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An internet traffic tax would harm Europe's digital transformation

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About the Author

Brian Williamson works at the intersection of the digital economy and policy. Brian has worked on the contribution of connectivity and applications to economic and social outcomes and the policies likely to support the greatest possible contribution. Clients have included governments, regulators, telcos, and tech companies.

Disclaimer

This is an independent report funded by the Computer & Communications Industry Association. The opinions offered herein are purely those of the author. They do not necessarily represent the views of the client, nor do they represent a corporate opinion of Communications Chambers.

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1. Executive summary

A report by Axon (2022), commissioned by the European Telecommunications Network Operators' Association (ETNO), proposes that certain content and application providers be required to negotiate a fee with telecommunications network operators. Axon claims this would promote network investment and be beneficial overall.

This paper argues that there is no sound basis for imposing a fee that would harm rather than promote investment by reducing innovation and use in relation to content and applications; and would harm achievement of the European Commission's digital transformation vision for 2030.

Data growth is good for telcos

The cost estimates cited in the Axon report are flawed as a basis for assessing traffic related costs since they are not based on an assessment of incremental traffic costs.

The incremental costs of internet traffic are negligible for fixed broadband access, low and declining for mobile access and low in transit markets where content and application providers invest in network capacity e.g., in subsea fibre optic cables. The predominant IP model is settlement free peering.

Incremental traffic related costs therefore range from approximately zero for fixed access to low and declining for transit, core and mobile networks.

Not only are the unit costs of traffic declining over time – otherwise past traffic growth could not have been accommodated – but traffic growth drives telco revenues.

Traffic growth promotes fixed access retention and fibre adoption, and traffic growth is monetised via tiered mobile data tariffs whereby consumers pay more for more. Data growth is good for telcos, not bad, which is what they say to investors:

> *"Surging demand for mobile data is the clear driver for future growth in the business" Telefonica, 2020*

There is no basis for requiring content and application providers to pay an additional fee related to traffic.

What is proposed is in fact an internet traffic tax unrelated to the opportunity cost of traffic which may be negative and is certainly negligible.

Giving telcos money and taxing content and applications would harm rather than foster investment

If you simply give money to telcos the demand and price for access is unchanged, so the business case for investment would be unchanged. The money would go to shareholders, and even if strings were attached additionality would be hard to verify.

If you tax content and applications you will reduce the development, adoption and use of content and applications, on which the business case for network investment depends. The incidence of an internet traffic tax would also extend far beyond its initial point of application, for example, impacting those using cloud services. The net impact is therefore likely to be negative for investment.

Further, an internet traffic tax would be inimical to the European Commission's goal of achieving digital transformation, including the goals of 75% of EU companies using traffic intensive applications such as cloud, AI and big data and the growth of scale-ups across sectors from fintech, to healthcare and the gaming and creative sectors.

Finally, data growth is not exponential but has been declining (except for a spike in growth

during 'lock down'). Perhaps the question that should be asked is whether the real problem is insufficient data growth, both as a reflection of digital transformation and as a spur to network investment.

The assertion of asymmetric bargaining power is a red herring

Axon asserts that the root cause of the problem their proposals seek to address is asymmetric bargaining power between major OTTs and telecommunications network operators in relation to IP traffic. Yet reviews by BEREC in 2017 and WIK in 2022 for Bundesnetzagentur, do not support the Axon conjecture and find that the market is competitive and functioning well.

A further review by BEREC into the sending party pays principle and 'fair contribution' is pending, but on the basis of existing reviews the Axon assertion of asymmetric bargaining power as grounds for an internet traffic tax is a red herring.

Evidence from South Korea suggests an internet traffic tax would be harmful

We have a natural experiment of what Axon proposes in South Korea, and the outcome is not positive. WIK (2022) report that:

> *"Market observers report a decline in diversity of online content and expect rising prices for end users for content, as well as lower network infrastructure investments. Quality for end users is declining."*

Zooming out to understand the broader picture

It is essential to 'zoom out', as the European Commission do in their vision for 2030, and consider how to foster digital transformation and the benefits that will flow from it.

Yet Axon focuses on a hypothetical GDP gain from additional network investment but does not consider the GDP loss from a tax on internet traffic which would discourage the use and development of content and applications. Not only would the negative impact on content and applications negatively impact GDP directly, it would also do so indirectly by reducing demand for network investment.

A further illustration is that Axon focusses on the energy used by networks, but not the potential for applications to reduce energy use throughout the economy, for example, via online collaboration. As noted in the European Commission Strategy for Data:

> *"Data driven applications will benefit citizens and businesses in many ways. They can… improve sustainability and energy efficiency"*

The devil in the detail

Whilst we conclude that an internet traffic tax is not justified and would prove harmful, we recognise that the European Commission examination may go into detail regarding how such a mechanism might be implemented and what ramifications it might have across adjacent policy areas.

Three issues are highlighted, namely ensuring a competitive level playing field between incumbent and entrant investors in the allocation of any traffic tax revenues, and compatibility of the proposed policy with global tax reform and net neutrality principles.

First, given the rise in network entrants able to tap into infrastructure funds, ensuring neutrality of funding between entrants and incumbents is not only an issue of fairness but also a material consideration in relation to efficiency.

Telecoms regulation has focused on ensuring equivalence of access to incumbent networks for retailers, the issue at stake here is different. Namely, ensuring that vertically integrated incumbent retailers do not self-preference in their choice of network inputs, thereby weakening an entrant's investment case. One option, adopted in New Zealand in relation to state support for fibre investment, would be to

make structural separation a condition for receipt of funds.

Second, given that the proposal is focused on 'big tech', is not based on evidence of market failure or inefficiency, and aims to move away from voluntary contracting, it will be viewed as a tax. As such it may run counter to agreement not to introduce new digital taxes whilst proposals for reform of taxation of multinational enterprises, including digital corporations, are under development globally.

Third, the proposed approach is not only discriminatory between sources of traffic based on the scale of service provider but may open-up scope for telcos to discriminate by enhancing their terminating monopoly power over access to end-users. As has proved the case in South Korea, this can be expected to raise objections on grounds the approach undermines net neutrality.

Conclusion

An internet traffic tax is not justified on grounds of asymmetric bargaining power, would harm rather than promote network investment and would hinder the achievement of digitisation goals for Europe. It is incoherent to tax the very thing you want more of, namely digitisation. The suggestion of an internet traffic tax should therefore be rejected.

2. Context

This paper focuses on evaluating the proposition in a report by Axon[1] commissioned by the European Telecommunications Network Operators' Association (ETNO), that imposing a fee on data traffic for some content and application providers and transferring the money to telecommunications network operators would be both fair and beneficial.

A similar proposition was put forward a decade ago and rejected at the time. Nevertheless, the question of whether some content and application providers should in effect be taxed and the money transferred to telecommunications network operators has again arisen and needs to be considered, taking account of available evidence.

The Axon report puts forward a proposition but does not answer any of the questions that need to be decided to evaluate that proposition.

The supporting report on costs by Frontier Economics likewise, on examination, does not address the question Axon suggests is relevant, namely what are the incremental costs of data growth? Even the answer to the question would be partial because data growth also involves benefits, both in terms of what application and content use enable but also in terms of the impact of induced demand on telcos revenues and the business case for network investment.

This paper discusses evidence in relation to the balance of costs and benefits for telcos from data growth, the question of whether there is a problematic power imbalance in relation to peering and transit markets and the overall impact of an internet traffic tax on digital transformation – an express goal of the European Commission. We conclude, in each of these areas, that the evidence viewed in the round runs contrary to the assertions in the Axon report.

The European Commission may however wish to go further than an in principal examination of the proposed internet traffic tax and consider how it might work in practice. This paper therefore includes some closing thoughts on the questions and evidence relevant to such an assessment.

[1] Europe's internet ecosystem: socio-economic benefits of a fairer balance between tech giants and telecom operators, May 2022. https://www.axonpartnersgroup.com/etno-report/

3. Data growth is good for telcos

The Axon report argues, in essence, that data growth is bad for telcos. In fact, data growth is good for telcos given that the incremental costs of data are negligible for fixed access and low and falling for mobile access, and because data growth drives demand and revenues for telcos.

Whilst some (but by no means all) telcos have argued that data growth imposes costs, that this is unfair and that they should receive payment from application providers, they have also pointed to data growth as a driver of revenue growth when communicating with investors.

The Axon paper relies on a flawed estimate of traffic related costs

Axon utilises a report by Frontier Economics for Deutsche Telekom, Orange, Telefonica and Vodafone as a basis for their claims regarding traffic related costs.[2]

However, the footnotes to the Frontier Economics report point clearly to the fact that it does not provide incremental internet traffic related costs, namely:

> *"This will include costs which are variable with respect to traffic, but also some costs which are required to deliver any traffic but which do not vary with the level of traffic carried."* Footnote 5

> *"Given that we use accounting information from the operators, we rely on the operators to provide us with their split between 'traffic sensitive' and 'subscriber sensitive' costs."* Footnote 6

> *"We recognise that a bottom-up exercise could in theory produce improved incremental cost estimates but this fell outside the scope of our work."* Footnote 9

> *"These estimates are illustrative of the relevant costs and cannot be construed as indicative of a hypothetical amount of recovery by Telcos from OTTs."* Footnote 14

Frontier Economics do not vouch for the cost split provided by operators, recognise that an alternative 'bottom-up' modelling approach is in principle superior and caution against utilising their estimates as indicative of cost recovery from OTTs.

The Frontier Economics estimates do not provide a basis for any of the claims Axon make in relation to costs.

In any case, opportunity cost rather than cost should have been considered by Axon, namely the net impact of traffic growth considering the impact on network operators costs and revenues.

Below we first consider incremental costs before considering the revenue uplift associated with internet traffic growth.

Costs attributable to data growth are low and declining

Incremental costs for fixed access networks

For fixed broadband access, for the last mile 'capillary network', incremental data related costs are for practical purposes zero i.e. existing networks including copper networks could carry vastly more data than they do (peak bandwidth demand may support an upgrade from copper to fibre but data growth *per se* does not).[3]

[2] Frontier Economics, Estimating OTT Traffic- related Costs on European Telecommunications Networks, March 2022. https://www.telefonica.com/en/communication-room/the-unsurmountable-cost-of-otts-traffic-for-europe/?utm_campaign=Telco&utm_content=twitter&utm_medium=social&utm_source=twitter

[3] Even a 10 Mbps link could carry 26 TB per month, well in excess of typical existing data traffic per household.

The fact that capillary access incremental traffic related costs are essentially zero and core and transit costs are very low underpins the market shift to fixed access tariff packages that are predominantly unlimited in relation to data use.

Incremental costs for mobile access networks

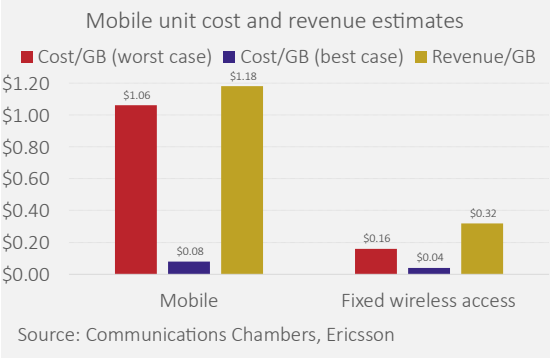
To meet traffic growth in mobile networks, once existing cellular sites become congested, more sites (cell splitting), and/or more spectrum and/or more efficient technology (transitions to higher 'G's) is required i.e., there is an incremental cost.

However, mobile operators are free to reflect incremental costs in their tariff structures (say via tiered data plans) and the incremental costs associated with data growth are in any case low and falling.

In 2010 Ericsson estimated the costs of accommodating mobile data over 2G/3G networks at less than €1/GB.[4] More recent estimates are lower still, reflecting rapid productivity growth in relation to mobile networks.

Ericsson (2020) estimated the cost per gigabyte (CPGB) and revenue per gigabyte (RPGB) for mobile broadband and fixed wireless access.[5] The estimates are shown in Figure 1. The costs for mobile broadband are as low as $0.1/GB.

Figure 1: Mobile unit cost and revenue estimates



Source: Communications Chambers, Ericsson

Ericson estimate mobile data traffic of 11.3 Exabytes (an Exabyte is 10^18 bytes or 1 billion Gigabytes) per month for Western, Central and Eastern Europe for 2022.[6] Assuming traffic related costs of approximately €0.1 per GB this amounts to €0.1 bn per month or a little over €1 bn per year.

This estimate is an order of magnitude lower than the cost estimate reported be Axon of €13-22 bn. Further, traffic growth is also a revenue driver for mobile, and the net 'opportunity cost' of traffic growth may be negligible or negative (which would be consistent with positive comment by telcos regarding traffic growth to investors).

Incremental costs for core and transit networks

There are some costs associated with traffic growth in core and transit networks common to fixed and mobile access, but these are low. Further, prices for IP transit continue to fall rapidly:[7]

> *"Across a range of markets, 10 GigE prices fell 18% compounded annually from Q2 2018 to Q2 2021. A comparable sample of 100 GigE port prices fell 30% over the same period."*

[4] Greger Blennerud (Ericsson), Mobile broadband – busting the myth of the scissor effect, 2010. https://silo.tips/download/mobile-broadband-busting-the-myth-of-the-scissor-effect
[5] David Wait (Ericsson), Understanding the Economics of 5G Deployments, June 2020. https://www.ericsson.com/en/blog/6/2020/economics-of-5g-deployments
[6] Ericsson, June 2022 data. https://www.ericsson.com/en/reports-and-papers/mobility-report
[7] https://blog.telegeography.com/2021-global-ip-transit-price-trends

In any case tech companies invest in networks, for example, in subsea fibre-optic cables to ensure capacity is available to meet growth and reduce international connectivity costs for the broader ecosystem.[8] The predominant IP model is settlement free peering. Any costs, net or revenues and investment, may therefore be ambiguous and are in any case likely to be modest.

Conclusion

The costs of data growth are low, ranging from zero for fixed capillary access to around €0.1/GB for mobile broadband. Core and transit networks costs are very low and declining, content and application providers invest in transit networks and the predominant IP model is settlement free peering.

The revenue uplift from data growth is positive for telcos

As BEREC noted when this issue arose in 2014:[9]

> *"Ultimately, it is the success of the CAPs…which lies at the heart of the recent increases in demand for broadband access (i.e. for the ISPs very own access services)."*

Yet Axon focuses on costs and does not consider the revenue uplift from data growth.

Fixed access

Fixed access tariffs are typically unlimited with respect to data consumption reflecting the zero cost of data carriage in the last mile access network and low costs in the core network.

However, fixed access providers benefit indirectly from data growth since data growth reduces the risk of mobile substitution and, given that data growth is correlated with peak bandwidth demand, is part of the pitch to upgrade to fibre. Illustrative is the March 2022 letter from EE advising customers of a price increase which commented as follows:

> *"Since 2018, broadband usage has increased by 90%, so having a connection you can count on matters - a lot. That's why we're bringing EE Full Fibre, cutting-edge broadband that can handle anything with blistering speeds of 900Mbps, to more people than ever."*

Telcos benefit from data growth in relation to fixed access since data growth involves very low costs (thus the shift to unlimited tariffs) but promotes fixed access customer retention and, via the correlation with peak demand, promotes fibre adoption.

Mobile access

Given that mobile access does involve incremental costs, and because mobile networks may have localised congestion, mobile operators offer monthly mobile data tiers at different price points.

Data growth therefore benefits telcos in relation to mobile access since data growth encourages customers to migrate to higher priced packages with larger data allowances.

What telcos say to investors differs from what some say to policy makers

What telcos say to investors, and what some of them say to policy makers, are starkly different.

The structurally separated fixed operator Chorus in New Zealand makes a virtue of applications including Netflix and data growth:

> *"The unrelenting growth in demand for data, the increasing reliance on both high-speed download and upload performance, as well as the emerging awareness of fibre*

[8] The Economist, Tech giants are building their own undersea fibre-optic networks, October 2017. https://www.economist.com/business/2017/10/07/tech-giants-are-building-their-own-undersea-fibre-optic-networks

[9] BEREC's comments on the ETNO proposal for ITU/WCIT or similar initiatives along these lines, November 2012. https://berec.europa.eu/eng/document_register/subject_matter/berec/others/1076-berecs-comments-on-the-etno-proposal-for-ituwcit-or-similar-initiatives-along-these-lines

broadband's contribution to sustainability, are all underlying trends that support our business."[10]

Mobile operators monetise data traffic growth even more directly, and this is reflected in their communication with investors:

"Vodafone VOD.L, the world's second-largest mobile operator, has raised its full-year earnings forecast for the first time in recent history, as customers switch to using more mobile data on their smartphones…"[11]

Increased demand during Covid 19 is viewed as having brought forward digitalisation and demand, and this is seen as positive:[12]

"The world has changed because of the pandemic," Chief Executive Nick Read told reporters on Tuesday.

"We see a compelling opportunity for high growth given the step change we've seen towards a digital society over the past year. Importantly, this growth opportunity exists in both Europe and Africa."

Telefonica are also positive about data growth:[13]

"Surging demand for mobile data is the clear driver for future growth in the business"

Suppressing data growth would prove harmful overall

Ultimately it is the benefits consumers and citizens derive from services and applications that matter and suppressing data growth associated with applications can be expected to result in harm overall.

As the European Commission has noted:[14]

"Data driven applications will benefit citizens and businesses in many ways. They can:

- *improve health care*
- *create safer and cleaner transport systems*
- *generate new products and services*
- *reduce the costs of public services*
- *improve sustainability and energy efficiency"*

Discouraging the development and use of data driven applications via an internet traffic tax would undermine all of the above potential benefits of data driven applications.

The real problem – not enough data growth?

Absent rapid data growth, one might expect a decline in revenues, as telcos unit costs continue to decline due to technology advances and productivity gains:[15]

[10] Chorus Annual Report 2021. Page 12. https://company.chorus.co.nz/reports
[11] Reuters, Vodafone lifts profit view as customers ditch wifi for mobile, 14 November 2017. https://www.reuters.com/article/us-vodafone-group-results-idUSKBN1DE0PI
[12] Reuters, Vodafone ramps up investment to capture growth opportunity, 21 May 2021. https://www.reuters.com/world/uk/vodafone-posts-12-drop-full-year-earnings-2021-05-18/
[13] Telefonica, Mobile data, how is Telefónica Europe capturing this growth opportunity? Deutsche Bank European TMT Conference, September 2020. https://www.telefonica.com/en/wp-content/uploads/sites/5/2021/10/100910_european_TMT_conference.pdf
[14] European Commission, A European Strategy for Data. https://digital-strategy.ec.europa.eu/en/policies/strategy-data
[15] David M. Byrne and Carol A. Corrado, The Increasing Deflationary Impact of Consumer Digital Access Services, July 15, 2020. https://www.federalreserve.gov/econres/notes/feds-notes/the-increasing-deflationary-impact-of-consumer-digital-access-services-20200715.htm

> *"Advances in these technologies have been very rapid in the past 25 years and continue at blistering rates to this day. Without continued increases in internet technology and capacity from 2010 to 2015, the world could not have achieved the reported 29 percent per year increase in IP traffic and nearly 78 percent per year increase in wireless data traffic that it did during this period…"*

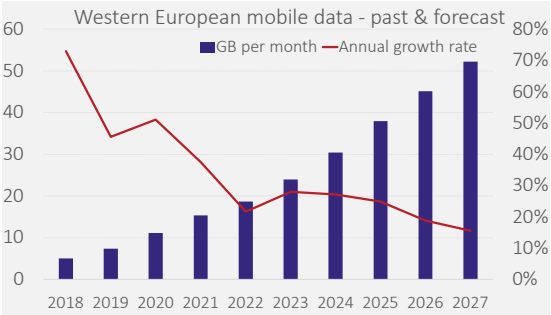
IP transit costs and prices have also fallen rapidly, whilst the capacity/speed of fixed broadband access has increased from dial-up speeds of 56 kbps to fibre in the 100 Mbps to 1 Gbps range today.

Viewed from this perspective continued growth in data demand is essential to maintain existing telco revenues and to monetise new investment.

Whilst the response to Covid-19 tended to lift data consumption overall, the trend for both fixed and mobile access has been declining growth i.e., data growth is not exponential.

Mobile data growth is forecast to continue to decline, for example, Ericsson project that growth per smartphone in Western Europe will continue to decline[16], see Figure 2 (a similar decline is forecast for Central and Eastern Europe).

Figure 2: Mobile data growth is not exponential – it is declining



Source: Communications Chambers, Ericsson (June, 2022)

Fixed broadband traffic growth is also slowing.[17]

Conclusion

Data growth is good for telcos, in addition to the benefits associated with digitisation and use of data driven applications throughout Europe.

Arguably the real challenge telcos face is declining data growth, rather than excessive data growth. Declining data growth may also signal a slowdown in adoption and use of data driven applications.

From these perspectives content and applications development, and the data flows this involves, should be fostered rather than taxed.

[16] Ericsson, June 2022 data. *https://www.ericsson.com/en/reports-and-papers/mobility-report*
[17] Kenny, Patterns of fixed traffic growth, 2021. *http://www.commcham.com/pubs/2021/10/5/patterns-of-internet-traffic-growth-2021.html*

4. Giving telcos money and taxing content and applications would not foster investment – it would harm it

It is argued by Axon that taxing content and application providers and giving the money to telcos would promote network investment, particularly in very high-capacity fibre and 5G networks.

Giving telcos money would not foster investment

Simply giving telcos money would not change the price or demand for network access[18] and would not therefore impact investment directly. Rather, value would simply be transferred to telco shareholders.

One could seek via additional regulation to ensure that any additional money was invested. But doing so is likely to be challenging in terms of verifying additionality.

Taxing internet traffic would reduce investment and innovation in applications and networks

Whilst giving money to telcos would not foster investment, taxing internet traffic would discourage the use and development of applications on which network investment depends.

To illustrate, a key part of the business case for 5G is that it can accommodate data growth via more spectrally efficient technology and the scope to utilise additional spectrum bands. As Ericsson put it:[19]

> *"Growth in mobile traffic is among the foremost economic drivers of next-generation wireless networks."*

If data growth is reduced by a tax on data, the business case for 5G investment would in turn be diminished.

In 2014 a mobile internet traffic tax of 150 forints per gigabyte (around €0.50) was proposed in Hungary.[20] The proposed tax was modelled[21] and would have had a negative impact on data growth, network investment and consumer welfare.[22] The impacts of the tax on data growth and economic welfare are reproduced in Figures 3 and 4. The estimated impacts were substantial.

[18] Unless telcos lowered the price of broadband and/or data which might be expected were access genuinely a two-sided market.
[19] David Wait (Ericsson), Understanding the Economics of 5G Deployments, June 2020. https://www.ericsson.com/en/blog/6/2020/economics-of-5g-deployments
[20] Reuters, Hungary plans new tax on Internet traffic, public calls for rally, 22 October 2014. https://www.reuters.com/article/hungary-internet-tax-idINKCN0IB1AO20141022
[21] A tax has the same impact irrespective of who pays, namely an internet traffic tax would have the same impact and ultimate burden irrespective of whether telco's, consumers or application providers were taxed. https://www.khanacademy.org/economics-finance-domain/microeconomics/elasticity-tutorial/price-elasticity-tutorial/a/elasticity-and-tax-incidence
[22] Williamson and Wood, Mobile value, spectrum and data demand – a bootstrap approach to estimation, *Digital Policy, Regulation and Governance*, Vol. 19 No. 1. 2017. https://www.emerald.com/insight/content/doi/10.1108/DPRG-06-2016-0028/full/html

Figure 3: Impact of tax on traffic

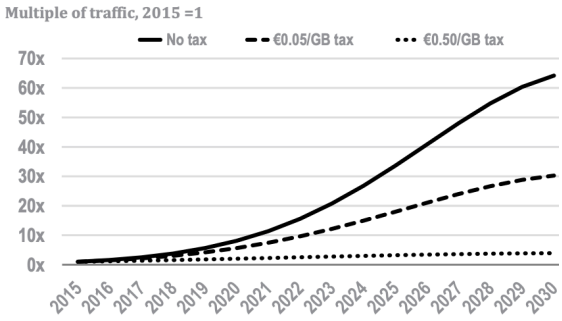
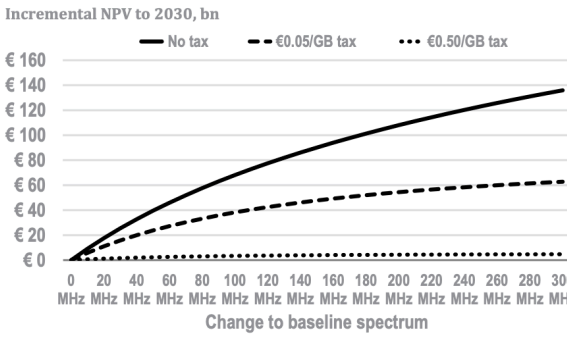


Figure 4: Impact of tax on economic welfare



The proposed mobile traffic tax was not adopted in Hungary, and neither should the proposed internet traffic tax be adopted across Europe today.

Conclusion

An internet traffic tax would suppress data growth, demand for network access, investment, and consumer welfare.

5. The assertion of asymmetric bargaining power is a red herring

Axon assert, but do not evidence, that the root cause of a problem results from:

> *"…asymmetric bargaining power between major OTTs and telecommunications network operators in their commercial negotiation of the terms of transporting IP traffic".*

This claim is not substantiated by Axon and is not supported by evidence in terms of market outcomes and investigations by BEREC (2017)[23], Analysys Mason (2020)[24] and WIK (2022)[25]. BEREC is monitoring and analysing the evolution of the internet ecosystem and is expected to report further during 2022.

Prices for IP transit are falling alongside cost declines

WIK (2022) note that cost reduction and price reduction correspond broadly:

> *"The costs of the network components used for peering and transit continue to fall steadily. The measurable price development of transit and IXP services seems to correspond to the degree of cost reduction of the network components."*

BEREC (2017) found that the IP interconnection market generally works well

BEREC (2017) reviewed the IP interconnection market and concluded that was generally working well:

> *"Generally, the ability of markets to adapt to changing market conditions, business models and technological developments seems to be unbroken.*
>
> *Broadly, NRAs involved [disputes]… have typically concluded that interconnection (i.e. transit, peering, CDN) markets are functioning adequately and that intervention is therefore not required."*

Further, in a report on the public consultation on IP-interconnection practices BEREC noted the ETNO/GSMA view that: [26]

> *"GSMA and ETNO believes that IP arrangements are highly dynamic and will continue to evolve competitively, driven by innovation in transport networks, price competition and continued investment in flexible forms of network capacity. They therefore support BEREC's recommendation that there is no need for specific regulatory intervention and that monitoring of market practices is sufficient."*

[23] BEREC Report on IP-Interconnection practices in the Context of Net Neutrality, 2017. https://berec.europa.eu/eng/document_register/subject_matter/berec/reports/7299-berec-report-on-ip-interconnection-practices-in-the-context-of-net-neutrality

[24] Analysys Mason, IP interconnection on the internet: a white paper, May 2020. https://www.analysysmason.com/consulting-redirect/reports/ip-interconnection-korea-white-paper/

[25] WIK, Peering and transit markets, 2022. https://www.bundesnetzagentur.de/EN/Areas/Telecommunications/Companies/Digitisation/Peering/start.html

[26] BEREC Report of the public consultation on BEREC Report on IP-Interconnection practices in the Context of Net Neutrality, October 2017. https://berec.europa.eu/eng/document_register/subject_matter/berec/reports/7298-berec-report-of-the-public-consultation-on-berec-report-on-ip-interconnection-practices-in-the-context-of-net-neutrality

WIK (2022) found that the IP interconnection market generally works well

The WIK study (2022) for Bundesnetzagentur broadly found that the transit and peering market had adapted to traffic growth and other developments and functioned well. The study makes many specific observations, amongst them:

> *"Many CAPs operate an open peering policy and have only few prerequisites for peering, which, incidentally, is usually settlement-free. Many ISPs have a much more restrictive peering policy, with many requirements for a number of parameters. Deutsche Telekom peers only with Tier 1 backbone operators. It only offers transit to CAPs and does not allow any on-net CDN servers."* Paragraph 16

> *"CAPs have once again increased their investments in transport and delivery infrastructure in recent years in order to handle traffic more efficiently, to reduce dependency on others, to gain more flexibility for their own capacity upgrades and to improve the quality of their service provision to the end customer. In particular, their investments in the delivery infrastructure of CDNs make them much more independent from the network investment decisions of ISPs. In our view, on-net CDNs are an expression of an efficient overall optimisation of the hosting, transport, content delivery and access network infrastructure. The network access provided by the ISP remains as the last bottleneck over which CAPs have no control. However, there are no discernible indications that they will integrate into this level of the value chain as well. Only Google is known to have some small- scale fibre pilot projects of its own in the USA."* Paragraph 22

> *"the architecture of the internet was elastic enough to cope with the sudden pandemic-related traffic increases without noticeable major disruptions."* Paragraph 29

> *"The legal and regulatory framework for IP interconnection has changed relatively little in recent years. With the exception of South Korea, the market for interconnection is unregulated in all countries, i.e. with regard to the conditions of interconnection. However, in a few cases there have been disputes between market participants and, in some cases, intrusions by NRAs into the contractual freedom of market players. Indirectly, there is also a connection between the net neutrality rules that have been in force in the EU since 2015 and the wholesale level, because a disruption of interconnection at the wholesale level can also lead to end users not reaching all destinations of the internet, with lasting implications for net neutrality.* Paragraph 30

Costs and prices continue to decline, and the market has worked well. No evidence is found of market abuse due to a power asymmetry in favour of content and application providers. Indeed, in the cases where concerns have arisen in relation to market power and conduct, they have revolved around the actions of ISPs (Swisscom and T-Mobile NL) and the risk of abuse of the terminating monopoly in relation to the Liberty Global/Ziggo merger.[27]

Experience in South Korean suggests that Europe should not move to sending network pays

Axon mentions South Korea as having parallels with what they propose in Europe. It is

[27] European Commission, Case M.7000 - LIBERTY GLOBAL / ZIGGO. https://ec.europa.eu/competition/elojade/isef/case_details.cfm?proc_code=2_M_7000

important, therefore, to consider developments and outcomes in South Korea. WIK (2022) review developments and literature in relation to South Korea and conclude that:

> *"South Korea is the only country so far that has responded to the concerns of telcos and introduced the Sending Party Network Pays (SPNP) billing principle on a legal basis. Initially, only ISPs were obliged to exchange traffic with each other as transit for a fee. Subsequently, CAPs were also obliged to pay network charges to ISPs. The implementation of the new rules was and is highly controversial in Korea and is still being fought out in court. Initially, it was mainly national CAPs that were affected. Large CAPs evade this regulation or pay. Market observers report a decline in diversity of online content and expect rising prices for end users for content, as well as lower network infrastructure investments. Quality for end users is declining."* Paragraph 14

WIK (2022) also notes that Open Net Korea and 13 other NGOs see current policy as a violation of net neutrality and are calling for abolition of the sending party network pays rule (Section 2.2.1).

Conclusion

Available evidence does not support the Axon claim that there is asymmetric bargaining power in relation to transit and peering in favour of content and application providers. Indeed, in instances where regulatory concern has been raised it has related to the conduct of telcos.

Further, in South Korea where a sending party network rule has been introduced both price and quality outcomes in the market have deteriorated. These are not outcomes Europe should seek to emulate.

There is no need for specific regulatory intervention, monitoring of market practices is sufficient. Further, there is no basis on grounds of asymmetric power for support for telcos in relation to bargaining which would amount, in effect, to an internet traffic tax given the power telcos have in relation to terminating traffic.

6. Zooming out to understand the broader picture

Previous sections conclude that data growth is good for telcos, transferring money to telcos would not foster investment, taxing data related to content and applications would reduce demand and therefore network investment and that claims regarding asymmetric bargaining power are a red herring.

Other arguments have also been made by Axon, but typically with a narrow lens that paints a partial picture. This section therefore 'zooms out' to better understand how content and applications and networks interact and relate to a range of policy issues and priorities for Europe.

Incentives

Consumers pay for connectivity. They are also the parties who initiate data downloads and uploads. This is efficient and aligns incentives appropriately in terms of the choice and use of connectivity between providers and users.

Content and application providers predominantly enter settlement free peering given the mutual benefits and invest in network infrastructure such as subsea fibre optic cables. This is also efficient.

Providers are free to price their services how they wish (subject to constraints on wholesale access pricing and wholesale-retail margin where they are found to have significant market power).

Providers can offer unlimited access or charge for data; they can differentiate pricing according to peak bandwidth or offer a single product etc. These choices are informed by cost structures and demand. Where incremental data costs are low network operators tend to offer unlimited packages, where capacity is limited or incremental costs material tiered data package pricing is more likely.

Individual consumers also have different preferences. If uninterrupted service is valued highly, they might purchase a service with fixed access coupled with a mobile fall back. They might also switch provider to obtain a service that offers better value for money, including potentially more basic services.

The *status quo*, under which consumers pay for connectivity, decide what connectivity is fit for purpose and initiate internet traffic flows; and in which providers are free to offer a diversity of services and tariff plans, works well.

Axon also asserts that, absent a data charge for content and application providers, incentives to economise on bandwidth in the design of applications are weak. This view is misplaced since content and application providers have an incentive to deliver services efficiently to ensure:

- The best possible user experience, for example, to ensure that video is delivered without buffering.
- Global reach over networks of variable quality.
- That costs of transporting traffic are minimised including costs that end users incur.

These considerations provide a powerful incentive to innovate and invest in technologies including local caching and improved data compression that reduce traffic and improve service for a given level of traffic.[28] Indeed, it is hardware, content, and application providers - rather than telcos - who are members of the

[28] For example, work Netflix does to ensure efficient use of data in delivering video:
https://netflixtechblog.com/how-data-science-helps-power-worldwide-delivery-of-netflix-content-bac55800f9a7
https://netflixtechblog.com/bringing-av1-streaming-to-netflix-members-tvs-b7fc88e42320

Open Media Alliance[29] which developed the AV1 compression standard.

Existing incentives to economise on data use are strong and appropriate.

GDP and jobs

Axon argues that additional funds for telco investment in fibre and 5G would bring additional GDP and jobs. This view is misplaced for two principal reasons:

- First, taxing internet traffic would reduce the use and development of content and applications on which economic and other gains such as decarbonisation are dependent. Given the difficulty of ensuring additionality of investment from the value transferred to telcos, and the dependence of the business case for investment on increased use of content and applications, the net effect of an internet traffic tax can be expected to be negative for GDP.
- Second, investment in next generation networks might be expected to reduce telco employment since such networks have lower operating costs and lower labour requirements.[30] Further an internet traffic tax would reduce employment in the content and application sector, including European start-ups and scale-ups. Finally, to the extent that GDPP is harmed the quality of jobs throughout Europe would also be harmed.

An internet traffic tax would harm the adoption and use of data driven applications, demand for investment in networks, digitisation and therefore GDP. This, in turn, would reduce jobs and the quality of jobs in the network, applications and content ecosystem.

Productivity and prices

Given technology and productivity improvements in the mobile sector the unit costs of data have fallen rapidly over time. Fibre and core networks have also seen declining unit costs for data. These gains have been driven by Moore's law for computing and Keck' law for optical data transmission rates, and past traffic growth would not have been possible without rapidly falling unit costs since total costs would have ballooned otherwise.

The productivity gains are significant, if measured correctly.[31] Yet as a rule these gains are not reflected in measured prices[32] as bills rather than unit prices are typically measured and the deflationary impact of telecoms is not reflected in price indices.

The UK Office for National Statistics has moved to a unit price measure for telecommunications services and the change is significant, as shown in Figure 5[33]. Over the decade to 2017 the improved index declined 77% whilst the current index declined 8%.

[29] https://aomedia.org

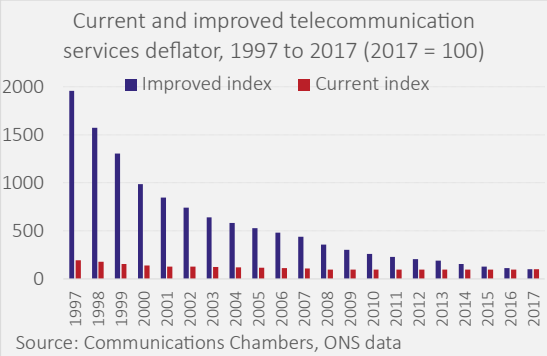
[30] From a wider perspective productivity growth involves a reallocation of employment throughout the economy, so job gains or losses in a sector should not necessarily count in terms of net impacts, see: European Commission, Economic Appraisal Vademecum 2021-2027 - General Principles and Sector Applications, 2021. Section 2.4. https://ec.europa.eu/regional_policy/sources/docgener/guides/vademecum_2127/vademecum_2127_en.pdf

[31] Byrne and Corrado, ICT Prices and ICT Services: What do they tell us about Productivity and Technology? May 2016. https://www.conference-board.org/pdfdownload.cfm?masterProductID=10467

[32] David M. Byrne and Carol A. Corrado, The Increasing Deflationary Impact of Consumer Digital Access Services, July 15, 2020. https://www.federalreserve.gov/econres/notes/feds-notes/the-increasing-deflationary-impact-of-consumer-digital-access-services-20200715.htm

[33] ONS, Double deflation methods and deflator improvements to UK National Accounts: Blue Book 2021. https://www.ons.gov.uk/economy/nationalaccounts/uksectoraccounts/methodologies/doubledeflationmethodsanddeflatorimprovementstouknationalaccountsbluebook2021

Figure 5: An improved price index shows a rapid decline in telecoms prices



Wider adoption of the improved approach to measuring the price of telecommunications services would highlight the dual role of data growth and investment in driving productivity growth and declining prices.

The tax base for broadband funding

If investment beyond what the market delivers is desired for public policy goals, for example, to improve network coverage, then it should be funded from general taxation.

According to the Diamond-Mirrlees result in relation to optimal taxation, inputs to production (such as data) should not be taxed.[34]

An internet traffic tax, by discouraging adoption and use of data driven applications, demand for investment in networks, digitisation and GDP would also reduce the economy wide tax base.

Finally, an internet traffic tax would, by reducing mobile traffic and expected mobile traffic growth, reduce the demand for and value of additional spectrum for mobile operators, thereby reducing future spectrum auction proceeds. Whilst the goal of auctions should not be revenue raising *per se*, the harm here arises from harm to the value of mobile capacity increases and therefore to expected auction proceeds.

Value chains

The GSMA and Kearney have reported on the value chain.[35] The report suggests an imbalance between networks and applications exists.

However, general purpose technologies such as electricity and connected computing generate benefits primarily by enabling transformation and innovation throughout the economy and would not be expected to make up a large share of value added themselves.

Telecommunications and energy each comprise only around 2% of GDP in developed economies, yet are essential to a vast range of economic and social activity.

Indeed, one of the reasons general purpose technologies are powerful, in addition to having a wide range of applications, is that they go through a phase of rapid productivity growth which - whilst increasing their indirect contribution via what they enable - may contribute to their share of GDP declining (unless demand growth outstrips productivity growth).

Stock market valuations may also overshoot for general purpose technologies, as ultimately the main beneficiaries are users. The relative fortunes of different activities may also prove volatile as investor sentiment regarding where shareholder value will be captured shifts. For example, a portfolio investor, writing in the Financial Times in June 2022, noted a shift in sentiment towards telecoms companies providing access to content:[36]

[34] Diamond and Mirrlees. "Optimal taxation and public production. I: Production efficiency." The American Economic Review, Volume 61(1), March 1971. http://darp.lse.ac.uk/PapersDB/Diamond-Mirrlees_2_(AER_71).pdf

[35] GSMA and Kearney, The Internet Value Chain 2022, May 2022. https://www.gsma.com/publicpolicy/resources/internet-value-chain

[36] FT, Making money from screen time, 7 June 2022. https://www.ft.com/content/13d456a0-2572-42dd-ad2c-a68d21724dbf

> *"Netflix may have hurt us, but other holdings, in telecom companies, have done well in the past three months. Singapore Telecom is up 3 per cent, KPN up 7 per cent, Nippon TT up 11 per cent and AT&T up 17 per cent."*

There is nothing exceptional or unfair about the evolution of the value chain and the shares of telecommunications versus the activities that connectivity enables.

Europe's Digital Decade

The European Commission has published goals for digital transformation by 2030.[37] These include the digitisation of businesses and public services, and the role of digital in supporting sustainability and the green transition.

The digital transformation will, almost by definition, involve growth in the transmission of data. As the European Commission has noted:[38] *"Data driven applications will benefit citizens and businesses in many ways."*

An internet traffic tax can therefore be expected to be inimical to the goal of achieving widespread adoption and use of data driven applications and digital transformation including the goals of 75% of EU companies using cloud, AI and big data and the growth of scale-ups.

Net neutrality

In South Korea, which introduced sending party pays in relation to data, Open Net Korea and 13 other NGOs see the policy as a violation of net neutrality and are calling for its abolition.

In Europe the proposal for a levy on internet traffic has drawn objections from 34 civil society organisations from 17 countries in a joint statement raising concerns about the potential impact on the free and open internet and the risk the proposals set a precedent globally that fractures the free and interconnected nature of the internet.[39]

The proposal would in effect allow telcos to force some OTTs to pay to deliver content to users. That would be discriminatory, both in terms of applications and providers. This would appear at least to be contrary to the principles underpinning net neutrality requirements in Europe.

Whilst the specific proposition naturally isn't something BEREC has looked at in terms of IP interconnection' agreements to date, it would appear from BEREC guidance that selective and forced paid peering on the part of ISPs could potentially constitute a breach of net neutrality.[40]

The Green transition

Axon discusses the energy use associated with data growth. However, even viewed through this narrow lens, the energy efficiency of networks is improving, and networks managed traffic

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[37] https://ec.europa.eu/info/strategy/priorities-2019-2024/europe-fit-digital-age/europes-digital-decade-digital-targets-2030_en

[38] European Commission, A European Strategy for Data. https://digital-strategy.ec.europa.eu/en/policies/strategy-data

[39] The European Commission threatens to undermine the core values of the free and open internet, June 2022. https://en.epicenter.works/content/the-european-commission-threatens-to-undermine-the-core-values-of-the-free-and-open-internet

[40] BEREC Guidelines on the Implementation of the Open Internet Regulation, June 2020. Paragraph 6: *"NRAs may take into account the interconnection policies and practices of ISPs in so far as they have the effect of limiting the exercise of end-user rights under Article 3(1). For example, this may be relevant in some cases, such as if the interconnection is implemented in a way which seeks to circumvent the Regulation."* https://berec.europa.eu/eng/document_register/subject_matter/berec/regulatory_best_practices/guidelines/9277-berec-guidelines-on-the-implementation-of-the-open-internet-regulation

increases during Covid without corresponding increases in energy use.[41]

However, the broader picture is that data enables the virtualisation of services, with the electrons and photons enabling opportunities for substitution for much more energy intensive activity involving atoms.

Examples include a streamed movie versus the production and transport of physical media; or the use of online collaboration tools which flourished during COVID-19 as alternatives to physical travel and meetings.

As Ericsson noted, whilst much can be achieved in improving the energy efficiency and greenhouse gas emissions related to network operations the greater payoff will come from connectivity supported opportunities for greenhouse gas emissions reduction throughout the economy (which may be associated with an increase in data traffic):[42]

> *"A combination of switching to renewables, modernizing equipment and fully utilizing the energy-saving capabilities of today's mobile networks can immediately make a positive difference, contributing significantly towards service providers' net-zero emissions targets."*
>
> *"However, the societal impact is much greater. Connectivity is an enabling technology, representing a fast, scalable tool to help address climate change. Indeed, digital technology may be the most powerful, scalable tool the world has to tackle the climate crisis."*

Fairness

Fairness is arguably less well defined than efficiency in relation to existing frameworks. However, fairness now has prominence in relation to European frameworks with the term included in the Digital Markets Act[43] and the Draft declaration on Digital Rights and Principles for the Digital Decade. The latter states that:

> *"All market players benefiting from the digital transformation… make a fair and proportionate contribution to the costs of public goods, services and infrastructures."*

Well-functioning markets and fairness

The interpretation and application of the principle of fairness therefore requires particular care, in part because getting it right is so important in relation to the internet ecosystem, but also because it may set precedent.

Arguably the interpretation of fairness in relation to market structure and conduct should not overturn established 'market failure' grounds for intervention.[44] In effect what is fair may be a consideration once a problem such as abuse of market power is established but should not be a consideration in relation to producers in well-functioning markets.

If access and peering is a well-functioning market, which several studies have concluded it is, should fairness be a further consideration?

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[41] GSMA, COVID-19 Network Traffic Surge Isn't Impacting Environment Confirm Telecom Operators, June 2020. https://www.gsma.com/gsmaeurope/latest-news-2/covid-19-network-traffic-surge-isnt-impacting-environment-confirm-telecom-operators/

[42] Ericsson Mobility Report, November 2021. Page 35. https://www.ericsson.com/4ad7e9/assets/local/reports-papers/mobility-report/documents/2021/ericsson-mobility-report-november-2021.pdf

[43] Cremer *et al*, Fairness and contestability in the Digital Markets Act, July 2021. https://tobin.yale.edu/sites/default/files/Digital%20Regulation%20Project%20Papers/Digital%20Regulation%20Project%20-%20Fairness%20and%20Contestability%20-%20Discussion%20Paper%20No%203.pdf

[44] This is separate from the more general question of what is fair in terms of societal opportunities and outcomes for citizens and the broad-based tax, benefit and other interventions such as universal education designed to promote fairness. The focus here is on producers.

Taxation and fairness

The main channel of contribution to public goods is via taxation, and enterprise contributes directly via corporate taxes but also indirectly via value added taxes and wage taxation.

From this perspective the best way to promote a fair contribution is to ensure the taxation system raises sufficient revenue whilst minimising the disincentive to creating value added. As discussed earlier an internet traffic tax is not a an efficient basis for revenue raising.

This leaves the question of taxation of multinational enterprises, including digital corporations, for which there is an agreed way forward.[45] The motivation for this initiative is in part to ensure fairness in the operation of the global tax system.[46]

Non-financial contributions and fairness

Consideration of fairness should arguably take account of linkages in terms of induced demand (these linkages are at times internalised by market participants, typically with payment to those who contribute indirectly to demand such as price comparison services).

Content and application providers not only selectively invest in network infrastructure and pay for telecommunications services directly, but also contribute to the induced demand for network infrastructure.

As discussed, the indirect contribution of content and application providers via induced demand for network infrastructure, particularly very-high-capacity networks, and therefore monetisation via consumers is substantial. Indeed, telco voice and SMS services now make a comparatively small contribution in terms of revenues and do not contribute to willingness to pay for very-high-capacity networks.

From this perspective there is an imbalance with content and application providers making a disproportionate, albeit indirect, contribution to public infrastructure.

Reductio ad absurdum

The notion of fairness promoted by Axon, ETNO and the GSMA in relation to the internet value chain – applied consistently and more generally – would undermine the efficient operation of markets and disrupt value chains across swathes of the economy. *Reductio ad absurdum*, it is a flawed idea.

Apparent disparities between the value of services that enable innovation and value creation more generally, and linkages in terms of demand stimulus that do not involve monetary transfers, are widespread; and do not in general represent market failure or something inherently unfair.

To take one example, electricity generation and distribution has been responsible for a wave of innovation for over a century and is now further seen as a key enabler of de-carbonisation throughout the economy. Yet the electricity sector makes up a comparatively small share of GDP and is dwarfed by the growth it has enabled.

Following the logic of compensation for costs indirectly 'caused' or seeking payment from 'all market players who benefit' (and which is it?) would have far reaching implications in relation to electricity distribution and applications; even acknowledging that 'The internet is *not* a washing machine'.[47]

[45] OECD, International community strikes a ground-breaking tax deal for the digital age, October 2021. https://www.oecd.org/tax/international-community-strikes-a-ground-breaking-tax-deal-for-the-digital-age.htm

[46] Christie (IMF), Taxing tech, Spring 2021. https://www.imf.org/external/pubs/ft/fandd/2021/03/taxing-big-tech-and-the-future-of-digital-services-tax-christie.htm

[47] ETNO, 8 common questions on the "fair contribution" debate, 8 June 2022. https://www.etno.eu/news/all-news/742:8-questions-fair-contribution.html

Electric car manufacturers – BMW, Volkswagen, Tesla etc – benefit from the pre-existing electricity grid, but do not contribute other than via payment for electricity they consume directly.

As electric vehicle adoption grows electricity consumption will increase and vehicle owners will pay directly for it via consumption-based charges and monthly line charges.

Further, as electricity demand grows at the household level, ultimately increased maintenance costs and/or enhancement of distribution networks may be required[48] - the costs of which are not reflected in consumption-based pricing.

On efficiency or fairness grounds should electric car manufacturers, as players who benefit from electricity grids, be required to negotiate a contribution - to in effect be taxed – with the money going to electricity suppliers? Probably not, lest we discourage the transitions we value, be they digital or electric.

Conclusion

There are a range of questions in relation to charging for data for which a narrow perspective might yield one answer whereas zooming out to take a broader perspective yields a different answer. Considering a range of specific issues identified by Axon from this broader perspective we find that the previous conclusion that an internet traffic tax would prove harmful is reinforced.

Nevertheless, the following section considers questions that may arise if an internet traffic tax is evaluated beyond the in-principal stage where we conclude it founders. Even if one concludes that the devil isn't in the idea, the devil might nevertheless be in the detail.

[48] Muratori, Impact of uncoordinated plug-in electric vehicle charging on residential power demand, January 2018. Nature Energy. https://www.nature.com/articles/s41560-017-0074-z
For an overview see: Arstechnica, How many electric cars can the grid take? 2018.
https://arstechnica.com/cars/2018/01/how-many-electric-cars-can-the-grid-take-depends-on-your-neighborhood/

7. The devil in the detail

This paper concludes that an internet traffic tax isn't a well-founded idea and would harm achievement of the European Commission's digital transformation vision.

Nevertheless, to the extent that appraisal goes beyond the in-principal stage an examination of questions such as who would pay what, to whom and for what under what conditionality would be required. This examination might also throw up further in principle challenges that would need to be considered.

Who might pay?

The broad proposition is that large tech companies would pay. However, whereas scale might be one filter in terms of the scope of the Digital Markets Act, it isn't clear that there should be a size threshold for content and application providers to make a 'contribution' to telecommunications network operators.

Further a size threshold may distort the behaviour of firms close to the threshold (though smaller firms may in any case end up paying an internet traffic tax since they utilise cloud services and digital platforms to deliver their own services).

What should be the level of internet traffic tax?

Given that the proposed tax arguably isn't well founded on efficiency or fairness grounds, there may not be a sound objective basis for setting the rate. Nevertheless, a decision would be required.

The Axon report relates potential revenues to an estimate of costs. However, the source of the cost estimates – Frontier Economics – acknowledge that they are not based on a bottom-up estimate of the incremental costs of data. The European Commission may therefore wish to estimate the incremental costs of data.

However, the data cost alone does not provide a complete picture in terms of the net cost/benefit of data growth for telcos. Incremental revenues would also need to be considered. This should include, at a minimum, fees for transit and mobile tiered data tariff revenues. It should also in principle include an estimate of the indirect ways in which content and applications induce demand and willingness to pay for very high-capacity networks including fibre and 5G.

The conclusion of such an exercise, conducted properly, might be that content and application providers contribute their fair share or more for network infrastructure both directly and indirectly.

Who would receive the funds?

The broad category proposed is telecoms network operators, but greater precision would be required. An emerging change in the market is that there are now many new entrants investing in fibre networks.

The funding business and funding models for these entrants typically differ from those of incumbent telcos, raising a question over whether the issues identified by incumbents are representative of the market, but also in terms of ensuring that whatever is done does not favour incumbents over entrants.

Further, what would be the process for deciding who was eligible, would the process be competitive and what conditions would attach to the use of the funds?

What conditionality should apply?

If the argument for an additional contribution is that content and application providers would benefit from additional investment in networks, then arguably they should have a say over what investments are beneficial. Arguably they should

also receive a share of network ownership in return for contributing directly to investment.

Further, to ensure efficiency and to maintain or enhance competition in the telecommunications market those receiving funds should be chosen via competitive procurement via a process that ensures a level playing field between incumbents and entrants.

However, a problem in terms of ensuring a level playing field is that incumbent network operators maintain significant retail market shares through their vertically integrated retail arms. This tilts the investment playing field in favour of incumbents and disadvantages entrants, particularly wholesale only entrants who may wish to strike details with retailers to support investment but cannot readily access the incumbents existing customers.[49]

One remedy to ensuring a neutral procurement process for additional investment would be to make network separation a condition for funding (as was the case in New Zealand in relation to access to state funding for fibre investment).

Ongoing monitoring would also be required to ensure that investment was additional, and customers benefited from any internet traffic tax.

Would an internet traffic tax conflict with other policies?

Introducing an internet traffic tax would involve a fundamental shift that may not only conflict with the goal of digital transformation but may also conflict or need to be reconciled with other policies. Examples include net neutrality, international initiatives in relation to the taxation of digital companies and the transition from terrestrial broadcasting to online content delivery.

A selectively applied internet traffic tax could be expected to raise questions over Europe's commitment to net neutrality, a concern that has been raised.[50] The proposed internet traffic tax is also likely to be seen as in conflict with the recent Declaration for the Future of the Internet.

An internet traffic tax might raise questions over whether European member states who signed up to the OECD process remained committed to the 8 June 2021 Two-Pillar Solution to Address the Tax Challenges Arising from the Digitalisation of the Economy.[51]

Finally, an internet traffic tax might directly, or indirectly (via their use of cloud services), discourage broadcasters from transitioning from terrestrial to online delivery, thereby delaying the further release of UHF radio spectrum for mobile and/or licence exempt use.

What should an impact assessment cover?

An impact assessment of the proposed approach would be required. This should include not only the anticipated impact on network investment, but also the impact on content and application providers, but those who utilise their services, the indirect impact on network demand and therefore investment and possible international implications regarding the principles underpinning the operation of the internet and progress in addressing the tax challenges arising from digitalisation of the economy. The full range of impacts of an internet traffic tax should be appraised.

[49] Wholesale access regulation, where operators are found to have significant market power, addresses a separate challenge, namely ensuring all retailers can access an operators' network on equivalent terms.
[50] The European Commission threatens to undermine the core values of the free and open internet, June 2022. *https://en.epicenter.works/content/the-european-commission-threatens-to-undermine-the-core-values-of-the-free-and-open-internet*
[51] *https://www.oecd.org/tax/beps/statement-on-a-two-pillar-solution-to-address-the-tax-challenges-arising-from-the-digitalisation-of-the-economy-october-2021.htm*

Conclusion

The practical details of an internet traffic tax and network subsidy regime would need to be worked out if it is decided to proceed to this step in-principle. It may be that issues of detail would reveal challenges that would require the merits of an internet traffic tax to be reappraised.