted a middle-of-the-road approach to network neutrality. For example, on November 20, 2008, the Canadian Radio-Television and Telecommunications Commission (CRTC) ruled that Bell Canada's traffic shaping policies were nondiscriminatory in that they applied equally to Bell Canada's retail customers and the customers being served by its competitors via wholesale access. On October 21, 2009, CRTC issued an additional regulation on what constituted acceptable Internet traffic management practices that recognized the permissibility of network management as a last resort and banned

practices that are “unjustly discriminatory,” “unduly preferential,” or anticompetitive. On January 25, 2011, CRTC issued a ruling approving of usage-based billing.

Canada’s record is similarly mixed with respect to zero rating. Most notably, on January 29, 2015, CRTC ordered Bell Mobility and Vidéotron to stop zero rating their proprietary mobile video services. Although CRTC generally prohibits TSPs from zero rating their own services, the regulator has indicated its willingness to permit zero rating of services owned by third parties (Nowak 2015). Vidéotron has begun testing these limits by offering a zero-rated service called Unlimited Music, which permits subscribers to access leading third-party music streaming services without that traffic counting against their data caps (Bode 2015b).

In short, claims that Canada categorically bans zero rating miss the mark. In fact, media reports characterize the actions of Canadian regulators as having given zero rating the “green light” (Bode 2015b). To the extent that they restrict zero rating, it tends to be programs favoring proprietary services. Lastly, one of the enforcement actions was against Vidéotron, which is the fifth largest wireless provider in Canada with a mere 2.5% market share.

D. EU

The final two countries that have engaged in enforcement actions against zero rating plans are both in Europe, although other countries such as Norway and Germany have criticized zero rating. All of these efforts have been superseded by the European Union’s recent legislation that is widely regarded as condoning many forms of zero rating.

1. Slovenia

Zero rating, known in Slovenia as free data transfer, has been common in Slovenia since 2007. Market leader Telekom Slovenije (48% of the mobile market and 35% of the fixed market as of the end of 2014) offers zero rated access to video from the UEFA Champions League and HBO Go as well as to the music service Deezer and its TviN proprietary online storage. The second largest mobile provider, Si.mobil (29% of the mobile market), provides zero rated access to the World Cup, the VOYO video service, and the Hangar Mapa cloud storage service. The third largest mobile provider, Tušmobil (13% of the mobile market and 1% of the fixed market) provided zero rated access to its own portal to and content downloaded from its site. Fixed-only provider Amis (12% of the fixed market) provided zero rated content from its own website, email, and from its Amis MobiaTV service.

Slovenia enacted a network neutrality legislation on December 31, 2012. Interestingly, during the legislative process, lawmakers specifically deleted a provision that would have prohibited price differentiation.

On July 17, 2014, Dušan Caf, in his capacity as chair of the Electronic Communications Council (SEK), which advises the government on the development of electronic communications, made a complaint about zero rating practices to both the Slovenian regulator, the Agency for Communications Networks and Services (AKOS), and the Slovenian Competition Authority. The complaint focused exclusively on Telekom Slovenia and Si.mobil and made it appoint to exclude mention of the smaller providers.

The Competition Authority responded on September 4, 2014, with a nonbinding opinion rejecting the call for a per se prohibition of all zero rated services. The Competition Authority concluded that doing so might be detrimental rather than beneficial for consumers and that the

assessment of the legality of the mobile operators' offers should be based on the effects of provision of such services.

AKOS did not take any action with respect to the complaint until December 18, 2014. On January 23, 2015, AKOS issued a decision finding several aspects of zero rating plans provided by the two largest operators violated Slovenia's network neutrality law. Somewhat surprisingly, AKOS focused on relatively minor zero rated services while leaving the most important zero rated offerings intact. With respect to Telekom Slovenije, AKOS ordered it to stop zero rating the Deezer music streaming service while permitting it to continue zero rating the UEFA Champions League and HBO Go. AKOS similarly ordered Si.mobil to stop zero rating the Hangar Mapa cloud storage service while permitting it to continue zero rating the World Cup and the VOYO video service.

AKOS followed up this initial action with a ruling on February 20, 2015, ordering Tušmobil and Amis to end all of their zero rating services. As noted above, Tušmobil was only zero rating content from its own portal, while Amis was also zero rating content from its video service.

The fact that some zero rated services were permitted to continue undercuts any claims that Slovenia categorically banned zero rating. It appears that AKOS subjected zero rating plans that provided no-cost access to proprietary content to greater scrutiny than zero rating plans that provided no-cost access to third-party content. Moreover, the manner in which AKOS applied the network neutrality law to zero rating seems somewhat peculiar. Dušan Caf, who brought the initial complaint, has expressed regret that regulator imposed tougher penalties on the smaller providers by ordering them to stop all their zero rated practices, while the incumbent received a lighter reprimand. With respect to the larger providers, the regulator only ordered them to stop zero rating fairly minor services. In music streaming, Deezer trails far behind market leader Spotify, while Hangar Mapa is a trivial cloud provider compared with companies such as Google and EMC. At the same time, the larger providers were allowed to continue to zero rate their premier video offerings of the World Cup, UEFA Champions League, VOYO, and HBO Go. In short, as was the case in Chile, prohibitions of zero rating appear to have placed a heavier burden on smaller providers.

In any event, the EU's recent legislation on the Single Telecom Market discussed below appears to have superseded Slovenia's policies with respect to zero rating. Indeed, members of the government acknowledged that the EU's actions effectively override Slovenia's zero rating decisions (RTV SLO 2015).

2. Netherlands

In the Netherlands, zero rating is known as positive price discrimination, and the Dutch regulator, the Authority for Consumers and Markets (ACM), has enforced the network neutrality law it enacted on June 4, 2012, against zero rating plans on three separate occasions. ACM brought its first enforcement action against zero rating on June 25, 2013, when it issued an order sanctioning Sizz, a mobile phone brand created jointly by Vodafone and the television channel RTL targeted at young women. The problem was that the Sizz app permitted access to RTL content without having that traffic count against subscribers' data caps. The regulator ordered Vodafone to offer the Sizz app as a separate service that can be purchased independently (ACM 2013c). Although the joint venture was supposed to run through 2016, Sizz stopped accepting

new customers on June 1, 2014, two years before its scheduled end (Telecompaper 2011; Schellevis 2014).

The second time occurred on December 18, 2014, when ACM fined Vodafone for allowing customers to access HBO Go for three months without having that traffic count against their data caps. In imposing this fine, the regulator noted that Vodafone's previous experience with Sizz, while not an aggravating circumstance, did put Vodafone on notice that its arrangement with HBO Go likely violated the Dutch network neutrality law (ACM 2014).

On May 27, 2015, after a year of preparation, the Dutch Department of Economic Affairs issued guidelines on network neutrality. These guidelines effectively prohibited zero rating when it ruled that all forms of positive and negative price discrimination violated the Dutch network neutrality law (Kamp 2015). Pursuant these guidelines, on July 22, 2015, ACM ordered Vodafone to stop selling subscriptions to its Endless Spotify service offered as part of its youth-oriented Hi brand, which allowed subscribers to stream music without having that traffic count against their data cap. ACM did grandfather in existing Endless Spotify customers for up to two years when their contract expired (ACM 2015).

The Dutch regulator has thus enforced the network neutrality law fairly aggressively with respect to zero rating plans, applying it to services provided by third parties as well as proprietary services. ACM has not been wholly inflexible in applying the network neutrality. Most notably, on December 30, 2013, ACM allowed T-Mobile to continue to block streaming services such as YouTube and Spotify on the free Wi-Fi service it offered on NS trains. Given the bandwidth limitations, ACM concluded that such blocking was an appropriate measure to minimize the effects of congestion in a way that allowed as many riders as possible to use the internet connection (ACM 2013a, 2013b).

T-Mobile's experience with its free train service makes it clear that Dutch law is not so extreme as to invalidate any practice that favored or disfavored any application. That said, such leniency has its limits. On December 18, 2014, ACM fined KPN for the manner in which it was providing Free Basic Internet service in 176 locations, including Schiphol Airport. The Hybrid Hotspots turned off all of the ports except for ports 80 to 443, which had the effect of blocking applications such as BitTorrent, File Transfer Protocol, SSH, Telnet, VPN, and VoIP. Users who wished to use those services had to purchase Premium Internet service (ACM 2014b).

In addition, certain Dutch policy leaders have been critical of ACM's hostility towards service differentiation. For example, Remko Bos, the former director of the Dutch Independent Post and Telecommunications Authority (*Onafhankelijke Post en Telecommunicatie Autoriteit*), has questioned whether the difficulties in offering a variety of services caused by the regulations might actually be harming consumers (Schoemaker 2012). Similarly, then-European Commissioner for Digital Agenda Neelie Kroes (2012) asked, so long as consumers know what they are getting, "If consumers want to obtain discounts because they only plan to use limited online services, why stand in their way?" (see also Meyer 2014a).

In any event, as will be discussed below, the EU's recent legislation on the Single Telecom Market has effectively displaced Dutch law on zero rating.

3. EU's Single Telecom Market

Slovenia's and Netherlands policies with respect to zero rating have been superseded by the Single Telecom Market legislation enacted by the European Union. Initially proposed by

Neelie Kroes on June 4, 2013, the European Parliament added amendments on April 3, 2014, that would have made service differentiation much more difficult to sustain. Specifically, the Parliament added a provision defining net neutrality as “the principle according to which all internet traffic is treated equally, without discrimination, restriction or interference, independently of its sender, recipient, type, content, device, service or application.” The Parliament also added a provision specifying, “Providers of internet access to end-users shall not discriminate between functionally equivalent services and applications.”

The legislation was then sent to the European Council, where it soon ran into considerable opposition. Documents from the Italian Presidency in November 2014 showed that the Council advocated deleting both the net neutrality definition and the prohibition on discrimination from the legislation. A subsequent document released by the Latvian Presidency in January 2015 similarly concluded that the provision explicitly banning positive price discrimination (including zero rating) “cannot gain the necessary support” and that “[t]he issue of positive price discrimination could be left outside the scope of this instrument.”

The Parliament, Council, and Commission engaged in a trilogue throughout the spring, eventually reaching a compromise on June 30, 2015, that omitted both of the provisions added by the Parliament. The Council approved the compromise language on October 1, although both the Netherlands and Slovenia issued statements criticizing the failure to include stronger net neutrality protections. The Parliament followed suit on October 27.

A consensus has emerged about the likely import of this compromise. First, the final legislation is widely regarded as legitimating zero rating as a practice. Second, the legislation effectively repeals both the Netherlands and Slovenia law with respect to net neutrality. Indeed, the Netherlands conceded as much in the statement it issued when the Council adopted the legislation, and Dušan Caf acknowledged that the EU law in this area had overridden Slovenia’s.

* * *

Close analysis of the actions by various governments with respect to service differentiation yields a picture that is quite different than the one often described. No country has categorically banned zero rating. Quite the contrary, those few countries that have undertaken enforcement actions against zero rating plans have evaluated those plans on a case-by-case basis, finding some forms of zero rating to be permissible and forms to be impermissible. In particular, enforcement authorities have exhibited a greater willingness to accommodate zero rating plans that involve services provided by third parties and have reserved their harshest criticism for attempts to zero rate proprietary services.

The enforcement history also reveals what scholars who have studied zero rating empirically have consistently pointed out that zero rating tends to be undertaken by smaller providers attempting to compete with more established incumbents. These smaller players should be given wide flexibility over the ways they try to compete. The unfortunate reality is that all too often the enforcement policies have hurt the smaller players that policies should be designed to nurture (see, e.g., Elaluf-Calderwood 2015; Futter and Gillwald 2015; Galpaya 2015a, 2015b; Galperin 2015).

IV. ANALYSIS OF POTENTIAL ANTICOMPETITIVE EFFECTS

The foregoing economic analysis provides ample reason for inferring that permitting service differentiation could well yield substantial benefits both in promoting Internet adoption and in benefiting consumers. The enforcement history of zero rating provides another reason to be skeptical of calls for categorical prohibition of service differentiation.

These conclusions draw further support from classic principles of competition policy. A review of the literature bolsters the confusion that the propriety service differentiation should be evaluated on a case-by-case basis with the benefit of the doubt going to the innovation.

A. The Unlikelihood of Consumer Harm

Concerns about agreements between applications and TSPs are fundamentally about contractual cooperation between two levels in the same chain of production, an area of competition policy known as vertical restraints. The conventional wisdom about vertical contractual restraints has undergone something of a sea change over the past half century. Although the conventional economic wisdom was once quite hostile towards vertical restraints, the modern economic literature has shown the circumstances under which vertical restraints can harm consumers are considerably more rare than once thought. Many models show ambiguous results (see, e.g., Vernon and Graham 1971; Salinger 1988) or even consumer benefit (see, e.g., Spengler 1950; Machlup and Taber 1960). The models that do exist that show potential consumer harm tend to be highly stylized and subject to restrictive assumptions (see, e.g., Hylton and Salinger 2001). This makes the equilibria in game theoretic models quite sensitive to changes in assumptions and often causes them to exhibit large, discontinuous changes in response to small changes to the underlying parameters. This has led some to call game theoretic models “Goldilocks theories,” because every parameter must neither be too big or too small for the theory even to be plausible (Liebowitz and Margolis 1999, 251). Thus, policymakers must be careful that all of the factual predicates of each model are satisfied before inferring that consumers are being harmed (Ayres 1990, 1313-14 and 1317).

Even more fundamentally, the game theoretic models typically cited as supporting consumer harm make no attempt to formalize the overall impact on consumer welfare, either by offering a metric for determining optimal innovation or by taking into account potential efficiencies. The problem is that these models assume precisely the type of market structure that is likely to give rise to these efficiencies (Hylton and Salinger 2001, 471). It is for this reason the creators of these models have cautioned that they would not support the broad per se rules (Whinston 1990, at 855-56).

The inference that vertical restraints would harm consumers only under unusual circumstances indicated by the theoretical literature is backed by a solid empirical literature showing that vertical restraints tend to promote consumer welfare. For example, a recent study conducted by four members of the FTC’s staff surveying twenty-two published empirical studies found “a paucity of support for the proposition that vertical restraints/vertical integration are likely to harm consumers.” Indeed, only one study unambiguously found that vertical integration harmed consumers, and “in this instance, the losses are miniscule (\$0.60 per cable subscriber per year).” On the other hand, “a far greater number of studies found that the use of vertical restraints in the particular context studied improved welfare unambiguously.” The survey thus

concluded that “[m]ost studies find evidence that vertical restraints/vertical integration are pro-competitive.” The weight of the evidence thus “suggests that vertical restraints are likely to be benign or welfare enhancing,” which in turn provides empirical support for placing the burden on those opposing the practice (Cooper et al. 2005).

Another survey published in the *Handbook of Antitrust Economics* similarly reviewed twenty-three published empirical studies of vertical restraints. Despite the relatively small sample size, the authors found the empirical evidence to be “quite striking,” “surprisingly consistent,” “consistent and convincing,” and even “compelling.” As a general matter, “privately imposed vertical restraints benefit consumers or at least do not harm them,” while government mandates or prohibitions of vertical restraints “systematically reduce consumer welfare or at least do not improve it.” Together “[t]he evidence . . . supports the conclusion that in these markets, manufacturer and consumer interests are apt to be aligned, while interference in the market [by the government] is accomplished at the expense of consumers (and of course manufacturers).” The authors conclude that “the empirical evidence suggests that in fact a relaxed antitrust attitude towards [vertical] restraints may well be warranted” (Lafontaine and Slade 2008).

Taken together, the theoretical and empirical literature on vertical restraints provide a strong reason for inferring that vertical combinations could well benefit consumers. The question is what implications that inference has for calls for prohibiting vertical combinations in the Internet industry.

B. Ex Post Case-by-Case Review Over Ex Ante Per Se Illegality

The U.S. Supreme Court’s antitrust jurisprudence provides a useful framework for answering this question (Yoo 2007). The primary decision is whether to engage in the type of ex post case-by-case inquiry that characterizes the rule of reason or to apply the type of ex ante categorical prohibition associated with per se illegality.

Since the earliest antitrust decisions, the U.S. Supreme Court has recognized the default rule is the rule of reason (*Standard Oil Co. of N.J. v. United States*, 221 U.S. 1 (1911)). Thus competition policy authorities should generally undertake a fact-specific inquiry into a practice’s actual effect on consumers when evaluating a practice. The Supreme Court has repeatedly recognized that case-by-case analysis is particularly important for new practices that are not well understood. Only when long experience has convincingly proven that practice is almost always harmful should a practice be treated as illegal per se.⁴

The Supreme Court reiterated its framework for determining whether to deviate from the rule of reason and instead treat a practice as illegal per se in its recent decisions on vertical restraints. In *State Oil Co v Khan*, 522 U.S. 3 (1997), the Court recognized that “most antitrust claims are analyzed under a ‘rule of reason,’” under which courts evaluate the competitive impact of a particular practice on a case-by-case basis in light of all of the facts. If, however, a court has sufficient experience with a particular vertical restraint to conclude with confidence

⁴ See *FTC v. Ind. Fed’n of Dentists*, 476 U.S. 447, 458-59 (1986); *Arizona v. Maricopa Cty. Med. Soc’y*, 457 U.S. 332, 342 (1982); *Broad. Music, Inc. v. Columbia Broad. Sys., Inc.*, 441 U.S. 1, 9, 19 n.33 (1979); *Continental T.V., Inc. v. GTE Sylvania Inc.*, 433 U.S. 36, 49-50, 58-59 (1977); *United States v. Topco Assocs., Inc.*, 405 U.S. 596, 607-08 (1972); *White Motor Co. v. United States*, 372 U.S. 253, 263 (1963); *N. Pac. Ry. Co. v. United States*, 356 U.S. 1, 5 (1958).

that it evinces “such predictable and pernicious anticompetitive effect, and such limited potential for procompetitive benefit” that nothing would be lost by prohibiting it without any detailed inquiry into the specific facts, it should be categorically prohibited and declared illegal *per se*. If, on the other hand, “the economic impact of [the challenged] practices [are] not immediately obvious,” courts should refrain from imposing a *per se* rule and continue to apply the rule of reason.

The Court reiterated these same principles in *Leegin Creative Leather Products, Inc v PSKS, Inc.*, 551 U.S. 877 (2007). The Court began by noting, “[t]he rule of reason is the accepted standard for testing whether a practice restrains trade in violation of” the antitrust laws and that courts should declare a practice illegal *per se* only if it evinces “manifestly anticompetitive” effects and a “lack [of] any redeeming virtue.” The Court continued:

As a consequence, the *per se* rule is appropriate only after courts have had considerable experience with the type of restraint at issue and only if courts can predict with confidence that it would be invalidated in all or almost all instances under the rule of reason. It should come as no surprise, then, that “we have expressed reluctance to adopt *per se* rules with regard to restraints imposed in the context of business relationships where the economic impact of certain practices is not immediately obvious.” And, as we have stated, a “departure from the rule-of-reason standard must be based upon demonstrable economic effect”

The implications for the debate over service differentiation are clear: categorical prohibition of new practices like service differentiation with which policymakers do not have much experience would be improper. In the absence of a clear indication of what the competitive impact of permitting service differentiation might be, those practices are better analyzed under the type of *ex post*, case-by-case approach that characterizes the rule of reason rather than the *ex ante*, categorical approach that characterizes *per se* illegality, with the burden of proof placed on the party challenging the practice. Indeed, scholars who study zero rating empirically, many of whom are quite skeptical of the practice, acknowledge that such practices may well be beneficial. Accordingly, they caution against erecting a *per se* prohibition of zero rating (Futter and Gillwald 2015; Galperin 2015; Galpaya 2015a, 2015b; Layton and Elaluf-Calderwood 2015; Thakur 2015).

C. Factors Cutting Against Liability in Case-by-Case Review

Competition policy and the case studies exploring the way that net neutrality laws have been enforced against zero rating provide some guidance as to how to apply a case-by-case approach. Basic features such as the lack of market power, the lack of exclusivity, and the noninvolvement of proprietary services can provide safe harbors that can give clear guidance to those attempting to promote broader network deployment and adoption. That is not to say that the absence of such factors means that the practice is necessarily problematic. If one of the safe harbors is not met, whether a regulator should block practice depends on a complete assessment of its likely impact on consumers.

1. Lack of Market Power

First step under any competition policy analysis is determining whether a firm has market power. The U.S. Supreme Court has clearly established that per se illegality is inappropriate in cases in which the defendant lacks market power (*Jefferson Parish Hosp. Dist. No. 2 v. Hyde*, 466 U.S. 2, 13-18 (1984); *Northwest Wholesale Stationers, Inc. v. Pac. Stationery & Printing Co.*, 472 U.S. 284, 296 (1985)). Even under the case-by-case approach associated with the rule of reason, market power is a “significant consideration” (*Leegin*, 551 U.S. at 885-86).⁵

Market power represents a threshold inquiry for inferring anticompetitive effects (Werden 2014, 750 & n.249), although direct proof of anticompetitive effects may render such an inference unnecessary (*FTC v. Indiana Fed’n of Dentists*, 476 U.S. 447, 460 (1986); *NCAA v. Board of Regents*, 468 U.S. 85, 109-10 (1984)).

2. Nonexclusivity

Another factor that tends to absolve parties from liability is a lack of exclusivity. In this regard, the U.S. Supreme Court’s decision in *Broadcast Music, Inc. v. Columbia Broadcasting System, Inc.*, 441 U.S. 1 (1979), is particularly instructive. That case involved a joint venture that licensed copyrighted music together as a bundle under a blanket license. This device was said to create a new product that created real benefits to consumers. The fact that the license was nonexclusive left would-be licensees free to strike deals with composers and vice versa.

According to the Supreme Court, the lack of experience with the practice and the fact that the combination created a new product strongly counseled against subjecting these blanket licenses to a per se rule categorically declaring the practice illegal. Moreover, the nonexclusive nature of the licenses provided another reason cutting against categorical prohibition, since the ability to license outside of the collective mitigated the risk of consumer harm. The Court therefore held that such practices should be evaluated on a case-by-case basis under the rule of reason. Because the lower court had applied a per se rule without considering the rule of reason, the Supreme Court remanded the case so that the lower court could consider the proper application of the rule of reason in the first instance.

On remand, the lower court relied on the fact that CBS remained free to license outside the blanket license. Trial court had found that the viability of individual licensing limited the collective’s ability to harm consumers (*Columbia Broad. Sys., Inc. v. Am. Soc’y Composers, Authors & Publ’rs*, 620 F.2d 930, 936 (2d Cir. 1980)).

The implications of this case for service differentiation is clear. Like the collectives in *Broadest Music*, the combinations at issue here create new products that benefit consumers in unique ways. Like the collectives in *Broadest Music*, zero rating programs such as Binge On and Free Basics are nonexclusive, which allows anyone who wants access to any apps without having to through the zero rating program to do so.

In short, nonexclusivity serves as an important safety valve that greatly limits the ability to harm consumers. Nonexclusivity is thus a key factor that can protect service differentiation plans from liability.

⁵ See also *Copperweld Corp. v. Indep. Tube Corp.*, 467 U.S. 752, 768 (1984) (characterizing the rule of reason as “an inquiry into market power and market structure designed to assess the combination’s actual effect”).

3. Nonproprietary Services

The last consideration is whether the services being used to differentiate the TSP's offerings are proprietary or provided by a third party. When the service being provided is owned by the same company that owns the network, the combination is properly regarded as a form of vertical integration. When the service being provided is owned by a third party who simply signs a contract with the network, the combination is properly regarded as a vertical contractual restraint.

Vertical restraints are widely regarded as less problematic than vertical integration in that they tend to be more flexible, shorter lived, and cover less than the entirety of either firm's price and output decisions (see, e.g., Hovenkamp 2005, 492). Antitrust law thus provides an economic justification for treating service differentiation based around services provided by third parties more leniently.

* * *

These principles provide useful heuristics for making a quick determination of whether a practice is unlikely to harm consumers. The failure to fall within one of these safe harbors does not necessarily imply that the challenged practice is problematic. If none of the safe harbors is met, a regulator should base its decision on a complete assessment of its likely impact on consumers.

D. The Ineffectiveness of Alternatives

The lack of market power, nonexclusivity, and nonproprietary services serve as important safe harbors from any potential liability. The Consultation Paper also sought guidance on two alternative models for providing service to those without service. Unfortunately, neither of the proposed alternatives is likely to serve as an adequate substitute.

1. Restricting Access by Volume or Time

The first alternative approach proposed by the Consultation Paper suggests that a service could provide initial data consumption for free with the access limited by volume or time instead of being limited by particular content.

The biggest problem is that this solution is addressed exclusively to the supply-side of the problem without taking into account the demand side. Although such restrictions could reduce the cost of service, volume and time restrictions would do little to demonstrate the value of an Internet connection to nonadopters.

It is also far from clear that direct metering of usage will prove more effective in reducing cost than restricting or promoting access to certain apps (Yoo 2006). Past experiments with metered pricing have often proven less than effective. This solution is suggested by Ronald Coase's (1974) classic critique of lighthouses as pure public goods. Lighthouses have long been regarded as posing a paradigmatic example of a market failure in need of governmental redress. The standard account posits that the fact that lighthouse usage is difficult to meter made them particularly appropriate to governmental provision (see, e.g., Mill 1847). Coase rebutted this account by pointing out that throughout most of the 17th and 18th centuries British lighthouses

were operated by private, profit-making enterprises. Lighthouse owners were able to finance their lighthouses through tolls collected at nearby ports, since presumably only those ships that were preparing to enter port would come close enough to shore to have need of the lighthouse's services.

Port usage thus represented an easily metered proxy for determining which ships had benefited from the services of nearby lighthouse. The historical record suggests that this system was quite successful. As of 1820, thirty-four of the forty-six lighthouses in existence had been built by private individuals. Over time, these private lighthouses began to be taken over by a quasi-governmental organization known as Trinity House. Even after being acquired by Trinity House, they continued to be privately financed through user fees rather than through tax revenues.

Coase's analysis of lighthouse financing suggests that the choice between metered usage and prohibiting the use of certain applications may be more complex than initially seems. Given the ambiguity, the better course would be to give TSPs the latitude to explore the full range of different ways to attract consumers.

2. Post hoc reimbursement

The second alternative proposed by the Consultation paper would be for content providers to reimburse users for their browsing and downloading after the fact. As an initial matter, forcing end users to pay up front and receive rebates later may serve as a deterrent to indigent people who have trouble assembling the cash needed to make the up-front payment for the service.

More importantly, this solution focuses exclusively on the supply side. While it may be equally effective in reducing the cost of service, it would do nothing to address the demand-side obstacles to adoption. Providing end users with rebates would do nothing to demonstrate the value of an Internet connection.

CONCLUSION

Service differentiation thus yields many benefits. It can promote Internet adoption by demonstrating the value of an Internet connection. It can allow consumers to enjoy service plans that are more closely tailored to their preferences. It can allow smaller providers to compete more effectively with larger and more entrenched incumbents and can provide useful ways to reduce costs.

Service differentiation's relatively novelty and potential benefits counsels strongly against erecting a categorical prohibition of the practice. Instead, the propriety of any practice should be evaluated through the case-by-case approach associated with the rule of reason. Any more restrictive rule threatens to deprive innovation and experimentation of the breathing room it needs to survive.

Ms. Vinod Kotwal

January 7, 2016

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Sincerely,

A handwritten signature in black ink that reads "Christopher S. Yoo". The signature is written in a cursive style with a large initial 'C' and a distinct 'S'.

Christopher S. Yoo

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REFERENCES

- ACM. 2013a. "Afsluiten Onderzoek 'T-Mobile HotSpot in de Trein.'" *ACM*.
<https://www.acm.nl/nl/publicaties/publicatie/12508/Afsluiten-onderzoek-T-Mobile-HotSpot-in-de-trein/>.
- . 2013b. "Telecom Company T-Mobile is allowed to Restrict Free Internet Access on Board Trains." *ACM*. <https://www.acm.nl/en/publications/publication/12536/Telecom-company-T-Mobile-is-allowed-to-restrict-free-internet-access-on-board-trains/>.
- . 2013c. "Wob-besluit op Verzoek van Bits of Freedom over Netneutraliteit." *ACM*.
<https://www.acm.nl/nl/publicaties/publicatie/13302/Wob-besluit-op-verzoek-van-Bits-of-Freedom-over-netneutraliteit/>.
- . 2014. "Fine on Vodafone for Violation of Net Neutrality Rules." *ACM*.
<https://www.acm.nl/en/publications/publication/14310/Fine-on-Vodafone-for-violation-of-net-neutrality-rules/>.
- . 2015. "Overgangstermijn KPN Voor Beleidsregel Netneutraliteit." *ACM*.
<https://www.acm.nl/nl/publicaties/publicatie/14524/Overgangstermijn-KPN-voor-beleidsregel-netneutraliteit/>.
- Allot Communications. 2014. "App-Centric Operators on the Rise."
<http://www.allot.com/resource-library/mobiletrends-charging-report-h1-2014/>.
- Arthur, W. Brian. 1989. "Competing Technologies, Increasing Returns and Lock-in by Historical Events." *Economic Journal* 99: 116.
- Ayres, Ian. 1990. "Playing Games with the Law." *Stanford Law Review* 42: 1291.
- Bode, Karl. 2015a. "FCC Boss: New T-Mobile Zero Rating Plan 'Pro Competition.'" *DSLReports*. <http://www.dslreports.com/shownews/FCC-Boss--New-T-Mobile-Zero-Rating-Plan--Pro-Competition--135692>.
- . 2015b. "Videotron Tests Net Neutrality with New Zero Rated Music Plan." *DSLReports*.
<http://www.dslreports.com/shownews/Videotron-Tests-Net-Neutrality-With-New-Zero-Rated-Music-Plan-134934>.
- Canada Radio-Television and Telecommunications Commission. 2008. "Telecom Decision CRTC 2008-108." <http://www.crtc.gc.ca/eng/archive/2008/dt2008-108.htm>.
- . 2009. "Review of the Internet Traffic Management Practices of Internet Service Providers." <http://www.crtc.gc.ca/eng/archive/2009/2009-657.htm>.

- . 2011. “Usage-Based Billing for Gateway Access Services and Third-Party Internet Access Services.” <http://www.crtc.gc.ca/eng/archive/2011/2011-44.htm>.
- . 2015. “Broadcasting and Telecom Decision CRTC 2015-26.” <http://www.crtc.gc.ca/eng/archive/2015/2015-26.htm>.
- Carare, Octavian, Chris McGovern, Raquel Noriega, and Jay Schwarz. 2015. “The Willingness to Pay for Broadband of Non-Adopters in the U.S.: Estimates from a Multi-State Survey.” *Information Economics and Policy* 30: 19.
- Chamberlin, Edward Hastings. 1962. *The Theory of Monopolistic Competition*, 8th ed. Cambridge, MA: Harvard University Press.
- Cooper, Alissa. 2013. “How Competition Drives Discrimination: An Analysis of Broadband Traffic Management in the UK.” SSRN. <http://dx.doi.org/10.2139/ssrn.2241562>.
- Cooper, James C., Luke M. Froeb, Dan O’Brien, and Michael G. Vita. 2005. “Vertical Antitrust Policy as a Problem of Inference.” *International Journal of Industrial Organization* 23: 639.
- Council of the European Union. 2015a. “Draft Regulation of the European Parliament and of the Council Laying Down Measures Concerning the European Single Market for Electronic Communications and to Achieve a Connected Continent, and Amending Directives 2002/20/EC, 2002/21/EC and 2002/22/EC and Regulations (EC) No 1211/2009 and (EU) No 531/2012 (First Reading).” <http://data.consilium.europa.eu/doc/document/ST-12279-2015-ADD-1-REV-1/en/pdf>.
- . 2015b. “Proposal for a Regulation of the European Parliament and of the Council Laying Down Measures Concerning the European Single Market for Electronic Communications and to Achieve a Connected Continent, and Amending Directives 2002/20/EC, 2002/21/EC and 2002/22/EC and Regulations (EC) No 1211/2009 and (EU) No 531/2012 - Examination of the Presidency Compromise Text on Net Neutrality.” <http://data.consilium.europa.eu/doc/document/ST-5439-2015-INIT/en/pdf>.
- . 2015c. “Roaming and Open Internet: Council Ready for Talks with EP.” <http://www.consilium.europa.eu/en/press/press-releases/2015/03/150304-roaming-and-open-internet-council-ready-for-talks-with-ep/>.
- . 2015d. “Roaming and Open Internet Rules Adopted by the Council.” <http://www.consilium.europa.eu/en/press/press-releases/2015/10/01-roaming-charges/>.
- David, Paul A. 1985. “Clio and the Economics of QWERTY.” *American Economic Review* 75: 332.
- Digital Fuel Monitor. 2014. “EU28 & OECD Mobile Internet Access Competitiveness Report Q4 2014.” *Digital Fuel Monitor*. http://dfmonitor.eu/insights/2014_nov_premium_q4_update/.

- Eggerton, John. 2015. "Wheeler: Binge On Is Pro-competitive, Pro-innovation." *Multichannel*. <http://www.multichannel.com/news/fcc/wheeler-binge-pro-competitive-pro-innovation/395474>.
- Elaluf-Calderwood, Silvia. 2015. "A Dialogue on "Zero Rating" and Network Neutrality." *Internet Governance Forum*. <http://www.intgovforum.org/cms/187-igf-2015/transcripts-igf-2015/2874-2015-11-12-a-dialogue-on-zero-rating-and-network-neutrality-main-meeting-room-finished>.
- European Commission. 2013. "Communications Committee, Working Document, Subject: Broadband Lines in the EU: Situation at 1 July 2012." http://ec.europa.eu/information_society/newsroom/cf/dae/document.cfm?doc_id=1700.
- European Parliament. 2014. "Proposal for a Regulation Recital 45." <http://www.europarl.europa.eu/sides/getDoc.do?pubRef=-//EP//NONSGML+AMD+A7-2014-0190+237-244+DOC+PDF+V0//EN>.
- Farrell, Joseph, and Garth Saloner. 1985. "Standardization, Compatibility, and Innovation." *RAND Journal of Economics* 16: 70
- . 1986. "Standardization and Variety." *Economics Letters* 20: 71.
- Federal Communications Commission. 2010. "Preserving the Open Internet," Report and Order. *Federal Communications Commission Record* 25: 17905.
- . 2015. "Protecting and Promoting the Open Internet," Report and Order on Remand, Declaratory Ruling, and Order. *Federal Communications Commission Record* 30: 5601.
- Fitchard, Kevin. 2010. "LTE Launches in the U.S.—MetroPCS Style." *Connected Planet*. <http://connectedplanetonline.com/3g4g/news/metropcs-launches-lte-092110>.
- Futter, Ariel, and Alison Gillwald. 2015. "Zero-Rated Internet Services: What Is to Be Done?" Broadband 4 Africa, Policy Paper 1, 2015. http://www.researchictafrica.net/docs/Facebook%20zerorating%20Final_Web.pdf.
- Galpaya, Helani. 2015a. "A Dialogue on "Zero Rating" and Network Neutrality." *Internet Governance Forum*. <http://www.intgovforum.org/cms/187-igf-2015/transcripts-igf-2015/2874-2015-11-12-a-dialogue-on-zero-rating-and-network-neutrality-main-meeting-room-finished>.
- . 2015b. "Zero Rating, Open Internet and Freedom of Expression." *Internet Governance Forum*. <https://www.intgovforum.org/cms/187-igf-2015/transcripts-igf-2015/2932-2015-11-13-ws-79-zero-rating-open-internet-and-freedom-of-expression-workshop-room-8-finished>.
- Galperin, Hernan. 2015. "Zero Rating, Open Internet and Freedom of Expression." *Internet Governance Forum*. <https://www.intgovforum.org/cms/187-igf-2015/transcripts-igf->

2015/2932-2015-11-13-ws-79-zero-rating-open-internet-and-freedom-of-expression-workshop-room-8-finished.

- Gillula, Jeremy. 2016. "EFF Confirms: T-Mobile's Binge on Optimization is Just Throttling, Applies Indiscriminately to All Video." *Electronic Frontier Foundation*. <https://www.eff.org/deeplinks/2016/01/eff-confirms-t-mobiles-bingeon-optimization-just-throttling-applies>.
- Guha, Robin, and Gulveen Aulakh. 2015. "Zero Rating: What Are Countries Doing About It." *The Times of India*. <http://timesofindia.indiatimes.com/tech/tech-news/Zero-rating-What-are-countries-doing-about-it/articleshow/47001571.cms>.
- Hovenkamp, Herbert. 2005. *Federal Antitrust Policy: The Law of Competition and Its Practice*, 3d ed. St. Paul, MN: West Publishing Company.
- Hylton, Keith N., and Michael Salinger. 2001. "Tying Law and Policy: A Decision-Theoretic Approach." *Antitrust Law Journal* 69: 469.
- Kamp, H.G.J. 2015. "Besluit van de Minister van Economische Zaken van 11 mei 2015, nr. WJZ/15062267, Houdende Beleidsregel Inzake de Toepassing Door de Autoriteit Consument en Markt van artikel 7.4a van de Telecommunicatiewet (Beleidsregel Netneutraliteit)." *Overheid.nl*. <https://zoek.officielebekendmakingen.nl/stcrt-2015-13478.html>.
- Katz, Michael L., and Carl Shapiro. 1985. "Network Externalities, Competition, and Compatibility." *American Economic Review* 75: 424.
- Kivuva, Mwendwa. 2015. "Zero Rating, a Poisoned Chalice for the Developing World." *CircleID*. http://www.circleid.com/posts/20151124_zero_rating_a_poisoned_chalice_for_the_developing_world/.
- Kroes, Neelie. 2012. "Next Steps on Net Neutrality - Making Sure you get Champagne Service if that's What You're Paying For." *European Commission*. http://ec.europa.eu/archives/commission_2010-2014/kroes/en/blog/netneutrality.html.
- . 2013. "The EU, Safeguarding the Open Internet for All." *European Commission*. http://europa.eu/rapid/press-release_SPEECH-13-498_en.htm.
- Lafontaine, Francine, and Margaret Slade. 2008. "Exclusive Contracts and Vertical Restraints: Empirical Evidence and Public Policy." In *Handbook of Antitrust Economics*, edited by Paolo Buccirossi, 392. Cambridge, MA: MIT.
- Layton, Roslyn, and Silvia Elaluf Calderwood. 2015. "Zero Rating: Do Hard Rules Protect or Harm Consumers and Competition? Evidence from Chile, Netherlands and Slovenia." SSRN. <http://dx.doi.org/10.2139/ssrn.2587542>.

- Liebowitz, Stan J., and Stephen E. Margolis. 1999. *Winners, Losers & Microsoft: Competition and Antitrust in High Technology*. Oakland, CA: Independent Institute.
- Machlup, Fritz, and Martha Taber. 1960. "Bilateral Monopoly, Successive Monopoly, and Vertical Integration." *Economica* 27: 101.
- Meyer, David. 2014a. "Is Zero Rating a Net Neutrality Issue? Europe's Outgoing Digital Chief Doesn't Think So." *GigaOm*. <https://gigaom.com/2014/10/20/is-zero-rating-a-net-neutrality-issue-europes-outgoing-digital-chief-doesnt-think-so/>.
- . 2014b. "Pro-Net Neutrality Norway Advises Carriers to Avoid Zero-Rating." *GigaOm*. <https://gigaom.com/2014/11/18/pro-net-neutrality-norway-advises-carriers-to-avoid-zero-rating/>.
- Nowak, Peter. 2015. "Why 'Zero Rating' is the New Battleground in Net Neutrality Debate." *CBC News*. <http://www.cbc.ca/news/business/why-zero-rating-is-the-new-battleground-in-net-neutrality-debate-1.3015070>.
- Ofcom. 2013a. "Communications Market Report 2013." *Ofcom: Stakeholders*. http://stakeholders.ofcom.org.uk/binaries/research/cmr/cmr13/2013_UK_CMV.pdf.
- Rohlf, Jeffrey. 1974. "A Theory of Interdependent Demand for a Communications Service." *Bell Journal of Economics and Management Science* 5: 16.
- RTVSLO. 2015. "Zvodeneli Kompromis Medmrežne Nevtralnosti Pustil Nezasovoljstvo." *RTVSLO*. <http://www.rtvlo.si/znanost-in-tehnologija/zvodeneli-kompromis-medmrežne-nevtralnosti-pustil-nezasovoljstvo/368779>.
- Salinger, Michael A. 1988. "Vertical Mergers and Market Foreclosure." *Quarterly Journal of Economics* 103: 345.
- Savetheinternet.in Coalition. 2015. "Dear Mark Zuckerberg, Facebook is Not, and Should Not be the Internet." *Hindustan Times*. <http://www.hindustantimes.com/tech/dear-mark-zuckerberg-facebook-is-not-and-should-not-be-the-internet/story-w9S3uhnEYVP8L85EtbTqCO.html>.
- Scherer, F.M., and David Ross. 1990. *Industrial Market Structure and Economic Performance*, 3d ed. Boston: Houghton Mifflin.
- Schellevis, Joost. 2014. "Vodafone en RTL Stoppen met 'Vrouwenprovider' Sizz." *Tweakers*. <http://tweakers.net/nieuws/95551/vodafone-en-rtl-stoppen-met-vrouwenprovider-sizz.html>.
- Schoemaker, Rene. 2012. "OPTA Ziet Niets in Nederlandse Netneutraliteit" [OPTA Doesn't Like Dutch Net Neutrality Law] (in Dutch). *Webwereld*. <http://webwereld.nl/e-commerce/57142-opta-ziet-niets-in-nederlandse-netneutraliteit>

- Spengler, Joseph J. 1950. "Vertical Integration and Antitrust Policy." *Journal of Political Economy* 58: 347.
- Subsecretaria de Telecomunicaciones. 2014a. "Ley de Neutralidad y Redes Sociales Gratis." *Subsecretaria de Telecomunicaciones*. <http://www.subtel.gob.cl/ley-de-neutralidad-y-redes-sociales-gratis/>.
- . 2014b. "Of. Circular N° 40/DAP 13221 /F-51." *Subsecretaria de Telecomunicaciones*. http://www.subtel.gob.cl/transparencia/Perfiles/Transparencia20285/Normativas/Oficios/14oc_0040.pdf.
- . 2015. "Sector Telecomunicaciones Año 2014." *Subsecretaria de Telecomunicaciones*. <http://www.subtel.gob.cl/attachments/article/5521/PPT%20Series%20Diciembre%202014%20VFinal.pdf>.
- Telecompaper. 2011. "Vodafone NL, RTL Present Sizz." *Telecompaper*. <http://www.telecompaper.com/news/vodafone-nl-rtl-present-sizz--783261>.
- . 2014. "Vodafone, RTL to End Sizz Joint Venture." *Telecompaper*. <http://www.telecompaper.com/news/vodafone-rtl-to-end-sizz-joint-venture--1009523>.
- Thakur, Dhanaraj. 2015. "A Dialogue on "Zero Rating" and Network Neutrality." *Internet Governance Forum*. <http://www.intgovforum.org/cms/187-igf-2015/transcripts-igf-2015/2874-2015-11-12-a-dialogue-on-zero-rating-and-network-neutrality-main-meeting-room-finished>.
- Tirole, Jean. 1988. *The Theory of Industrial Organization*. Cambridge: MIT Press.
- Vernon, John M., and Daniel A. Graham. 1971. "Profitability of Monopolization by Vertical Integration." *Journal of Political Economy* 79: 924.
- Welinder, Yana, and Carolynne Schloeder. 2014. "Chilean Regulator Welcomes Wikipedia Zero." *Wikimedia Blog*. <http://blog.wikimedia.org/2014/09/22/chilean-regulator-welcomes-wikipedia-zero/>.
- Werden, Gregory J. 2014. "Antitrust's Rule of Reason: Only Competition Matters." *Antitrust Law Journal* 79: 713.
- Whinston, Michael D. 1990. "Tying, Foreclosure, and Exclusion." *American Economic Review* 80: 837.
- World Economic Forum. 2015. "Expanding Participation and Boosting Growth: The Infrastructure Needs of the Digital Economy." *World Economic Forum*. http://www3.weforum.org/docs/WEFUSA_DigitalInfrastructure_Report2015.pdf.
- Yoo, Christopher S. 2005. "Beyond Network Neutrality." *Harvard Journal of Law and Technology* 19: 1.

- . 2006. “Network Neutrality and the Economics of Congestion.” *Georgetown Law Journal* 94: 1847.
 - . 2007. “What Can Antitrust Contribute to the Network Neutrality Debate.” *International Journal of Communication* 1: 493.
 - . 2012a. *The Dynamic Internet: How Technology, Users, and Businesses Are Transforming the Network*. New York: AEI Press.
 - . 2012b. “Network Neutrality and the Need for a Technological Turn in Internet Scholarship.” In *Routledge Handbook of Media Law*, edited by Monroe E. Price, Stefaan G. Verhulst, and Libby Morgan, 539. London: Routledge.
- Zickuhr, Kathryn. 2013. “Who’s Not Online and Why.” *Pew Research Center*.
<http://www.pewinternet.org/2013/09/25/whos-not-online-and-why/>.