What kind of Net Neutrality Regulation Does Mexico Want?

CPI COMPETITION POLICY INTERNATIONAL

By Martin Cave

Introduction

The point about the question in the title is that it is one which I cannot possibly answer. It is up to Mexico decide what it wants! So what I intend to do is discuss some of issues which I think may influence the country's decision.

The elusive term network (or net) neutrality (NN) was first coined by Timothy Wu in 2002. It was quickly taken up as a cause in the US, leading to enforcement action and additional regulatory proposals a few years later. In other jurisdictions it was on a slower burner. Thus in Europe the first major initiative taken by the European Commission, in the form of a questionnaire, was taken in 2010, although the Parliament of one country, the Netherlands, passed NN legislation in 2011. However, as described below, by the end of 2016 both the US and the EU had NN regulation in place, subject in the US to a final appeal to the courts.

The focus has now switched to other countries and regions. So far, however, action has limited. India has passed NN rules, which attracted considerable interest because it led to a conflict with Facebook. Brazil is also taking steps to introduce NN legislation. Thus the spread of NN regulation is so far limited.

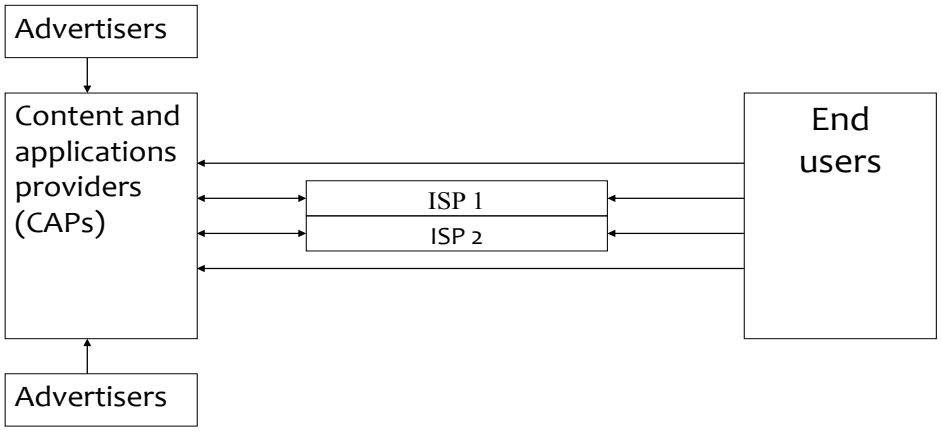
The debate invokes a diverse set of issues. Proponents regard it as a measure necessary to preserve the freedom and openness of the internet, and the innovation and social and political benefits which that brings. Opponents sometimes describe NN as a solution in search of a problem. In commercial terms, the debate pits content and applications providers against network operators. Given what the parties claim is at stake, it is a sensible issue for any regulator to explore.

This paper is designed to assist that process of exploration. After an overview in section 2, it notes the disagreement about the goals on NN in section 3. Sections 4 and 5 focus on the two major components of the NN debate. Section 6 examines some international experience and section 6 asks if Mexico needs NN regulation.

An overview of the issues

Some of the issues can be illustrated via Figure 1, which shows the flows of services and money among three groups: content and application providers (CAPs), such as Google and Netflix; network operators or internet service providers (ISP), such as Comcast and TelMex; and end users, particularly households. It is notable that the same firm may be involved in both the CAP and the ISP businesses.

The interests of CAPs and ISPs are in some degree complementary, in some ways competitive. Each needs the other: the CAP needs the ISP to deliver its content; the ISP needs the CAPs to encourage and expand demand for its broadband service. However, competition comes in over the division between the two types of firm of end user revenues, based on households' willingness to pay for delivered content.



Note: arrows denote financial flows.

Figure 1

Areas of conflict, upon which NN regulation bears, include the following matters:

1) Traffic management and transparency

In figure 1, each ISP is depicted as transporting content supplied by the set of CAPs to end users. If this traffic is managed, it gets there just as well and more economically. This process includes prioritisation – for example ensuring that streamed video arrives in the required sequence, while emails can cope with some delay. Such 'basic' traffic management can enhance the capacity of the networks considerably and keep down costs. It would ideally be communicated to end users comparing

the services of various ISPs. Regulation has been put in place to ensure that such data are available. However it is not an easy thing for most end users to make qualified judgements about.

Another problem is that of distinguishing benign or acceptable traffic management from the anti-competitive conduct now described.

2) Foreclosure

Suppose in the figure that ISP1 owns a CAP which is in rivalry with other CAPs. It would probably enhance the combined entity's profits to slow upon the traffic emanating from the rival content providers, thus degrading the end users' service. This can be done either by blocking the traffic, or by degrading ('throttling') it. It was exactly a charge of this nature which led the FCC into its first conflict with Comcast, and ignited the NN issue in the USA. In most jurisdictions, such conduct by a dominant firm runs the risk of breaching competition law.

3) Tiered services.

Figure 1 describes three flows of services and payments which are key to the NN debate: payments made by end users to their ISP; payments made by end users to CAPs; and payments flowing (in one direction or another) between CAPs and ISPs. (Also significant are flows going to CAPs from advertisers.) Part of the NN debate revolves around the question of whether these services should be available at a uniform quality of service, or at varying qualities of service each associated with a different price.

The notion that end users should be allowed to purchase from their ISP different speeds or download capacity is not generally seen as problematic by either side of the NN debate. Nor is there any significant appetite to limit in general the prices end users pay for content, outside actions taken in some jurisdictions against dominant content suppliers (notably of live sports rights and Hollywood films).

However, the third flow is more controversial: should an ISP be able to take money from a CAP in return for prioritising, or otherwise favouring, delivery of that CAP's content?

Historically, cable networks have had a negotiated relationship with the channels they carry, although the negotiation may be to some degree in the shadow of regulation. Thus 'basic' channels may have to pay for carriage, while a premium channel capable of attracting viewers to the cable operator may be paid to come aboard. The instant case is not identical with the cable precedent: unlike a broadband network, a cable system has a fairly unambiguous capacity constraint and quality of service, whereas a broadband networks quality is variable.

One way of describing a prohibition of such differential pricing in the NN debate is to say NN constrains this price to be zero. The pros and cons of doing so are outlined in sections 4 below.

A particularly controversial variant of such a transfer is zero rating.[1] Suppose an end user (typically on a mobile network) has a down-load limit. A CAP can make a payment to the ISP, in return for which that network will tell its customers that access to the content provider will not count against their download limit. Where the CAP is advertiser-supported, with no cash nexus with the end user, this may be a way of implementing a profit-enhancing strategy to acquire or bind customers. Where the arrangement with the ISP is exclusive (non-replicable for any rival CAP) it may attract anti-trust or regulatory scrutiny.

In addition, there are several further aspects which need to be considered:

4) Fixed vs. mobile, and 5G

Does the debate over NN play out in the same way for fixed and mobile networks? In its 2010 Order on NN, the FCC Order imposed less strict prohibitions on mobile than on fixed networks (see below). It did not persist with this approach, however.

A factor which might justify differences in treatment is that, because of spectrum limitations, capacity constraints in mobile networks are tighter than in fixed. There is also more network sharing between mobile network operators, the on-selling of capacity to mobile virtual network operators, and use of one operator's network by roamers attached to another network. This somewhat muddies the waters over which network does what.[2]

The advent of 5G will add further complications. In one vision, 5G will bring universal connectivity of humans and machines, connecting millions or billions of devices at high speeds and low latency. However, the cost of so doing will be every high, and the situation described above is likely to be confined to densely populated urban areas. Elsewhere 5G will initially serve as a faster, cheaper version of 4G, and a possibly different network will service the internet of things. As time passes, the coverage of the former area will expand. In that area, a wide range of applications and sectors - known as 'verticals' – will be served (*e.g.*, assisted driving, eHealth, energy management, possibly safety applications). Each will require a separate configuration. This seems incompatible with a strictly drafted NN principle which limits traffic management to purely technical requirements, rather than finding a balance between cost and willingness to pay.[3]

A further difference from earlier generations embodied in 5G is that it embodies virtualisation. This involves implementing the functions of the communications infrastructure in software running on standard computing equipment, following the precedent of data centres, which have gone through a similar transformation. 5G thus uses software defined networking and network function virtualisation. This reduces costs, and simplifies the addition of new services. The framework for these developments

[1] See J Eisenach, The economics of zero rating. Nera Economic Consulting, 2015 and C Marsden, 'Comparative case studies in implementing net neutrality: a critical analysis of zero rating,' script*ed* 13 (1) May 2016. Frieden, R., Grey nuances in the black and white debate over subsidized Internet access Telecommunications Policy (2016), http://dx.doi.org/10.1016/j.telpol.2016.10.002

[2] See P Alexiadis, EU Net Neutrality policy and the Mobile Sector: the Need for Competition Law Standards, pp. 17-19, 2016, available at https://chillingcompetition.com/2016/05/16/eu-net-neutrality-policy-and-the-mobile-sector-the-need-for-competition-law-standards-by-peter-alexiadis/

[3] Ibid. p.20 (footnotes omitted)

has been standardised by standards bodies such as ETSI. But the thrust of this development is to strengthen the trend towards the heterogeneity of network provision.[4]

Finally, with 5G Wi-Fi is likely to be more fully integrated with other mobile communications technologies, so that the device swaps between them automatically. Imposing single and homogeneous performance characteristics in the presence of 'mix and match' technologies may be impractical or, at best, inefficient.

The conflict over objectives

The NN issue is unusually bedevilled by conflicts over objectives. Regulators are no stranger to these. They arise very obviously when they have duties which embrace both standard economic efficiency (which in some circumstances may be achievable by use of competition), and equity or universal service objectives. A lot of effort has been put into this reconciliation.[5]

Within the economic efficiency framework, regulators are often torn between the goals of static and dynamic efficiency. For example, telecommunications firms tell them that investment is best promoted by reducing their obligations to offer access by competitors to their facilities, because the resulting reduction in downstream competition will increase returns and encourage the introduction of new technologies.

The economic literature on NN, as described below, uses the standard efficiency formula for appraisal. A model is constructed of the interactions among the various agents involved in meeting end user demands. The outcome is evaluated broadly in terms of customers' own valuations for private values. In principle public benefits would also be estimated, but this has not happened in practice. Models giving clear results tend to be static in nature, ignoring investment and innovation effects, although some dynamic models exist. As for empirical estimates of net benefits in these terms, with one exception considered below, the problem seems so far to have defied quantification.

NN advocates use a different framework For example, a prominent NN advocate writes:[6]

'Most generally, network neutrality regulation serves 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. More specifically, network neutrality rules aim to, first, foster innovations in applications. ...A greater number of applications also increases the internet's potential to create value in the social, cultural, and political domains. Second, network neutrality rules are designed to protect users' ability to choose how they want to use the network, without interference from network providers....Third, network neutrality rules aim to preserve the internet's ability to improve democratic discourse, facilitate political organisation and action and to provide a decentralised environment for social, cultural and political organisation in which anybody can participate.'

[4] See Peter Alexiadis and Tony Shortall, The Advent of 5G: Should Technological Evolution Lead to Regulatory Revolution? Antitrust Bulletin, Vol. 2 No. 1, November 2016.

[5] Examples include a reverse auction for the task of meeting 'non-commercial' demand

[6] Barbara von Schewick, Network Neutrality and Quality of Service: What a Non-Discrimination Rule Should Look Like, Stanford Law Review, 67(1), 2015, p. 10-12.

If we examine the three points, the first two appear to fall squarely within the 'economic' framework – the first a reference to dynamic efficiency, the second to extending consumer sovereignty and restricting producer power. But the third is clearly non-economic.

I suspect that the factor which has made so much of the NN debate a 'dialogue of the deaf' is precisely the failure to recognise that the participants are pursing different goals.

One approach to resolving among objectives is to 'ask the people', by stated preference methods. 'Net neutrality' is a term of art, with no agreed meaning. It is therefore difficult to get coherent views on it from ordinary people. This is one of the findings of a study on 'The value of net neutrality to European consumers', commissioned by BEREC, the college of EU regulators, based on responses of consumers in four member states.[7] In very short summary, this study found that

"1) Consumers understand the Internet as a space for information and social interaction, not as a platform for data transport. They are not only unaware of network neutrality, but find the term misleading.

2) Quality of experience is most important to consumers. Free, unrestricted and reliable access to high quality of content and communication is what they care about.

3) Network neutrality-related attributes make up around 50% of consumers' purchase decisions. There are different consumer segments that show distinct purchasing behaviour.[8]

4) Consumers want fair play. In addition to their own quality of experience, they care about the quality of experience of others. Some may thus be sceptical about quality-differentiated services."

This study, path-breaking and incomplete as it is, is a useful corrective against the generally 'top-down' tenor of NN discourse.

Tiered levels of service and zero rating

On a number of NN issues a basic consensus seems to exist among contributors to the debate. These include restrictions on blocking, throttling and unreasonable discrimination, affirmative transparency requirements, and an exemption for reasonable network management. However, paid prioritization or tiering aspect remains a hotly disputed aspect of the NN debate remains. In concerns the flows of money among the parties, notably the legitimacy of payments levied by ISPs on CAPs for the delivery of their content to end-users, as set out in figure 1 above.

In the NN debate, there are three fundamentally different ways in principle in which monetary flows between CAPs and ISPs can be set:

[7] Available at http://berec.europa.eu/eng/document_register/subject_matter/berec/reports/5024-berec-report-on-how-consumers-value-net-neutrality-in-an-evolving-internet-marketplace-a-report-into-ecosystem-dynamics-and-demand-side-forces

[8] Author's note: this is based on the observation based on consumers' stated preferences that attributes of the service related to NN (such as zero-rating and the data cap) account for about half of the utility the service provides.

- They can be prohibited, or confined to applications in the minor exceptional cases known as specialised services; this prohibition (or confinement) lies at the core of the continuing NN debate.
- They can be subject to negotiation between the parties; this will likely generate a set of tiered rates at different quality levels corresponding to different levels of priority. The outcome of such negotiations will depend, among others, on the market power exercised by the negotiating parties. In this version, in deference to the status quo, a basic "best efforts" rate is usually assumed to be available at a zero price (but this is not necessarily the case).
- They can be set in a regulatory manner, as a regulated termination rate, in the same fashion as voice termination rates are set by regulators in the context of a "calling party pays" pricing regime, however with a potential differentiation for different qualities of service. The simplest but not the only way of doing this is to set a single, uniform positive rate.

It is worth pointing out that, in relation to broadcasting platforms, there are ample precedents for negotiation between content providers and providers of platforms such as cable and satellite companies. And the resulting money flows can go in both directions. In other words, the issue is not confined to ISP/CAP relationship alone.

It is also important that, in the case of advertiser supported content, there is no direct way in which the content provider can provide a monetary benefit to end-users to exploit its services; the only thing it can do to benefit them, absent zero rating is to reduce the advertising content.

Economic modelling of the tiered service issue[9]

A number of authors have applied the standard tools of economic analysis to evaluate the effects of the above noted options, and the results of some of them are reported below.[10] The models adopted can be either "static", which in this case normally means ignoring the effects on investment, or "dynamic" – taking effects on investment into account. As usually happens, the greater realism of the dynamic models tends to spoil the clearer and more intuitive results of the static models.

One of the earliest and most transparent models is due to Hermalin and Katz.[11] They operate with an ISP structure that is either monopolistic or duopolistic, while CAPs differ in the quality of service that they require. In effect the three options noted above are considered: a uniform QoS at either a zero or a uniformly positive price; and a menu of differentiated service levels at different prices. Indirectly mandating a uniform quality excludes certain providers, generating an effect on end-users welfare that is probably negative. This effect is most pronounced when the imposed price is zero.

This confirms a widely derived and unsurprising result that when end-users have different tastes for attributes of the products they buy, their welfare can be enhanced by being able to pay different prices for different products in the market place.

But work by others has shown the possibility of a counterexample. Economides and Tag introduce into a different model the impact of an externality in the content market.[12] They suppose that

[9] This section necessarily gives an informal and incomplete account of the models.

[10] See also Shane Greenstein, Martin Peitz, and Tommaso Valletti, 'Net neutrality: a fast lane to understanding the trade-offs,' Journal of Economic Perspectives—Volume 30, Number 2, 2016, pp. 127-150.

[11] Benjamin Hermalin and Michael Katz, "The economics of product-line restrictions with an application to the network neutrality debate," *Information Economics and Policy* 19, no. 2 (2007): 215–248.

[12] Nicholas Economides and Joachim Tag, "Network neutrality on the Internet: A two-sided market analysis," *Information Economics and Policy* 24, no.2 (2012): 91–104.

multiple advertiser supported CAPs dealing with a monopoly (alternatively, duopolistic) ISPs. The choice is between having a zero or nonzero termination charge. But they differ from Hermalin and Katz by supposing that end-users gain a benefit from the simple "availability" of additional CAPs, even if they do not use them. This they call a "cross-group externality." And they show that if these externalities are high enough, then in both a monopoly and a duopoly ISP setting, NN can generate more end-user welfare than allowing positive payment for CAPs to ISPs. As before, this corresponds with economic intuition: if more CAPs confer a large enough benefit on all end-users, then this effect might outweigh the detrimental impact on variety noted by Hermalin and Katz. However, no empirical evidence is cited for the presence of the externalities.

Within the Hermalin/Katz model for the NN result to hold, externalities would have to apply at the margin reached under a non-NN policy. Given the apparent low entry barriers for most CAPs, and their observed proliferation, one might think that the benefits offered to non-consumers by the "option" of even more of them might be quite small. However, some CAPs actually are confronted with substantial entry barriers and CAPs already in those markets – like Google, Facebook or ESPN – command market power. The Hermalin/Katz model does not seem to capture, for example, exclusive arrangements between such CAPs and ISPs that could lead to Internet fragmentation, and that could happen in particular under ISP competition.

Gans and Katz[13] have made a useful generalisation of NN, by observing that, as well as prohibiting a tiered pricing relationship between ISP and CAP,[14] it might also refer to the prohibition of discrimination depending on content with respect to the transmission price the ISP charges households. This creates four cases: i) no restriction on either kind of price discrimination by the ISP; ii) a restriction on discrimination in prices charged to CAPs; iii) a restriction on discrimination on prices charged to consumers; iv) no discrimination on either price. They call ii) and iii) variants of weak net neutrality, and iv) strong net neutrality.

They show that either weak form of net neutrality fails, essentially because the ISP can extract the surplus in question using the other non-prohibited form of discrimination. They also show that even strong net neutrality allows the ISP to extract rents, to a degree which varies with the other restrictions placed upon it.

When we enter the looking glass world of dynamic economic models, the mapping between assumptions and results gets more complex. As an illustration, the well-known 2010 model of Choi and Kim assumes a single ISP which either levies no charge on either of the two assumed CAPs, or auctions a higher quality channel to one of them.[15] In their particular setup, they discover that it is impossible to state which regime yields the larger ISP investment, though NN encourages more investment by the CAPs. A later model by the same authors with Doh-Shin Jeon focuses on the impact of the capacity held by the ISP.[16] Other models are specified differently. At least some of them find NN less conducive to ISP investment than its opposite. But one of them also raises the spectre that the absence of net neutrality leading to the 'dirt road' phenomenon – the possibility of ISPs degrading basic internet service to encourage CAPs to trade up.[17]

[13] Joshua S Gans and Michael L Katz, Net Neutrality, Pricing Instruments and Incentives, NBER Working Paper 22040, February 2016.

[14] This would mean that if any content were carried without charge, all content would be so carried.

[15] Jay Pil Choi and Byung-Cheal Kim, "Net neutrality and investment incentives," *Rand Journal of Economics* 41, no.3 (2010): 446-471.

[16] Jay Pil Choi, Doh-Shin Jeon and Byung-Cheol Kim, Net neutrality, Network Capacity and Innovation at the Edges, May 2015

[17] Marc Bourreau, Frago Kourandi and Tommaso Valletti, "Net neutrality and competing internet platforms," *Journal of Industrial Economics* 63, no. 1 (2015): 30-73.

What can we conclude from this? Simple, or even complex, economic models are not by themselves a reliable guide to economic policy. However, the static models do indicate: i) that a restriction like NN on freedom of contract has the potential to distort end-user choices, which ii) it might be expedient to do in the presence of large externalities. This may predispose us to be sceptical of outright NN tiering prohibitions and to favour the permission of negotiation for service differentiation in the absence of other cogent reasons to follow this course. But there is another potential factor – the presence of market power exercised by ISPs. This could open the door to both exploitative and exclusionary conduct – overcharging of CAPs (and ultimately of end-users) and discrimination against CAPs not affiliated with an ISP.

An empirical analysis of zero rating

The above analysis is entirely abstract. But there is an interesting study of zero rating which seeks to establish its impact on consumer surplus.[18] The study estimates a change in demand equation based on two years, 2012 and 2014, where the introduction of zero-rating is one of the factors explaining demand. Data from 16 countries are used. The results show that demand is 0.12% higher when zero-rated plans are available for the selected sample of countries. The total increase in consumer surplus was USD 9 billion. Of course this is not a surprising result: the immediate effect of zero-rating is to transfer money from the CAP to end users. It may, of course, have adverse effects if it entrenches dominance in the CAP market.

Assessment

It has been argued – probably uncontroversially – that tiering is the most durable and important extant economic issue in the NN debate. Because it hinges on the whole gamut of NN considerations, from the desirable degree of product differentiation to the best way to control market power, it is inevitably very complex, and may require compromise among objectives. In particular, if there are concerns about the use of market power by ISPs, then it is sensible to build into the regime a means of managing this risk.

The extreme approaches we have identified in our discussion range from a full NN policy encompassing no charging of any CAPs to the application to the relevant transactions between CAPs and ISPs of nothing beyond competition laws.

In these circumstances, it may be fruitful to examine intermediate solutions. Starting for convenience from the NN end of the spectrum, one such solution is the making of exceptions to the "no price and product differentiation" rule. This already features in the debate. In the United States, exceptions are known as "special services" and parsimoniously defined as "*using some form of network management to isolate the capacity used by these services from that used by broadband Internet access services*." In Europe, they are known as specialised services, and their proper extent is still one of the subjects of sometimes-heated debate.

The best that can be said for this approach is that if differentiation is advantageous, it is likely (but not certain) that even a small amount of it in key areas is better than none. But if the exceptions were confined to such things as emergency services, driverless cars and critical health applications, and if exceptions stop short of the bulk of commercial Internet transactions, the difference from pure NN might be small.

[18] Oscar Saenz De Miera Berglind, The effect of zero-rating on mobile demand: a empirical approach and potential implications', International Journal of Communication, 10(2016), pp. 2442-2459.

A broader departure from NN would be to impose certain *ex ante* restrictions on the transactions which ISPs could enter into with CAPs. These would bear some similarity with prohibitions under the competition laws of the two regions, but could be tailored to meet the circumstances of the case in a way that competition law cannot, and would be distinguished both by their *ex ante* nature and by the different enforcement mechanism which would be entailed.

The logic of this approach is to impose some restrictions on the individual negotiations between ISPs and CAPs. One main argument against allowing such paid prioritization is that monitoring and evaluating it on an individual basis is cumbersome and almost impossible. But pre-specified prioritizations based on generally available and transparent criteria are an alternative. If different applications have different quality of service requirements, then one should be able to design prioritization that is nondiscriminatory in the sense that it is available to all who want to pay for it. This would both reduce transactions costs for parties and reduce enforcement costs. A possible way of doing this could be to require that an operator proposing any quality of service deviation from the best-efforts Internet (which would first have to be defined) would have to formulate a tariffed offerings available to all customers. Such a tariff would have to specify quality and price. It would be difficult, but this would also hold for negotiated outcomes.

The advantage of negotiated outcomes is that the ISP and the CAP have to find common criteria that are verifiable. Under a tariffed version the ISP would have to come forward with a tariff notification to the regulator. In a stronger version of the rule, this would be subject to prior regulatory approval via an open process. While the price schedule would be at the discretion of the ISP, it should follow some restrictions that would prevent discrimination against small users. For example, a monthly fixed fee of a million dollars would exclude all small users, while a high usage fee would be neutral. An alternative to a usage fee could be pricing based on the capacity of lines used. The presence of notified tariffs would make it easier to enforce, for example, prohibitions on margin squeezes when the ISP was also a content provider.

The next step in the interventionist progression puts considerably more detail on the setting of charges. This takes us into the territory of the regulated "termination model", where the level of charges on the CAP to be levied by the ISP are set by a regulatory process. To avoid the problem of a single quality of service, they could allow differentiation of this key attribute.

This could involve crossing the Rubicon from territory in which certain negotiating behaviours and price structures are forbidden or proscribed, into the territory in which detailed prices and commercial arrangements are prescribed or imposed. Yet the lack of intrusive regulation of the latter kind in data termination (as distinct from voice termination) is widely seen as one of the foundations of the success of the internet. Its practical substitute has been a flexible regime of peering and paid peering which operates in the shadow of competition law (including merger control), and has delivered results which are not perfect but satisfactory or better.[19] It has to be kept in mind, however, that this system evolved among large backbone networks that successively admitted smaller networks to the club. However, this may not work for small CAPs relative to large ISPs. Nevertheless, famously, the economist George Stigler is said always to have advised his business clients to seek to get themselves regulated: this was the reliable path to long term excessive profitability. The enthusiasm of some ISPs for the regulation of data termination should thus give us pause before adopting this proposal.

[19] Nicolas Economides, "The Economics of the Internet Backbone", *Handbook of Telecommunication Economics,* ed. Sumit Majumdar, Ingo Vogelsang and Martin Cave, (2005): 373-412.

Where has this discussion taken us? We have three fundamental options for governing transactions between ISPs and CAPs. The strict NN proposition is to prohibit any such payment and with it, any quality differentiation. Absent a special reason such as powerful externalities, this looks likely in competitive circumstances to be welfare reducing.

In contrast, wholly unregulated ISP/CAP transactions might fare well in a world with controllable market power and few significant externalities. If the latter abound and/or are large some interference may be warranted. If the ISP sector were riddled with ineradicable market power, where tiering is concerned then even strict NN might be an n-th best outcome.

We have suggested that, in the right circumstances, it may be fruitful to search for a solution which lies in the middle ground between the extremes of NN and wholly unregulated ISP/CAP transactions. We do not endorse the imposition of a model of regulated differentiation termination charges, but suspect that less intrusive form of intervention can both reduce transactions and enforcement costs and place a limit on, and make more transparent, any use of market power by an ISP. The feasibility of this approach would have to be examined in the circumstances of each jurisdiction. This issue is considered below in relation to Mexico

Selected country/regional experiences: US, EU & Latin America

United States

The recent net neutrality ("NN") proceeding before the U.S. Federal Communications Commission ("FCC") has been the most commented proceeding in the FCC's 80-year history. Almost 4 million comments were received on the proposed rulemaking issued by the FCC in May 2014.

The U.S. Federal Communications Commission ("FCC") started formulating a net neutrality ("NN") policy in 2005 at a time when it was otherwise pursuing a deregulatory path towards the incumbent network operators that are the main ISPs. Over the last ten years, both under Republican and Democratic leadership the FCC has persistently continued to pursue NN obligations on the ISPs. First, in 2005, in the form of an Internet Policy Statement without legal powers, then in a 2008 order against Comcast's policy of throttling P2P services, then in a 2010 Open Internet Order, and most recently in the February 2015 order "Protecting and Promoting the Open Internet."[20] The earlier orders were struck down by federal courts, because the FCC lacked the necessary authority to establish common carrier obligations on ISPs that were classified as "information service" providers. The newest order has withstood challenge in the Federal Court of Appeal of the DC Circuit, but the final decision may rest with the Supreme Court.

In its latest order the FCC took a totally new approach by assuming authority mainly based on two sources. Following a suggestion by the January 2014 Federal Court of Appeals of the D.C. Circuit the first source is the FCC's general authority under Section 706 of the 1996 Telecommunications Act, which is about providing incentives for advanced telecommunications capability.[21] The second and

[20] U.S. Federal Communications Commission, *In the Matter of Protecting and Promoting the Open Internet*, Report and Order on Remand, Declaratory Ruling, and Order, GN Docket No. 14-28 (adopted February 26, 2015).

[21] Verizon v. FCC, 740 F.3d 623 (D.C. Cir. 2014).

more substantial authority is based on the application of Title II of the Communications Act to the Internet. This is a clear reversal of old FCC policy. For years the FCC had "backed itself into a corner"[22] by interpreting ISPs as providers of "information services" rather than of "telecommunication" (FCC 2002 for cable modems and 2005 for all fixed broadband access services).[23] Under the Telecommunications Act of 1996 the FCC has ample authority to regulate telecommunication services but little or no authority to regulate information services. By switching ISPs from information services to telecommunications, the FCC would under Title II gain the necessary authority but, at the same time, may be seen as contradicting its own longstanding legal interpretation. The FCC now considers broadband Internet access service ("BIAS") as a telecommunications service with add-ons that can be information services.[24]

Under the telecommunications provisions of Title II the ISPs become common carriers. At the same time, many other regulations would apply that seem to be inadequate for ISPs. The FCC is therefore forbearing from most of the Title II regulations and, under a light touch approach, only applies a limited set of rules. Specifically, the FCC requires brightline nondiscrimination rules that were already part of the previous NN orders. However, this time the FCC went further in the direction of a purer form of NN than in the previous NN orders. In the 2010 order there had been partial exemptions for reasonable network management, for mobile services and for special services that could be given priority. In contrast, under the 2015 order no tiering will be allowed at all, not even for special services that could be given priority under certain circumstances under the 2010 rule. In addition, ISPs for mobile services are covered similarly to fixed line services. They can only receive some more flexible treatment under the reasonable network management exception, which remains in place but has become more specific than before.

The FCC's brightline NN rules now include:

- no blocking
- no throttling
- no paid prioritisation
- no unreasonable interference: this is a catchall for any newly emerging or not yet discovered discriminations
- extensive transparency requirements.

The blunt prohibition of paid prioritization (tiering) came only late in the game along with the FCC's switch to the Title II classification of ISPs. FCC's proposed NN rulemaking of Spring 2014 indicated that the Commission was leaning toward relying exclusively on Section 706 and that it would have allowed paid prioritization if "commercially reasonable." The subsequent strict denial of paid prioritization comes as a particular surprise to economists, who find quality differentiation for different consumer tastes or for different Internet applications a natural business response that comes closer to customer needs than an "one size fits all" approach.[25] It may, however, come closer to the views

[22] Kevin Werbach,"No dialtone: The end of the public switched telephone networks", *Federal Communication Law Journal* 66, no.2 (2014): 203.

[23] U.S. Federal Communications Commission, *Cable Modem Declaratory Ruling*, 17 FCC Rcd at 4819, ¶ 32 (2002). U.S. Federal Communication Commission, *Wireline Broadband Classification Order*, 20 FCC rcd at 1486365, ¶1427, 1490912, ¶ 10306, (2005).

[24] *See* U.S. Federal Communication Commission (2015*) supra* note 20, at 47.

[25] The FCC goes so far as to interpret paid prioritization as a third degree *price* discrimination issue rather than as a *product differentiation* issue (*Id*., at FN 296).

expressed by the Internet community. The former view also comes out in the FCC's emphasis on the open Internet as a "platform for speech and civic engagement."[26]

In justifying its prohibition of paid prioritization, the FCC maintains that "the threat of harm is overwhelming" and therefore exceeds any beneficial effects. It also notes that there are no "practical means to measure the extent to which edge innovation and investment will be chilled" by paid prioritization. Contrary to the other NN requirements, there is no exemption from the paid prioritization prohibition for reasonable network management. The only remaining ways open for paid prioritization are (1) a waiver request (which must demonstrate "some significant benefit but no harm" or (2) the structuring of a service so that it is outside "broadband Internet access service." The latter currently includes, for example, telephone services. The FCC acknowledges that some large edge providers (CAPs) can assure themselves priority services outside the ISP offerings but accepts that as inevitable.

The FCC views the main NN issues as largely independent of the level of ISP competition, as long as consumers do not multi-home. In that case, ISPs fulfill a gatekeeper function between edge providers and consumers. Mobile operators in particular can be an edge provider's only consumer access.

Europe

It has often been remarked that Europe lags behind the United States in the timing and the intensity of its concerns about net neutrality. A number of hypotheses have been advanced to explain this, including:

1. 1). The notion of the Internet as an open and democratic space for innovation and the exercise of the right of free speech had much greater resonance in the United States, the land of the Internet's birth, than in Europe.
2. 2). The United States had different competition and regulatory arrangements than Europe in at least two significant respects. First, the ability in the United States to impugn the conduct of a dominant or monopoly firm was more limited, and second, a ruling of the U.S. Supreme Court (Trinko) disapplied competition law in certain case where a regulation was in place.[27]
3. 3). Most importantly, the fixed broadband retail market structure in the United States was much more concentrated than in Europe. Whereas incumbent ISPs in the European Union were almost everywhere obliged to share their networks or local loops with their retail rivals, in the United States such mandatory access progressively came to an end from 2004.[28]
4. Turning to the European NN legislation that has been enacted to date, the major instrument was the 2009 revision of the set of Directives that formed the European regulatory system for electronic communications services coming into effect in 2003. Though the term NN is not used, the proposition that "access competition + transparency on data management = preservation of network neutrality" is clearly enshrined. Thus, two changes were made within the Directives:

[26] *See* U.S. Federal Communication Commission (2015*) supra* note 20 at 77.

[27] *Eleanor Fox, "Monopolization and Abuse of Dominance: Why Europe is Different," The Antitrust Bulletin 59, no. 1 (2014): 129-152.*

[28] *See* U.S. Federal Communication Commission, *In the Matters of Petition For Forbearance of the Verizon Telephone Companies Pursuant to 47 U.S.C. § 160(c) (WC Docket No. 01-338), SBC Communications Inc.'s Petition for Forbearance Under 47 U.S.C. § 160(c) (WC Docket No. 03-235), Qwest Communications International Inc. Petition for Forbearance Under 47 U.S.C. § 160(c) (WC Docket No. 03-260) and BellSouth Telecommunications, Inc. Petition for Forbearance Under 47 U.S.C. § 160(c) (WC Docket No. 04-48)* (adopted October 22, 2004) and also http://www.fcc.gov/wcb/cpd/triennial_review/triennialremand.html.

- Obligations were placed upon ISPs to be more explicit about the network management policies they employed. And national regulatory authorities were expressly given power to specify measurement parameters.
- NRAs could, subject to an oversight process, impose minimum quality standards on broadband suppliers if they had significant market power or dominance.

While, in a 2012 report, BEREC (the newly created College of NRAs in Europe) collected evidence of large scale throttling and traffic management, noting that at least 20 percent of mobile customers were denied access to VoIP services,[29] it noted that new transparency rules had come into force in 2011, and observed that general European competition law provisions were already in place to deter and punish anticompetitive actions taken by ISPs in their dealings with non-affiliated content providers.[30]

Was this optimism enough to end the European NN debate? It had already become clear that it was not. Two Member States reacted forcefully to events in their domestic markets. With some of the highest capacity broadband networks in Europe and sophisticated users, the Netherlands was an early flashpoint. In April 2011, the Dutch legislature had amended the telecom law to enshrine a very strict NN obligation. Similar legislation was adopted in Slovenia, which only became law on 1 January 2013.[31]

In 2013, the Commission proposed a major reformulation of the regulatory regime, known as "Connected Continent" and designed to achieve a single market in telecommunications. This included a section on rights of end-users with a subsection proposing:

> "The obligation on providers to provide unhindered connection to all content, applications or services being accessed by end-users – also referred to as Net Neutrality while regulating the use of traffic management measures by operators in respect of general internet access. At the same time, the legal framework for specialised services with enhanced quality is clarified."[32]

In the end, the NN and one other matter were all that remained of the Connected Continent proposals. On June 30 2015, the NN solution agreed between the Council and the Parliament, subject to formal ratification by each body, was announced, with the claim that the new rules are 'the strongest in the world." On one hand, it asserted that "there will be no paid prioritisation of any content or service or category of content or service"; on the other hand, the supply of specialised or innovative services "like IPTV, high definition videoconferencing or healthcare services like telesurgery' can be exempted 'on condition that they do not harm the open Internet access.'[33] The Netherlands government immediately objected that the new rules admitted price discrimination by the back door.

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[29] BEREC, "Findings on Traffic management and other practices resulting in restrictions to the open Internet in Europe," BoR (12) 30 (2012). BEREC was the newly created College of NRAs in Europe.

[30] BEREC, "BEREC public consultations on Net Neutrality" BoR (12) 34 (2012).

[31] *See* http://www.uradnilist.si/1/content?id=111442

[32] European Commission, "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" COM(2013) 627 final, Brussels, 11 September, (2013). The reference to "specialised services" covers exceptions to the uniform quality of service otherwise contemplated.

[33] *See* http://europa.eu/rapid/press-release_IP-15-5265_en.htm.

The corresponding Regulation was enacted on 25 November 2015.[34] BEREC was given the task of preparing Guidelines for the implementation of net neutrality provisions of the TSM regulation.[35]

The Guidelines, adopted in September 2016, adopted a fairly rigorous policy in relation to tiered services. Thus specialised services must meet the following requirements:

- Necessity – are they necessary to meet requirements for a specific level of quality?

- Capacity – is network capacity sufficient that quality of internet access services is not degraded?

- No substitution – are specialised services usable or offered as a replacement for IA?[36]

It is likely that regulators in member states will now draw up their own guidelines. Enforcement is quite likely to lead to litigation in member states' courts.

Latin America[37]

Brazil engaged in debate about net neutrality from the mid-2000s, but attempts to legislate stalled until 2013, when the issue became entangled with that of foreign surveillance of internet traffic. These events led to the passage of a law in 2014, under which "The party responsible for the transmission, switching or routing [ie an ISP] has the duty to process, on an isonomic [equality before the law] basis, any data packages, regardless of content, origin and destination, service, terminal or application." Moreover, ISPs must "act with proportionality, transparency and isonomy" and "offer services in non-discriminatory commercial conditions and refrain from anti-competition practices."

Somewhat ambiguous arrangements were made for subsequently consulting on and establishing detailed rules. The issues included the definition of the equivalent of 'specialised services', and over zero rating. These are not yet resolved.

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 law was enacted in 2010, and contained the following provisions:

- ISPs cannot arbitrarily block, interfere, discriminate, obstruct or restrict users' rights to use send receive or offer any type of content application or legal use of the internet.
- They may, however, apply traffic management procedures which do not affect free competition.

Following the passage of the law there has been some controversy over the rigour with which it is enforced by SUBTEL, the regulator, in respect of an operator with significant market shares in internet services and pay-tv.

Other interventions have 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).[38]

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[34] Regulation (EU) 2015/2120 laying down measures concerning open internet access..

[35] BEREC, Work Program 2016, BoR (15) 140 (2015): 17.

[36] See BEREC Guidelines on the Implementation by National Regulators of European Net Neutrality Rules, BoR (16) 127, September 2016, paras 99-127, available at 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

[37] See further P Vargas-Leon, 'Net neutrality: an overview of enacted laws in South America,' in (Belli and De Filippi, eds.) Net Neutrality Compendium, Springer, 2015 and C Marsden, 'Comparative case studies in implementing net neutrality: a critical analysis of zero rating,' scripted 13 (1) May 2016.

What kind of net neutrality rules does Mexico want?

One thing that is clear from the previous section is that NN rules contain several distinct elements, as well, in some jurisdictions (particularly in Latin America), extending into other neighbouring areas, such as privacy, security and surveillance.

The 2014 Federal Telecommunications and Broadcasting Law imposed a variety of obligations on ISPs, defined as either licensed operators of public telecommunications services or authorised entities which commercialise telecommunications services.[39]

The IFT was required to issue general guidelines to regulate net neutrality further, consistent with the following principles:

- free election: ie Internet users can access any content, application or service offered by an ISP, without restriction on that access, and can use devices of their choice;
- non-discrimination provisions, which prohibit blocking or throttling,
- privacy
- transparency, requiring publication on the ISP's website of information relating to their services and any traffic management policies authorized by IFT
- traffic management, specifying legitimate forms of traffic management
- quality standards which can be imposed by IFT
- sustained infrastructure development, which requires IFT to develop guidelines which foster network development

These guidelines will thus establish rules which ISPs will observe in respect of the same key components of NN in other jurisdictions, namely transparency, traffic management, anti-competitive conduct and discrimination (or tiering).

Before discussing the possible development of the guidelines, it is useful to say something about the structure of the fixed and mobile ISP market places in Mexico.

In 2011/12, the Mexican government invited the OECD to conduct a review of Telecommunications Policy and Regulation in Mexico. It found the sector to be 'characterised by high prices, among the highest within OECD countries, and a lack of competition, resulting in poor market penetration rates and low infrastructure development.' It observed that 'the Mexican telecommunications market is dominated by a single company with 80% of the fixed line and 70% of the mobile phone market'.[40] The radical reform programme initiated since then has led to some changes in these shares, but they remain very high. Similarly high concentration is visible in pay-tv, where another company has about 70% of the market.

In other words, the provision of ISP services (in fixed and mobile telecoms and cable and satellite tv) is dominated by two companies, although this is somewhat complicated by current restrictions of the carrying of video. Independent content and applications providers confront network companies

[38] C Marsden, 'Comparative case studies in implementing net neutrality: a critical analysis of zero rating,' script*ed* 13 (1) May 2016, page 16.
[39] Mexico adopts one of the strictest net neutrality frameworks in the world. Hogan Lovells Global Media and Communications Quarterly 2014, pp. 6-7.

[40] OECD Review of Telecommunications Policy and Regulation in Mexico, p. 11

which themselves are integrated into the upstream content market. For the reasons noted above, this will influence the implementation of NN policy.

In relation to the categories of rules noted above, the following conclusions may follow:

Transparency: there are good grounds for imposing internationally standard rules on transparency, for example the 2016 BEREC guidelines for the EU, which demand that:

-Information should be easily accessible, accurate, meaningful and comparable, and should cover:

- any traffic management measures used, and any impact on the end-user
- complaint-handling procedures
- data caps
- speeds (different metrics depending on fixed and mobile).

To the extent that end users in Mexico lack choice, however, the effect of these measures will be muted.

Traffic management: every jurisdiction has recognised that 'innocent' forms of traffic management are necessary to avoid major loss of network capacity.

Anti-competitive conduct: as was the case in the US with with Comcast and Netflix, there appear to be both opportunity and motive for the powerful Mexican ISPs to weaken or foreclose their content rivals. Such conduct would infringe Mexican competition law, which the IFT enforces. Abuses which might occur include excessive pricing, price discrimination or price squeezes. These might be supported by limited *ex ante* rules, taking the form, for example, of advance notice to the regulator of charges to be levied.

Tiering of services: It has been argued above that, when ISP and CAP markets are effectively competitive, then from a consumer welfare standpoint the prohibition of tiering is likely to be detrimental, absent a compelling reason why dynamic considerations might outweigh static welfare losses. However, the competitive precondition seems clearly to be flouted in Mexico, creating an opportunity for the two dominant ISPs to exercise their market power against CAPs (without necessarily breaching standard competition rules, such as those concerning margin squeezes).

The question then becomes whether the IFT can impose a regime of *ex ante* regulated tiered payments, which prevents abuses. As noted in section 4 above, this would entail solving the problem of setting what are effectively termination rates for different quality of services in circumstances where the cost allocation problems would be very large, and where it would be difficult to take account of the complex externality issues raised by NN, which include internet fragmentation, the dirt road fallacy, and externality issues occurring in competitive environments.[41] Possibly not a sensible thing to attempt in the first instance, if evidence of abuse is limited.

In other words Mexico may be seem to be stuck in relation to the tiering question with the choice between two simple policies, which are

(a) no net neutrality regulation, meaning that ISPs are free to discriminate against CSPs, as long as they do not violate competition law, or

[41] See the discussion in section 4 above.

(b) strict net neutrality regulation forbidding ISPs to discriminate in any way against CSPs (common carrier approach).

Unfortunately it turns out that the simple policies are not simple after all. Specifically, under no net neutrality regulation, the use of competition law may itself pose complex issues. In contrast, under strict NN regulation ISPs may circumvent NN via (a) network management, (b) peering with content providers disguised as ISPs, imposing differential charges on end users. The policy also faces the dilemma over how to treat zero rating, under which payments by CAPs are passed through directly to end users in a way which is likely to confer benefits on the latter. A regulator has to ask itself whether it is prepared to prohibit this.

Another way of expressing this is to say that a regulator has to think long and hard about enforcement of any law or rules. As noted above, the parties are both in some senses interdependent and conflicted. The regulator may find both of these options unpalatable. It might be sensible to address the enforcement problem upfront, and exercise a dgree of caution.

So - no easy choice.