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Net Fatality

Net neutrality rules harm innovation, investment and growth

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1. Summary

Net negative

Mobile networks provide a vital component of the UK's infrastructure that is crucial to the country's economic well-being. A healthy telecoms sector able and incentivised to invest in the latest technologies to support cutting-edge services is in everyone's interests. Unfortunately, the UK mobile industry – as DSIT's own *Call for Evidence* candidly acknowledges – faces extremely challenging conditions, including a revenue line that has collapsed by a quarter over the past decade, even while demand for data capacity continues to leap ahead. A sector that was once a promising engine of growth at the turn of the millennium will now struggle to undertake 5G upgrades matching the government's ambitions.

Many factors have brought about this state of affairs. For example, the industry has often been derided for relying on the sale of 'dumb pipes', that is to say raw data capacity without added-value features. The cruel irony here is that operators would welcome the freedom to provide more sophisticated, tailored offerings but are prevented from doing so by net neutrality legislation. The constraints imposed by this ruleset contribute directly to the mobile sector's present state. This paper sets out to explain why the UK as a whole (citizens, operators and economy) would benefit from removing a set of unnecessary rules that serve to chill innovation and depress investment.

Opportunity cost

Net neutrality is the superficially anodyne principle that all packets of data must be treated identically across a telecoms network. This obligation is despite the fact that, as customers would themselves acknowledge, certain data is of greater urgency. For example, maps-related data assisting a person navigate in a car is very high priority – because it needs to arrive in an

especially timely and reliable fashion if it is to help the driver decide which direction to take at a junction. Yet net neutrality rules severely hamper even customers *themselves* from specifying which traffic they would like to see accorded the most importance. Other offerings critical to SMEs in particular, like payment services, would also benefit from reform of the legislation. And, without change, the risk is that innovations such as agentic AI will simply not be able to reach their full potential in the UK. The net neutrality legislation does allow specialised services and differentiated retail offers, but neither of these are a practicable workaround – involving complex and cumbersome rules that slow innovation and adoption.

Repeal of the net neutrality rules would enable innovative offerings that could not only power productivity gains in the wider economy but also provide a potentially sizeable additional market in new services. Combined with the savings that would accrue from more efficient network management in the absence of net neutrality restrictions, this could help fund a meaningful portion of the heavy investment requirements facing the hard-pressed mobile sector.

Depending on the assumptions made, incremental revenues could plausibly lie in a range of between £174m and £871m per annum. Network efficiency gains could amount to a further (non-recurring) £384m. The combination of additional mobile capex and improved efficiency in the utilisation of existing infrastructure would together be worth around £142-557m a year – equivalent to 8-31% of current investment levels. Note that these estimates relate purely to the mobile subsector and could conceivably be substantially higher with the inclusion of fixed-line activities.

The additional cash flows from relaxing net neutrality restrictions could thereby make a significant contribution in taking the UK beyond

a basic 5G capacity-focused build into one centred on more advanced use cases. A government-sponsored assessment of the national economic benefits attributable to 5G deployment estimated a total cumulative GVA of £41bn. Reform of net neutrality has the potential to underpin 8-33% of 5G capex, fuelling £1.9-7.3bn of this economic contribution – a substantial portion of which could relate to SMEs.

You get what you regulate for

Regulation pervades the telecoms sector, touching almost every aspect of activity. Its effects are not merely direct but also cultural, shaping the basic day-to-day behaviours and assumptions prevailing. Personnel originating an idea for a new service will be conscious their proposal could be torpedoed in an instant should it conflict with an intricate ruleset in which they are not expert, so attaching risk to the process of ideation in the first place.

Indeed, the very caution needed to navigate such an involved regulatory ruleset is liable to be antithetical to the development of a more innovative mindset. This situation is only exacerbated by the highly subjective nature of many of the rules in areas like specialised services.

By contrast, software has not (at least historically) faced the same regulatory burden. This has enabled more of a free-wheeling, experimental attitude among the technology companies. Having originated a new service idea, a tech company's first questions will generally have been around its technical practicability and market potential, not its regulatory feasibility.

Technology regulation has tended to avoid chilling innovation by acting pre-emptively. The lighter touch generally applied suggests policy makers have recognised that prescriptive rulesets don't work well for rapidly evolving, software-centric industries. This is surely valid –

but what would be a mistake would be to fail to recognise that telecoms itself is becoming much more software-centric, with the result that it too can benefit from an accelerated pace of development. In particular, the shift to technologies like 5G and OpenRAN have the potential to make mobile platforms radically more flexible and customisable, opening up exciting possibilities in terms of new services. But this is only provided that rules don't hold the industry back.

Ultimately, the country will get the telecoms industry that it regulates for: prescriptive, pre-emptive legislation imposing complex rules to forestall problems that have never arisen in the UK is liable to produce a sector that is reactive, cautious and lacking in both creativity and dynamism. Fortunately, the ongoing review of the mobile market presents an opportunity to send a clear message to the operators that the government would value a sector prioritising innovation. While continuing to adhere to open internet principles (as it always has done, even before net neutrality legislation), the sector would be of greater benefit to UK citizens if it were able to focus on creating exciting new services rather than being obliged to privilege backward-looking box-ticking.

Out of options

The Mobile Market Review *Call for Evidence* cites estimates of up to £34bn being required for the deployment of advanced 5G through to 2030. This, of course, comes on top of other significant outgoings, including annual licence fees of approximately £250m per annum and the expense of complying with the designated vendor direction rules set out in the Telecoms (Security) Act of 2021. Where is the industry to find the prodigious sums required for this work? This is an especially pertinent question given that mobile revenues have fallen considerably, from £21bn in 2014 to £14.1bn by 2024 (CPI adjusted 2024 prices).

Telecoms operators have few options to finance these heavy build costs. DSIT's *Call for Evidence* document discusses many of them directly. Several are flatly ruled out, such as price rises or what has become known as 'fair share'. An infrastructure levy (like that seen in the water sector) would presumably also be unwelcome amidst the cost of living crisis. Ideas like FWA (fixed wireless access) represent nil sum games for the sector. Moreover, proposals of any sort need to reckon with the prevailing ferocious level of competition seen in UK telecoms.

In a market that is already saturated, this really leaves only one alternative, namely innovation: harnessing the novel capabilities provided by technologies like 5G and network slicing to deliver a superior quality of service that justifies a premium. Unfortunately, though, offerings of this type are liable to be incompatible with the constraints imposed by net neutrality legislation.

The government's 5G ambitions as stated in the *Call for Evidence* are worthy and surely uncontentious. But they also have very direct consequences. The degree of build envisaged is extraordinarily expensive and the revenues to fund it must come from somewhere. By a process of elimination, it can be seen that the only readily available 'somewhere' are the kinds of new services set out in this paper.

The mobile industry will therefore be following the ongoing Mobile Market Review closely, to gauge how serious the government is about its connectivity and technology goals, using the simple yardstick of the decision on net neutrality. The sector requests a freedom almost any other industry would take for granted: the freedom to innovate. What this requires is simply that telecoms be unshackled from the burdensome and unnecessary net neutrality ruleset.

The real risk is inaction

Evidence from right across the planet strongly suggests that the risks attached to removing net

neutrality regulation are very minor. The same cannot be said, however, for risks associated with retaining this outmoded ruleset.

Thanks to the wide range of approaches adopted to this regulation globally, we can compare how the different regimes have fared. Several Asian markets that are world-leaders in terms of telecoms technology have largely ignored net neutrality legislation altogether, such as South Korea, Japan and China. The absence of this legislation in these countries has not resulted in major disruptions to customers, with the most prominent counter to this only the withdrawal of videogame streamer Twitch from Korea – where its role was rapidly assumed by local platforms. Turning to the Anglo-sphere, the absence of net neutrality rules hasn't caused significant issues for New Zealand or Australia.

The US originally devised the concept of net neutrality but this regulation was rescinded in 2018. Its advocates warned about what was to follow, but other than a dispute over video traffic handling that year, the prophets of doom have not been vindicated.

Still greater in importance is the fact that there were no material issues in the UK in the years prior to the 2016 implementation of net neutrality legislation. Moreover, UK telecoms is not some cosy commercial backwater. Instead, customers have the most dependable of protections available: that afforded by intense competition. Even in a scenario in which net neutrality rules were removed and an operator then misbehaved, the inevitable result would be customers voting with their feet and departing for a rival. Note also that an absence of net neutrality legislation does not equate to an absence of *any* relevant legislation, as the safeguards afforded by competition and consumer protection law would remain in place.

The risks of reform are, in short, negligible. By contrast, though, those associated with inaction are very real. These fall under two broad headings. First, there is the risk of forsaking the

economic benefits of net neutrality repeal: new services that go unlaunched, a sectoral culture that is deficient in innovation and an industry that lacks the cash flows necessary for ambitious network build.

Second, there is the risk to sovereign autonomy. Amidst the present geopolitical upheaval, the importance of a robust and highly capable national telecoms infrastructure is self-evident. Indeed, the stakes here could yet grow still

greater, given open questions about where the communications and compute build of the future will be located – with orbital servers even being proposed that would lie beyond the direct reach of the UK government. Bearing this sovereign risk in mind, it should be even more apparent that removing outdated regulation from operators that employ UK staff, pay UK taxes, invest in UK infrastructure and are directly subject to UK lawmakers is surely in the interests of citizens, the economy and the country alike.

2. Opportunities foreclosed

Customers lose out

Net neutrality is the principle that all packets of data must be treated identically across a telecoms network. This might sound innocuous but isn't. In fact, these rules impose real costs, as this paper will set out. Certainly operators pay the price but – perhaps more importantly – so do their customers. The regulation not only results in networks that are less efficient and operators with fewer resources to fund upgrades, but also deprives users of innovative new services that might otherwise be developed and launched were it not for the constraints imposed by the legislation.

Mobile revenues have declined significantly over the last decade, while on the fixed-line side of the industry, many entrants are clearly struggling. Reform of net neutrality legislation provides an important opportunity to at least partially remedy this by enabling new classes of service. If – and only if – these prove popular with customers, the additional revenues generated (combined with the network efficiency savings available if net neutrality restrictions were withdrawn) could make an important contribution to funding further 5G

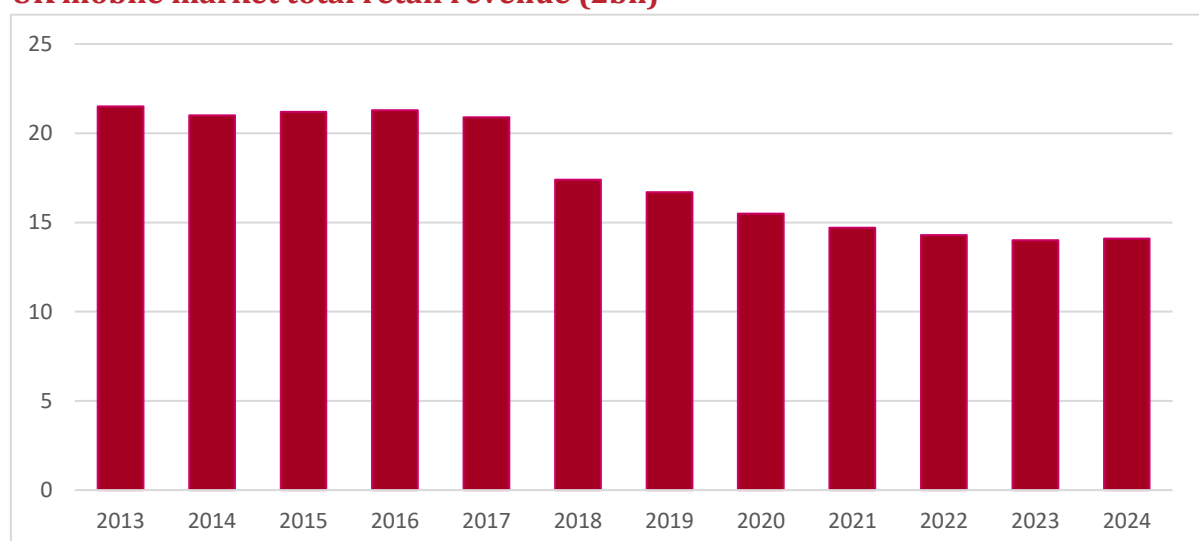
upgrades in the UK. The government's aspirations for 5G deployment are commendably ambitious. However, funding these types of investment requires substantial additional cash flows – without which the entire economy stands to lose out.

Prospective use cases

Net neutrality legislation hampers innovation. Illustrating this, discussed here are a trio of use cases that are being impeded by the rules now in place, falling under three category headings:

1. In some cases, the network operator will have the capability to determine that an individual customer's particular communication would likely benefit from an enhanced quality of service.
2. However, in other cases where the communication would similarly benefit from an enhanced quality of service, the network operator will not be in a position to know this – but the customer themselves will.
3. Finally, and most intriguingly, in a third service category, the network won't know what communications merit an

UK mobile market total retail revenue (£bn)



Source: Ofcom, *Communications Market Report 2025: Interactive data*, CPI adjusted 2024 prices

enhanced quality of service *and neither will the customer* – because the user won't even be human.

Use case: moments that matter

A point that will bear repeating in this paper is that all telecoms networks in general, but mobile networks in particular, are fundamentally contended. That is, they involve a finite resource being shared out among multiple users. The capacity of any 5G mobile network is primarily a function of how much radio spectrum an operator possesses and how many base stations it can build to utilise that spectrum. This spectrum is finite. The number of base stations in any given area is likewise finite (finding suitable sites, obtaining planning permission and interference issues all being practical constraints). Customers must therefore share inherently limited capacity.

In situations with limited but shared capacity, prioritisation is typically used to get the best overall result – bus lanes on roads or triage in A&E departments being just two examples. Telecoms networks have been no exception. Notwithstanding net neutrality principles, voice calls (including, of course, those to the emergency services) have always been accorded higher priority, irrespective of whether they were conveyed by circuit-switched techniques or carried as data packets (and thus otherwise little different from conventional data traffic).

What about distinguishing certain categories of data that are particularly important? A good example is provided by maps. When customers use a mobile network to access maps to navigate, it's reasonable to assume that the related data needs to arrive promptly, because immediate decisions will depend on it: which turning to take in the car, or which street to walk down to find a restaurant. For this reason, delays and interruptions to a mapping app can be much more frustrating than a few seconds of additional buffering or a brief pause when streaming a video, for example.

Mobile operators naturally take a close interest in this matter. The frustration of missing a turning on a car journey because of a stalled map app is precisely the type of experience that can prompt a customer to consider switching network. This is a “moment that matters”, and one which can cast a long shadow over a network's reputation with a customer.

It's not hard to think of further, similar examples. Sticking with the theme of transportation, consider the case of parking payments and electric vehicle (EV) charging. Particularly where these take place deep within the bowels of a concrete multi-storey carpark, mobile network signals can struggle to achieve the necessary building penetration unless the network can prioritise that connection. Moreover, failure to secure a connection can have extremely frustrating knock-on consequences, given all the customers' plans that may have been made contingent on being able to park successfully and being able to drive away in a charged vehicle. According the related data a higher quality of service would seem eminently appropriate and, because the volume and time span involved would generally be modest, it is unlikely to result in much impact on other mobile users in the vicinity.

Yet another example would be customers looking to make their way home from a crowded venue such as a theatre or music concert and needing to arrange transportation via a service such as Uber or Gett, particularly if late at night. All sorts of communications will doubtless be happening at such moments, for instance as members of a crowd share images of the performance. Most customers would probably agree that accepting small delays to these social media posts would be a more-than-acceptable trade-off if it meant faster and more reliable communication with the driver picking them up on a cold winter's evening.

Operators will also be aware, not least from surveys of their own user base, of the classes of

apps – and, in some cases, specific apps – where their customers most value the prompt arrival of data. Yet they're not permitted to act meaningfully on this information. This despite the fact that the motive here isn't to generate any additional revenue, but instead to improve the user experience (so encouraging the customer to remain loyal, as well as to give positive feedback on the network to friends).

Specialised services provide one way of giving certain services an enhanced quality of service. However, as discussed in more detail below, these come with a set of stringent regulatory requirements that are entirely disproportionate to a situation where an operator is merely trying to improve its own customers' usage experience. Use of a differentiated retail offer focused on the mapping app's category of traffic might be an alternative, but would also come with burdensome reporting requirements (especially the case considering that the network would not be charging for the resulting improvement in customer experience).

It is likely that many customers would be entirely content to leave to the networks the task of identifying apps benefiting from a degree of prioritisation, based on collective experience. Setting these preferences could be fiddly and plenty of users would probably be happy to reap the advantages of the improved quality of experience without wanting to get involved in the detail. Indeed, the need to specify their own individual preferences could be liable to put off large numbers of users, such that they would wind up missing out on the potential benefits.

However, that said, and while networks certainly do have good insights into this area, there is nothing in principle to prevent customers from themselves designating those individual services they see as being most time sensitive and meriting an enhanced quality of service in the mobile network. Operators could incorporate features in their apps allowing users to make this selection (something difficult today because the

rules prohibit app- or content-specific prioritisation). The result would be customers with a service that performed closer to their own preferences.

Unfortunately, then, net neutrality rules not only stymie operators from applying the benefits of their own knowledge of their millions of customers, but even impede these customers themselves from instructing the network with their own priorities. This latter type of scenario is further considered in the next use case.

Use case: the customer knows best

There is a further category of services where – for a variety of reasons – the network is not in a position to judge whether a higher quality of service with respect to the associated traffic is appropriate. Much of this boils down to the circumstances of individual customers. The example of mapping apps cited above is relatively unusual in that the great majority of those using such apps on a mobile network will be doing so to take immediate decisions.

These linkages, though, are much less clear with regard to other apps and app types. Take, for example, one particular category that is increasingly important for SMEs: payment apps. While dedicated payment terminals are well-established and still widespread, many small businesses and sole traders have elected to use a payment app installed on their smartphones. Needless to say, the ability of a business to accept payments is absolutely critical. Given the relatively low volumes of data involved, in many situations the best-effort nature of conventional internet access services will be perfectly sufficient. There are certain circumstances, though, where this will not be the case.

Consider, for instance, the case of a vendor selling street food from a stall, one that might be set up in a market area or make a temporary appearance at an entertainment event. This business will be reliant on a cellular network connection in an environment that could become extremely busy – for example, markets

can attract a lot of customers in a relatively small area. In such circumstances, when the mobile network is liable to become contended, the essential ability to rapidly and reliably process a payment is put at jeopardy. Even delays in securing a connection can lead to frustrated customers, longer queues and lost sales.

But, to repeat the point, this won't always be the case. Of course, most businesses will value prompt payment services to some extent, but it's more critical for those that are handling a large volume of transactions. It's likely a higher priority for a coffee shop than a shoe shop – simply because the latter will tend to have less of a queue. Any delays are less liable to jeopardise subsequent sales, because those sales are not so tightly packed time-wise.

As a consequence of the above, the network operator isn't necessarily in an ideal position to judge how best to treat data associated with a payment app. However, the customer is. For many SMEs, there might never be any need to do anything other than rely on general internet access services. For some, though, it would be advantageous to go beyond this from time to time, in certain circumstances, while for others it might be desirable most of or all of the time. The SME could designate its requirements via an operator's app, for example securing a higher quality of service specifically for its chosen payment app (but not for other apps, whether providing payment services or otherwise) by purchasing either a temporary boost or one running until further notice.

Because, in this example, the enhanced quality of service is restricted to the payments app rather than applying more broadly to other traffic as well, the customer doesn't wastefully upgrade the treatment of apps where this wouldn't provide real value (plus the risk of inconveniencing other users on the same cell site is minimised). Unfortunately, though, the net neutrality rules forbid app-specific

treatment by the network, making this arrangement impossible.

To retain today's net neutrality restrictions is to insist that nobody – *not even customers themselves* – should be in a position to say precisely how their own services should best be tailored. This seems out-of-place in an age of hyper-personalisation, where so many aspects of today's offerings can be adapted to an individual's preferences; where customers can select from an ever-proliferating range of devices; and where they are increasingly data literate and digital native. But even more importantly, the rules here can be seen to directly retard economic activity.

This type of customer-specified offering provides a good example of where new services might generate some much-needed extra revenues for the mobile sector. Note that some element of fee here is intrinsically necessary. If there were no fee at all involved, then there would be nothing to deter users from designating all of their activities as of the highest importance. Although the prioritisation of a payment service app is unlikely to much inconvenience other network users, the principle remains that capacity is a shared, contended resource, and it is therefore only appropriate that those looking to secure a higher quality of service pay some premium in recompense.

Given that net neutrality rules preclude prioritisation of an individual app, one alternative might be that the operator instead establish a differentiated retail offer focused on that app's category of traffic. The rules demand that this traffic categorisation be according to objectively different technical quality of service requirements. The network would want this traffic categorisation to have good granularity, in order to restrict the range of apps falling under this heading to those for which prioritisation was required. Unfortunately, this might very well necessitate establishing a whole matrix of

differentiated retail offers to accommodate all the possible combinations of prioritisations that customers might request across the enormous range of apps in use.

It is difficult to see how a looser definition could be squared with the objective technical requirements mentioned above. However, even were this possible, it would have the effect that a much broader range of apps might fall under such headings, in turn causing issues for the network (which obviously needs to focus prioritisation as narrowly as possible to minimise the risk of it affecting other users).

Another possibility might be the use of what is referred to as end-user imposed traffic management. However, the type of capability that this is able to support is very much limited in scope (being located only at the periphery) and cannot approach the end-to-end awareness, sophistication and efficiency of a solution managed by and across the network.

A further option would be to package the payment app as a specialised service, which would permit the operator to give elevated quality of service guarantees. There are in fact, though, a series of reasons why this alternative is also inappropriate – some of which have broad ramifications encompassing the nature of innovation in this fast-moving territory.

Imagine a scenario where a UK developer devises a new app to help SMEs. For the app to benefit from the better flexibility accompanying specialised service status, the developer (very possibly a SME itself) would have to approach all three networks to arrange to put this in place. The ensuing negotiation would not be a trivial affair.

Each operator would need to convince itself that the new app genuinely required specialised service status, knowing that should it miscalculate (or miscalculate Ofcom's risk of itself miscalculating) that it would face the regulator's sanction. For the operators, even if

the new service passes this legal inspection, there remains the matter of establishing the specialised service and then monitoring it on an ongoing basis to determine at what point that status must be withdrawn (owing to ongoing improvements in the broader network's capabilities).

Consider next the somewhat less positive (but nonetheless still welcome) scenario in which the innovative new app is not devised in the UK but is instead a globally available product. While a substantial international tech company might, in due course, get round to securing specialised services status for its offering, this is unlikely to be its first priority. The UK remains a substantial market, but it is only one of many. Meanwhile, the operators cannot realistically be expected to be aware of every app that stands to benefit and therefore to initiate the process themselves.

Moreover, irrespective of the app's origins, there will be circumstances when it is worth a customer's while securing enhanced quality of service for an app where it is dubious whether the specialised service criteria can be met. For example, it would be difficult to demonstrate that the aforementioned payment app required this status (something the net neutrality rules demand) when a general internet access service would be largely sufficient – even to the point where it would be adequate for the shoe seller, just not for the street food vendor on market day.

In any case, isn't all this in the eye of the beholder? Isn't the customer the best judge of whether the enhancement is worthwhile? Operator, developer and regulator alike are currently left having to evaluate whether or not the payment app met the threshold for requiring a specialised service, without actually having the practical experience of its use at the proverbial coalface. In other words, there is an information asymmetry here, where only customers have the necessary information to make a good decision. Why not simply entrust it to them?

As should be plain, the net neutrality rules just aren't a recipe for rapid innovation or adoption. It would be far more straightforward to give users the ability to purchase an improved quality of service for those individual apps where they would really value it.

This is really a question of bottom-up vs top-down. The specialised services ruleset is a top-down regime, where service proposals must be carefully weighed with due concern for the legal consequences of getting it wrong. Decisions will move at the pace of legal departments. By contrast, a scenario where users are simply empowered and entrusted to make their own decisions will move at the pace of those customers. As an added bonus to the economy, the beneficiaries from this faster pace will not only be the businesses making use of the new services, but also the developers producing the apps in question – potentially UK apps that could have global appeal.

Use case: agentic AI

As detailed above, there will be occasions when the mobile operator will be able to judge when an individual customer's particular communication would likely benefit from an enhanced quality of service; and there will also be situations where the customers themselves are best placed to make these assessments. Additionally, though, there will be those situations where the network is not in a good position to judge and neither is the customer, because the entity consuming network bandwidth will be an AI agent.

To the consumer, AI today involves primarily textual exchanges with services like ChatGPT or Gemini, which usually need only modest bandwidth. Plainly, though, the capabilities of machine learning to process more elaborate inputs go well beyond this – as evidenced by, for example, the subtitling and transcription functionality now routinely accompanying YouTube content and video-conferencing.

An exciting prospect is the use of AI to review video input and then provide analysis and recommendations. Video calls are already used to tap human expertise: for example, an electrician or plumber investigating a problem might use video of faulty components to consult with colleagues and ensure that precisely the correct replacement parts are ordered. A logical next step is to integrate the video directly into a diagnostic process leveraging AI.

Consider the case of an electrician called to a remote site (perhaps even in a telecoms network) where a fault has been reported. The electrician might communicate with the client using a video call as they seek to identify the source of the malfunction. But there's no need for the electrician to be working on the problem alone. At the same time, agentic AI could be reviewing the video using the cloud to provide its assessment of the cause of the fault and best remedies.

AI already provides many powerful avenues of productivity enhancement. Agentic AI can further enhance this by enabling workers to recruit the assistance of machine learning to tackle tasks in parallel to their own, human efforts. The use of the term 'agentic' is clearly important here. These are agents, i.e. possessed of their own agency, capable of deciding on a course of action to address the matter in hand. They therefore work in parallel with humans, receiving direction and input certainly, but able to take the initiative in accessing the information resources required to tackle the problem in question.

So the critical factor to bear in mind is that this AI capability is possessed of agency. To deliver its full productivity-enhancing potential, it needs the freedom to access the data and processing resources requisite to produce the best output. And it needs to be able to get on with this work without requiring constant supervision (which would rather defeat the purpose of the parallel work track it provides). The practical

consequence of this is that a piece of autonomous, complex software will be accessing network resource. This would be on behalf of a human but would not be directly and immediately under that person's control – or this would hardly be an instance of agentic AI.

Another consequence of the agentic nature of these services is that it is especially difficult to foresee the many varied forms that they are ultimately likely to take. The case of the electrician cited above is just one of very many that can be conjectured, from what promises to be an extremely diverse range. Indeed, at this early stage of the technology's evolution, it would clearly be mistaken to suppose it possible to predict its evolution with any accuracy. Nevertheless, even from just this one example, it will be plain that the agentic AI will need some kind of framework to keep within if everything is to work smoothly.

For instance, the aforementioned electrician, in the middle of a detailed videocall with the client discussing the intricacies of the fault, will certainly not want to find that session's quality impaired by a decision from the agentic AI to enlist (say) the input of a cloud-based diagnostic tool to review the video. Nevertheless, the electrician will still want that latter communication to occur – it's simply that the quality of the videocall with the client has to take priority. The agentic AI communication should take place, but only at a level of bandwidth which will not impair the quality of the videocall.

Of course, many of the relevant considerations here will vary enormously with the types of assignment involved. Often, though, the operators themselves will not be in a good position to judge what would be the most relevant quality of service standards. Moreover, their customers may be in no better position, since the agentic AI will be determining its own activity. Nevertheless, at least in theory, it should be possible to lay down certain basic principles, with one obvious example being to

'prioritise human communications over those initiated by their AI'.

As agentic AI proliferates, its total traffic contribution could become material. In some instances, the resulting data streams might be time critical. However, in other cases, they may not be – and in this latter type of situation, it might be appropriate to have a rule stipulating that the human user should see his or her traffic prioritised, while agents would have theirs run in the background.

Given that net neutrality rules preclude prioritisation of an individual app, one approach might be to establish a differentiated retail offer, which would provide at least some scope to tailor the treatment of apps' traffic. The challenge here, though, is that the rules demand that any traffic categorisation take place according to objectively different technical quality of service requirements. It is extremely unclear whether it would be acceptable under this arrangement to be dynamically re-categorising apps from one moment to the next, as would be necessary to separate apps that were human instigated (and so meriting prioritisation) from apps that were AI instigated. This is particularly the case when considering the direct implications.

With human and agentic activity taking place side by side, two apps falling into precisely the same category (in terms of their inherent quality of service requirements), would nonetheless have to receive different prioritisation. Indeed, at different moments, ostensibly very similar data traffic related to very similar apps (or even two instances of the very same app) would need different treatment depending on whether ultimately human or AI initiated. It should be striking that this is, in fact, an example of the very thing that net neutrality specifically sets out to prevent: according different treatment to two different apps doing the same kind of thing.

A different approach to implementing some form of prioritisation would be to leverage the

aforementioned end-user imposed traffic management. Unfortunately, these techniques are relatively limited in their scope, typically relying on relatively blunt, blanket rules in the form of static, policy-based caps or priorities. Furthermore, they are confined to the user's device and aware only of local conditions there, lacking visibility of the state of the broader network. Consequently, they cannot see where congestion is taking place, for example, or whether it is likely to be transient or persistent; nor can they coordinate across users or identify those situations in which more headroom might actually be available.

By contrast, networks have vastly more information at their disposal with which to make real-time decisions that will not only maximise efficiency but also more dynamically respond as traffic conditions fluctuate. Where prioritisation is necessary, the objective should nonetheless remain that it have as little of an impact on traffic flows as possible – and this is an aim best achieved by relying on the full intelligence and capabilities of the entire platform.

Accessing flexible quality of service parameters by packaging agentic AI offerings instead as a specialised service would present a different series of problems, many rooted in the fact that the net neutrality rules were never designed with technologies like this in mind. For one thing, the requirement would sometimes be for agentic AI traffic to be prioritised behind rather than ahead of that of the human user (with the latter's data perhaps needing no more than conventional handling).

Starting by considering a scenario where a UK company (very possibly a startup) devises the agentic AI in question, it would then be up to that developer to approach all three networks and negotiate terms. Again, as previously discussed, the operators would need to be able to show (on an ongoing basis) that the agentic AI service really required this status. This latter hurdle is difficult at the best of times, but would

be especially challenging in the context of a service with agency of its own – the network requirements of which are liable to be intrinsically unpredictable. The extent to which prioritisation was required (if at all) would vary not only in accordance with the network demands of the agentic AI but also by what the human user was trying to do at the same time. The number of permutations of apps in parallel use would be vast.

If the services in question were developed abroad (especially likely should net neutrality rules chill developers' ambitions domestically), then it would be an open question as to whether the international developer would ever get round to putting in place a specialised service in the UK (smaller companies might well lack the inclination). On the other hand, it is difficult to see how the operators could realistically monitor every new app globally that might benefit from this status – particularly as the networks will lack any detailed understanding of each app's use case (which may be confined to a very narrow industry context). All in all, this is hardly a recipe for the UK to spearhead early adoption and capture the associated productivity gains.

The question here once more boils down to being about whether a fast-paced domain of technological innovation such as agentic AI, at an early (and hence particularly uncertain) stage of its development, is better suited to a top-down or bottom-up approach. The former will move at the pace of legal departments, the latter at the pace of businesses keen to secure a commercial edge – and requires only that those businesses be entrusted to make their own decisions in the absence of net neutrality constraints. The beneficiaries of the resulting faster pace of innovation would not only be the companies making use of these new services, but also the startups developing the agentic AI services in question – which could go on to enjoy global success.

A further clarification is important. In the specific use case example described here of the electrician, the requirement is to prioritise human traffic above that instigated by an agentic AI. However, in many other scenarios, it is perfectly conceivable that this situation might be reversed: with the agentic AI-initiated communication needing prioritisation over the human. A recent report from Cisco characterises AI agents as “network ‘power users,’ operating at software speed rather than human speed” – and, in many cases, prone to impose a much greater traffic load than would typical human usage.¹ What is important is the networks have the flexibility to adapt to the context in question and not be hidebound by rules designed long before the emergence of the current cycle of AI development.

The likelihood is that AI is about to profoundly impact the usage profile of mobile platforms. Telecoms equipment vendors are already flagging the deep changes now underway – and warning that present day networks lack the capability to deal with the radically different landscape that is probable to emerge.

A vital new consideration here is that AI applications may well have the effect of upsetting what has been a central assumption of operators for decades, namely that downlink traffic to the customer (for instance, video or audio streams) is uniformly much heavier than uplink traffic (for instance, video uploads). By contrast, AI-driven applications are far more prone to be uplink-intensive. A good example is provided by the AI/AR smartglasses that are now approaching a level of greater technological maturity. These can generate continuous and heavy data streams as they transmit video up into the cloud,

where it can be analysed by AI (for example, to provide information and analysis on what the wearer is looking at).

Smartglasses typically generate a download-to-upload ratio of around 1:8. This compares with most cellular networks that are dimensioned for download-to-upload ratios of almost the opposite, of up to 10:1.² As a consequence, the risk is that uplink capacity becomes the new bottleneck. Even three to four users with medium-scale uplink requirements could create a problem on a contemporary cell site, especially if in difficult locations (such as in a building on the edge of a cell site’s coverage).

Note that smartglasses should be seen here as standing for whole new categories of device with inbuilt sensor capabilities. All sorts of electronics, ranging from the consumer to the industrial, could potentially benefit from the ability to share sensory data (such as video, audio or positioning) with cloud-hosted AI. In some scenarios, the downlink might be equally demanding (for example, to control the detailed activity of a device), while in other cases it might be comparatively lightweight (for example, if providing text-based responses).

In the face of a radical shift in the pattern of network usage, upending decades of established norms, it is important that operators have the necessary freedom to make use of the technical tools at their disposal to ensure networks function in the most efficient and reliable manner possible. This again calls for reform of a set of net neutrality rules that were devised for a different era.

¹ Cisco, *AI Impact on Wide Area Networks*, 2026.

² Ericsson, *How AI-powered devices will drive the shift to uplink-heavy networks*, 18 March 2026.

Taking the economic initiative

These new services are not just an opportunity for operators, but for the UK as a whole. They will allow the country to boost its competitiveness and enhance its position in AI, thereby supporting much-needed economic growth. A further important point is that they are still at a comparatively early stage in their development. The potential market in each country therefore remains ‘up for grabs’. Admittedly, Asian countries in particular enjoy a lead in 5G deployment, so might be expected to broach this territory first. Nevertheless, 5G technology is broadly available in the UK, and with it, many of the sophisticated new service functionalities that it makes possible (but which net neutrality rules constrain).

Of particular interest is the capability known as network slicing, which refers to the ability to segment the network in a virtual fashion, in order to be able to deliver particular quality of service guarantees to individual customers for individual applications. The first wave of 5G deployments, referred to as 5G NSA (non-standalone) implemented only a diluted variant of this capability that was confined to the radio layer rather than functioning throughout the whole network. In communications, the chain is only as strong as its weakest link, so this was far from ideal. However, more recent upgrades to 5G SA (standalone) platforms have extended the slicing capabilities to the full network.

Early examples

Since a standalone 5G network is required to fully exploit network slicing, and such upgrades have only become established comparatively recently, it is not surprising that a market for services based on this feature set is only now starting to emerge. Even so, Ericsson reports that globally there were 65 commercially available offerings utilising network slicing to

provide connectivity with differing quality of service undertakings.³

While this is an encouraging start, the three types of example use case discussed above really demand what is known as app-based network slicing, an even newer capability within 5G that was first launched by Singtel in Singapore in 2024.⁴ This relies on a technology known as User Equipment Route Selection Policy (URSP) to route the data associated with an individual app via the specific slice answering its quality of service requirements. Given its very recent unveiling, Singtel does not break out revenues from this segment in isolation. Nevertheless, it has already highlighted 5G slicing alongside its Quantum Safe Network and APIs as a growth engine, with revenues from these segments increasing 21%.⁵

The positive message here is therefore that app-based network slicing is at such an early stage of its development that there is still time for the UK to capitalise on these new capabilities and the innovative services that they can facilitate. On the other hand, though, there is hardly much point in mobile operators rushing to commercialise app-based network slicing if the net neutrality rules heavily constrain its use. Indeed, without thoroughgoing reform of net neutrality legislation, the risk is that the UK will fall behind those international peers that have chosen a more flexible regulatory regime which better facilitates agile innovation.

Reform of the net neutrality rules would enable these new technologies to be properly leveraged and so to realise their economic potential. The resulting benefits would be seen both in enabling the new services made possible and in supporting the jobs and skills development that would accompany their use.

³ Ericsson Mobility Report, November 2025.

⁴ Singtel, *Singtel pioneers world's first app-based network slicing technology*, 22 February 2024.

⁵ Singtel Singapore, *Driving sustained, profitable growth*, 28 August 2025.

The value of repeal

Repeal of net neutrality restrictions would yield monetary benefits on several fronts. First and foremost are the productivity gains that the new services might bring to the economy (including to SMEs). In turn, these would add to the growth of the broader economy, with further positive implications for employment and the country's tax base.

Second, the services market itself has the potential to be sizeable (as set out in more detail below), and so would help in sustaining the sector's heavy capex requirements. An additional source of cash flow to fuel upgrades would come from network efficiency gains, through the more effective capacity management that would be possible in the absence of net neutrality. Together, these factors could sustain a meaningful portion of the sector's infrastructure upgrade ambitions.

Market dimensions

How big might the market for these new services be? For obvious reasons, it is difficult to project the future dimensions of a market underpinned by technological capabilities such as URSP that are only just now being launched (and which would in any case be impeded by net neutrality rules in the UK). Nevertheless, what it is possible to do is to examine other forms of market segmentation that are already present to help gauge the preparedness of customers to pay for premium offerings.

Presently, price plans are largely differentiated on the basis of the size of the monthly data allocation, with the market encompassing a wide array of offers. Plans range from those with less than 1GB per month to those offering effectively unlimited usage. Ofcom's *Pricing and consumer engagement* publication of February 2026 reports data allocation bandings by contract customer proportions (what will be referred to here as 'data allocation customer bands').⁶ The 20-50GB allocation service attracted 19% of pay-monthly (contract) customers. About 39% of customers take larger allocations than this, what will be here termed 'premium' plans, and 40% smaller (less than 20GB), 'discount' allocations. The 20-50GB tier therefore sits in between these two and so might be considered the 'standard' type of package taken in the UK.⁷

Market ARPU figures are available from Ofcom's *Communications Market Report 2025 Interactive Data*, which provides figures up to July 2025.⁸ Unfortunately, what will be referred to here as the 'data allocation ARPU bands' do not entirely align with the data allocation customer bands in the *Pricing and consumer engagement* figures. However, they are close enough to work with for the purpose of the estimates being made here.⁹

To project the potential size of the new market, it is assumed that only those premium customers taking at least a 100GB or more plan would be prepared to pay some sort of a

⁶ Ofcom, *Pricing and consumer engagement*, 26 February 2026. This reveals that the most popular tariffs with users were either those of 20-50GB per month or those with unlimited usage (the two being roughly tied in popularity).

⁷ Breaking down the premium segment further, 7% of total pay-monthly customers opted for a 50-100GB plan, 12% chose an allocation of 100GB or more (but not unlimited), and 20% decided on an unlimited package.

⁸ Ofcom, *Communications Market Report 2025: Interactive data*, 17 July 2025.

⁹ The first step is to match the two sets of bands. The 50-100GB data allocation customer band within the premium segment falls squarely within the range of the

10-200GB data allocation ARPU band and is therefore matched with it. The 100GB or more (but not unlimited) data allocation customer band is assumed to map to the 200-500GB data allocation ARPU band. Finally, the two unlimited bands are mapped to one another. It is assumed that the 7% of pay-monthly users falling into the premium category but with data plans of only 50-100GB do not have sufficient appetite for the new services to be prepared to pay a premium for them, since although their plan is slightly larger than standard in terms of the data allocation customer bands, it still lies within the central tier of the data allocation ARPU bands. However, the other two premium data allocation customer bands are assumed to be prepared to pay something for a further enhanced service.

New services revenue uplift estimates (£m) supporting additional capex					
New services premia as % current premia	5%	10%	15%	20%	25%
Potential incremental revenue	174	348	523	697	871
Potential Incremental capex (via incremental EBITDA)	104	207	311	415	519

Source: Communications Chambers estimates

premium. To get an idea of its potential magnitude, it is possible to work off the premia being paid in the data allocation ARPU bands that are in place currently.¹⁰

These premia today obviously reflect the added value of a larger data allocation, and it is difficult to say how this might compare to the perceived value of the new services that could be launched in the absence of net neutrality constraints. Frankly, though, this really shouldn't be a subject for conjecture: it should simply be tested in the market – but, to repeat, for this to take place, the legislation in question would first need to be rolled back.

In view of the uncertainties here, it seems only reasonable to consider a range of possibilities, from a low case in which the new services are worth only 5% of premia associated with larger data allocations, through to a more optimistic scenario in which that proportion is instead 25%. This percentage can then be applied to the ARPU uplift present today in each data allocation ARPU band to estimate the ARPU uplift possible from the new services.¹¹

By factoring in the number of customers falling into each data allocation customer band, it is then possible to estimate the total additional revenues that the new services might generate. On the basis of the above calculations, these

could yield an incremental £174-871m per annum.

In the highly competitive conditions of the mobile market, it is of course entirely possible that, even if these premia vs standard plans were able to stick, nevertheless overall ARPUs might still not budge. This situation would leave industry revenues (and thus ability to support network investment) in no better a condition than before, but would mean that customers would derive the benefits of the new services at no additional net cost. However, in this scenario, at least the sector will have been granted the agency necessary to attempt to innovate and experiment its way to a better position. Furthermore, higher income customers (i.e. those paying the premium ARPUs) would be left cross-subsidising less affluent customers to a still greater extent than they do today.

The above figures represent the impact on the mobile side of the telecoms sector alone. However, net neutrality legislation also constrains the service innovation possible in fixed-line. While fixed-line platforms are somewhat less intrinsically contended than mobile, contention nonetheless remains a feature of all telecoms networks. Moreover, certain capabilities such as low latency connections would be every bit as valuable in fixed-line as in mobile.

¹⁰ Ofcom reports that the ARPU of 10-200GB plans stood at £17.88, that of 200-500GB packages stood at £21.06 and that unlimited offers stood at £31.37. As can be seen from these figures, customers choosing a 200-500GB plan pay an extra £3.18 per month as compared to those selecting a 10-200GB package.

Meanwhile, those deciding on an unlimited plan pay £13.49 more per month.

¹¹ This implies that the new services could add up to £0.80 in ARPU per month for 100GB or more (but not unlimited) customers (i.e. 25% of £3.18), and £3.37 per month for unlimited customers (i.e. 25% of £13.49).

The present paper is focused primarily on mobile, in answer to DSIT's *Call for Evidence* with respect to its review of the mobile market. An examination of the impact of net neutrality on fixed-line services would doubtless merit a further, dedicated study all of its own. For the present, suffice it to say that the total impact of net neutrality reform on telecoms revenues would be considerably greater having additionally incorporated the benefits to the fixed-line side of the industry.

Network efficiency savings gains

A further powerful benefit from net neutrality reform would be the way in which it would enable operators to run their networks more efficiently. Two areas in particular stand out here: the greater scope to use a range of optimisation techniques (yet without compromising the customer experience) and the ability to deal more effectively with the small minority of users whose excessive tethering has an outsize impact on others on the network.

Net neutrality rules constrain the mobile operators from fully leveraging optimisation techniques. A good example is in the field of video streaming. Video represents the majority of mobile network traffic, accounting for around 70% of Virgin Media O2's total volumes. A considerable portion of this is video that is being transmitted at a higher resolution than the user's device is actually capable of displaying. Virgin Media O2 estimates that up to around 25% of video traffic falls into this category. This implies that about up to 18% of network capacity is therefore being used inefficiently.

Unfortunately, net neutrality rules forbid operators from treating traffic differently depending on the attributes of the terminal device. The network is not permitted to handle a stream to a low-resolution smartphone any differently to one destined for a home cinema screen. Yet experience at Virgin Media O2 with techniques like adaptive video resolution and adaptive bit rate optimisation have indicated

that substantial gains would be possible, with indicative improvements in network-wide efficiency of circa 10%, were the rules to allow it.

Complicating this picture, though, is the fact that, while network operators are not permitted to differentiate between devices when handling traffic, this prohibition does not extend to content providers. The latter certainly implement optimisation techniques, even if they lack quite the same degree of incentive that a network operator would have to do so. In the absence of more granular data, this paper proceeds on the basis that most video traffic is already subject to optimisation (so no further efficiency gain would be possible were net neutrality rules reformed), but that a minority, 25%, is not (and so here an efficiency gain would be possible). Virgin Media O2's experience with video optimisation techniques in the past has yielded rather larger efficiency gains than this would imply, but it is also likely that content providers have themselves progressively implemented optimisation technology more extensively in the meantime.

Tethering is the practice of connecting to the mobile network with one device, which acts as a hotspot, and then chaining other equipment to it. As a result, what appears to be just a solitary connection can in fact be serving a whole set of different items of electronics, quite possibly with different users; or, for that matter, a single but highly data-intensive device that wouldn't usually be served via mobile, like a large high-resolution TV screen. Tethering clearly provides a helpful degree of convenience for many customers (for example, enabling them to readily connect a laptop to the internet while travelling without the need for a dedicated modem), but in the hands of a small minority of users has imposed a heavy network burden.

A good example of the misuse of tethering is where this capability is exploited to provide what is in effect a fixed wireless access (FWA) product connecting everyone in a multi-tenant

residence (rather than those individuals each taking their own subscription). This is a problem because mobile network capacity is inherently shared between all customers on a cell site, and this type of usage (which tends to be sustained and heavy) is prone to degrade the connectivity of others in the same area. Operators do sell dedicated FWA products, but must carefully plan to ensure that there is sufficient capacity available to support these offerings, and charge for them accordingly.

The most logical, efficient response to this would naturally be to make available tailored products designed specifically for these different use cases. One plan could address what might be termed ‘conventional’ tethering, that is where a single user is connecting a single additional device at a time, via their smartphone acting as a hotspot, and where the device being tethered has data demands that are moderate. A second plan could cater expressly for those effectively wanting a FWA service to connect multiple devices simultaneously (potentially with multiple users) or a single device that consumes data intensively. Net neutrality rules, though, prevent this specificity, by forbidding operators from limiting customers’ ability to tether devices – despite the vastly divergent usage profiles to which these different categories of tethering activity can give rise.

Ofcom’s preference is that operators instead rely on the traffic management rules (as mentioned earlier in this section) as well as setting tighter terms and conditions to control this problem.¹² The traffic management rules come under two headings: first, what is known as reasonable traffic management; and second, what are referred to as additional measures that go beyond reasonable traffic management. The issue with techniques falling under the first heading is that they must be based on objectively different technical quality of service

requirements relating to the specific categories of traffic. While those misusing tethering might unfairly degrade the experience of other customers sharing the same cell site, all will likely be using similar applications (such as streaming video). All these users will therefore have the same technical quality of service requirements relating to their traffic, meaning that operators cannot use reasonable traffic management to protect the data streams of conventional users from those misusing tethering.

What, then, of the second category, additional measures going beyond reasonable traffic management? These rules do permit a network to make interventions that are not related to a traffic category’s quality of service needs, which might introduce some additional flexibility (though depending on how narrowly traffic categories can be defined). However, Ofcom also stresses that these measures are not to be relied on either regularly or over the long term.¹³

This leaves the operators dependent on leveraging terms and conditions to contain the misuse of tethering. There are various issues here, starting with the fact that fair usage policies restricting the number or type of devices usable are explicitly ruled out.¹⁴ However, even were the rules around terms and conditions actually to accommodate this, there is the additional practicality to consider that any interventions made by operators on this basis tend to be inherently cumbersome and slow. Having identified a breach in the terms and conditions, a network must first contact the customer in question to notify them of the matter and typically give them an opportunity to amend their behaviour – all of which takes time.

Assuming that there is no change, the operator’s available sanction is to then terminate service. This is obviously an undesirable outcome for all

¹² Ofcom, *Net Neutrality Review*, 26 October 2023, p.121.

¹³ Ibid, p.86.

¹⁴ Ibid, p.121.

concerned. From the perspective of the operator, it would much prefer that the customer simply be on a plan properly appropriate to their usage rather than lose them altogether.

Ultimately, many of the issues being discussed here stem from the term “unlimited” and the reality that it has different meanings in different contexts. Had the problems that would emerge from tethering been apparent from the outset, this word might never have been applied in the first place. This, though, would perhaps have been a shame, as the concept is popular (and has become extremely well-established) with customers, who are purchasing a plan that essentially means they need never worry about their usage provided it remains faintly within the bounds of the conventional. Setting tethering misuse to one side, it would be extremely difficult for a smartphone customer (including, in the majority of cases, one tethering a laptop when out and about) to contravene fair usage policies on an unlimited plan.

Indeed, the only point at which usage is likely to become problematic is when multiple devices (e.g. laptops, etc) or a single, data-intensive device (e.g. large TVs, etc) are tethered. These scenarios would result in usage levels of the type seen with FWA services – and would generally be much more efficiently served via a fixed-line connection. Note that, even if such customers do not use their service for many days a month, they can nevertheless severely degrade the network for others active on the same cell site at the same time. Still, mobile networks can cater to some customers of this type, provided that they can plan and provision to be able to do so. In this situation, though, unlimited plainly means something different – effectively taking on a fixed-line context and involving considerably higher usage.

Again, the logical answer to all this would be to have two different products, tailored separately to this pair of very different use cases. A

conventional unlimited service for smartphone customers (but which restricted the number or type of devices usable so as to limit the extent of tethering); and a separate service for those looking to tether multiple parallel devices or a single data-intensive device, as something of a fixed-line substitute. Operators could frame the type of usage for which these plans were intended in concrete terms, such as the number and kind of tethering devices supported, which would be easier to understand than an abstract monthly GB cap.

Those users for whom a FWA-type product would be most appropriate could be steered towards the plan designed expressly for this purpose (and priced at a premium to reflect the much higher network demands involved). In the meantime, the traffic of others on the same cell site could be prioritised over *de facto* FWA users to ensure that the network experience of the former was not unfairly compromised by the burden imposed by the latter.

All this, though, would require reform of the net neutrality regulations. One benefit would be the resulting improvement in transparency, with customers able to choose between services more closely tailored to their usage. For those investing in networks, though, this issue is important primarily because of the enormous resources that are currently being consumed inefficiently. Virgin Media O2 estimates that around 7% of its capacity is accounted for by the misuse of tethering. With an overhaul of net neutrality regulation, this usage would either be properly supported by revenues through products specifically designed to cater to FWA, or alternatively would be more efficiently carried on fixed-line platforms, so freeing up the related resource for more cellular-appropriate purposes.

Network investment unlocked

Net neutrality reform would therefore yield two different sources of additional funds for network investment: first, the extra revenues feeding

into the sector from being able to sell new services; and, second, from the cost savings possible thanks to more efficient network management.

To begin with the additional revenues side of the equation, these would feed through into cash flows that could then be directed towards incremental network investment. In fact, the new services possible with the relaxation of net neutrality constraints should pass down into EBITDA in a markedly efficient fashion, because they will often relate to traffic that is already being carried on the network (and so already incurring all associated costs).

Working on the basis that the new services revenue would translate directly through into EBITDA, it is then possible to apply a mobile sector capex/EBITDA ratio to get an idea of the network investment this could support. Turning to Vodafone, as one of the most purely mobile-focused of the UK operators, its domestic operations have averaged a capex/EBITDA ratio of 59.5% over the financial years 2024-5.¹⁵ Applying this proportion to the extra EBITDA generated by removing net neutrality restrictions implies additional annual capex in a range of around £104-519m. This would represent an uplift of approximately 6-29% as compared to current UK mobile capex.

Moving on to the second factor underpinning additional network investment, cost savings from projected network efficiency gains, as previously discussed, these fall under two categories, namely the ability to apply additional optimisation techniques and the scope to address misuse of tethering.

As was mentioned previously, video comprises about 70% of mobile network traffic and, of this, around 25% is in higher resolution than the receiving device can realistically support, with the result that up to circa 18% of network capacity is being used inefficiently. Also as

previously mentioned, were more extensive optimisation techniques applied, this could have the effect of reducing the network-wide capacity required by up to circa 10%. However, given that content providers already implement various optimisation techniques themselves, it is assumed that only 25% of this benefit remains to be harvested by the operators (providing, obviously, the rules were to permit it).

Combining these latter figures suggests a network efficiency gain of about 2.5%. To put this in perspective, mobile network traffic is presently growing at a rate of approximately 16% per annum. This efficiency gain is therefore equivalent to around a sixth of the annual capex on mobile capacity. Virgin Media O2's current annual mobile capex stands at £572m and, of this, the bulk, at 80%, is dedicated to increasing capacity, amounting to £460m. The (non-recurring) efficiency gain here would therefore be worth about £72m to this one network.

Ofcom reports total market mobile capex for 2024 at £1.8bn.¹⁶ Virgin Media O2's capex therefore represents close to one-third of that of the overall market's total. Grossing up for this, on the assumption that the investment profiles of the other mobile operators are not greatly dissimilar, implies that the efficiency gain for the entire market would be around £226m. This may well be an underestimate. After all, the discussion here has focused on one particular case (i.e. video traffic conveyed in higher resolution than it can be displayed). There will doubtless be other parallel examples that could similarly benefit from more flexible rules. Furthermore, there would likely be efficiency gains for fixed-line operators also, albeit smaller in scale. After all, not all video traffic carried over fixed-line networks is destined for display on a wide-screen television.

Turning to addressing the misuse of tethering, projecting the potential efficiency gain possible here is admittedly challenging, given the relative

¹⁵ Vodafone, Annual Report 2025, p.20.

¹⁶ Ofcom, *Connected Nations UK Report 2025*, p.21.

paucity of data, especially at a sectoral level. However, it is nevertheless possible to produce an estimate that gives a sense of the scope of the possible benefits.

Were net neutrality rules reformed such that operators had the ability to more actively manage the traffic of *de facto* FWA customers, then the latter would have four obvious options in a market like the UK: either (1) to pay for an actual FWA plan addressing their usage requirements at their existing operator; or (2) to pay for an actual FWA plan addressing their usage requirements but do so by switching to rival network A; or (3) to do likewise by switching to rival network B; or (4) to terminate any such subscription (probably moving onto a fixed-line service instead). The network's preference will obviously be to retain the customer wherever possible.

Looking at EE (the market's other integrated fixed-line plus mobile network operator, so the closest peer to Virgin Media O2), FWA offers are priced at more than a £10 premium to unlimited plans. Virgin Media O2's own unlimited plans are priced at about £30 per month. Naturally, it is hard to say in what proportions the *de facto* FWA customers will decide how to act. The assumption made here is that each of these choices has an equal, one quarter probability.

This approach also has the advantage that the revenue impact at a sectoral level should be roughly neutral. Customers remaining with their existing operator but moving to an actual FWA plan (accommodating markedly higher usage) could be charged a premium, as could those doing so but by switching network. In terms of the numbers in the latter category, note that this would be a nil sum game across the sector as a whole. In other words, although individual operators might win or lose in terms of this particular bucket, there would remain (by definition) the same total number of customers within it. The above benefits at the sectoral level

would be offset by the impact of 25% of the *de facto* FWA users ending their subscriptions.

With the revenue effect approximately neutral, this leaves the network efficiency impact to estimate. For those users switching to an actual FWA plan, their (heavy) usage would continue unchanged. However, those *de facto* FWA users migrating off mobile would thereby free up cellular capacity. Applying the assumption that 25% of the customers would fall into this category implies that around 1.8% of the 7% of network currently consumed by *de facto* FWA customers would now be vacated.

Given that mobile volumes are growing at about 16% a year, this would be equivalent to around a tenth of Virgin Media O2's annual capex on mobile capacity of £460m. It is not anticipated there would be material costs in implementing any network functionality involved in addressing tethering misuse. Hence the (non-recurring) efficiency gain here would therefore be worth about £50m to this one network. Grossing up for the entire mobile sector suggests a total benefit of £158m.

Combining this with the gains from handling video traffic more efficiently discussed above brings the total to £384m. This represents the total capex that could be redirected to better effect elsewhere – since it would no longer be required to support excess video resolution or services that would be more appropriately provided over a fixed line (alternatively, in those cases where the customer continued to want a FWA service, this would at least be properly recompensed to match the cost of provision). To put this figure into perspective, it is close to the capex of the UK mobile market in a quarter.

Looking at this another way, the network efficiency gains discussed here would effectively give the operators three months' grace, during which their capex would not need be directed at 'vanilla' capacity additions, and so could instead be channelled towards investing in 5G's more

advanced capabilities and use cases (as classified in the Frontier Economics study cited below).

Taking the incremental capex that could be funded from the EBITDA generated by new services together with the two sources of efficiency gains spread over a ten-year period would be worth around £142-557m a year, equivalent to 8-31% of current investment levels.

Productivity uplift and economic contribution

How might the additional investments possible from rolling back net neutrality regulation feed through into broader economic benefits? Much work has already been undertaken quantifying the gains accompanying 5G deployment and adoption. Indeed, it is possible to rely upon a detailed piece of analysis commissioned by the government itself from Cambridge Econometrics and Analysis Mason.¹⁷

This report projected the economic benefits from 5G services according to various scenarios, including an optimistic set of assumptions based around it becoming a general-purpose technology (referred to as the GPT scenario) and an alternative set of assumptions in which adoption occurs at a more modest pace (referred to as the advanced digital technologies or ADT scenario). The gross value added (GVA) of specifically the economic (as opposed to social or environmental) benefits are estimated at £41-159bn over the period 2021-35. The lower bound represents the ADT scenario, the higher band the GPT scenario.¹⁸

Much of the benefit of 5G is presented in terms of productivity gains – or cost savings, which should amount to the same thing: greater output for the same input of labour. Examples

cited include reductions in factory downtime, lower defect rates, improvements in energy efficiency and reduced levels of waste.¹⁹

How much of this benefit in terms of GVA might be attributed to the rolling back of the net neutrality rules? One approach is to look at the additional capex that could be funded if this legislation were reformed, and to then estimate what portion of the above-cited 5G GVA this might in effect drive. Frontier Economics has estimated that the mobile industry would invest some £9bn in 5G by 2030.²⁰ Over an ten-year period, this implies annual investment of £0.9bn per annum.

This sum is roughly double the current level of 5G network investment separately reported by Ofcom, which stood at £520m for 2024.²¹ However, it should be borne in mind that, over time (and the Frontier report works on the basis of a ten year duration build) spending ought to progressively shift to the latest technology generation, i.e. 5G. A further difficulty is with attribution. Many of the investments required to support mobile services need not be strictly tied to a single technology generation. For instance, additional backhaul capacity could serve 4G as well as 5G. Note also that the Ofcom figures acknowledge a further £600m of investment that cannot even be reliably delineated between fixed-line and mobile.

The Frontier assessment of UK 5G capex requirements paints a sombre picture. To set against its £9bn projection of 5G spend, the report estimates that £5-7bn is required for what is termed a ‘basic 5G capacity’ build, being the network deployment necessary to meet projected traffic growth.²² The good news is that

¹⁷ Cambridge Econometrics and Analysis Mason, *Realising the Benefits of 5G, a report for the Department for Digital, Culture, Media and Sport*, August 2021.

¹⁸ Ibid, p.7.

¹⁹ Ibid, p.5.

²⁰ Frontier Economics, *The Investment Gap to Full 5G Rollout, Report for the Digital Connectivity Forum*, 7 September 2022, p.20.

²¹ Ofcom, *Connected Nations UK Report 2025*, 19 November 2025, p.53.

²² Frontier Economics, *The Investment Gap to Full 5G Rollout, Report for the Digital Connectivity Forum*, 7 September 2022, p.24.

anticipated investment levels should therefore be able to cover this requirement. However, to take 5G to 95% population coverage, what is termed a ‘basic 5G coverage’ build, would entail an additional £7bn of expense. Moreover, an ‘advanced 5G/advanced use cases’ build would cost a further £10bn on top of this. Finally, taking 5G to semi-rural customers with an ‘advanced 5G/semi-rural’ build would cost yet another £10bn, bringing the total potential bill to £32-34bn.²³ It is frankly difficult to see how the mobile sector’s depressed levels of profitability can either justify or fund these levels of investment.

Nevertheless, the additional cash flows that would be associated with relaxing net neutrality restrictions could make a significant contribution in taking the UK beyond the basic 5G capacity build. For instance, consider the combined cost of the latter alongside an advanced 5G/advanced use cases deployment, for which the total bill would be £15-17bn. Per annum, this translates into capex of £1.5-1.7bn. The aforementioned annual 5G projected investment base-case of £0.9bn covers at least a half of this requirement, while relaxing net neutrality restrictions could provide an additional £104-519m pa to make up a material portion of the rest (with efficiency gains potentially representing a further non-recurring £384m). One assumption here is that this latter capex is directed purely at 5G, but this does not seem unreasonable given its status as the leading-edge technology currently available. On this basis, net neutrality reform could underpin circa 8-33% of 5G capex.

Given the relatively modest 5G deployment ambitions currently in place, it seems warranted to work from the more cautious economic benefits assessment represented as the ADT scenario in the Cambridge Econometrics/Analysis Mason estimates, for a cumulative total GVA over 15 years of £41bn. Plainly, this figure

itself cannot be anything other than highly conjectural in nature, but it provides a useful starting point. What portion of these benefits would be attributable to the investment underpinned by reform of the net neutrality rules?

The approach taken here is to attribute the GVA in accordance with the extent to which net neutrality reform might fund 5G capex, but also to take into account the likelihood that there will inevitably be an element of diminishing returns. That is to say, the 5G investments providing the greatest benefits are likely to be those made first, while the 5G investment that net neutrality reform might underpin would be subsequent. The assumption made here is that the latter adds GVA with one-third the effectiveness of earlier capex, which in turn implies that removing net neutrality constraints could be responsible for generating a cumulative GVA of £1.9-7.3bn.

Many caveats obviously apply, and – to repeat – the GVA estimates are themselves necessarily speculative. Such considerations might argue for the range cited here to be seen as representing an upper bound. On the other hand, though, there is a real risk that, without change, investment will be largely confined to coping with raw traffic growth (i.e. what the Frontier paper refers to as a build to deliver basic 5G capacity) rather than really enhancing network functionality.

In other words, while existing services might pay for increasing capacity, revenues from new services (such as those detailed earlier in this section) would be directed at investment in the more advanced 5G capabilities on which much of the Cambridge Econometrics/Analysis Mason GVA assessment will depend. On this basis, the estimate made above might understate the extent to which net neutrality reform and the cash flows (and hence investment) it yielded were responsible for 5G’s GVA.

²³ Ibid, p.29.

An important point to add is that a substantial portion of this GVA would relate to SMEs. This vital element of the UK economy accounts for roughly half of UK private sector turnover and 60% of UK private sector employment.²⁴ The private sector in turn is responsible for approximately 80% of UK GVA.²⁵ The likelihood is that larger organisations might tend to take advantage of sophisticated new services earlier than would SMEs, particularly if there is a need for other investments to be made alongside in

order to leverage these capabilities. Nevertheless, working on the basis that the SME portion of private sector GVA is similar to its turnover contribution would at least provide an upper bound for the extent to which SMEs might benefit. This would imply that up to 40% of the GVA cited above as being driven by 5G investments funded through relaxation of net neutrality constraints, equivalent to a cumulative total of £0.7-2.9bn, would relate to SMEs.

²⁴ Department for Business & Trade, *Business population estimates for the UK and regions in 2025: statistical release*, 2 October 2025.

²⁵ ONS, *UK National Accounts, The Blue Book: 2025*, p.35.

3. Culture of compliance

What kind of sector is wanted?

Regulation has become a fundamental component of the telecoms sector, pervading almost all parts of the business. There are few decisions in the industry that are not touched by regulations and many that are largely determined by them. Indeed, it is no exaggeration to say that regulation is amongst the most significant determinants of commercial outcomes in the telecoms sector as a whole (fixed-line and mobile) – and is likely not even exceeded in its importance in this regard by technology itself.

The substantial regulatory ruleset has not been established without purpose or forethought. Nevertheless, it is appropriate to query its broader effects on the sector. What kind of industry is likely to emerge from the need to comply with such regulatory complexity? One displaying creativity and dynamism? This is especially pressing when the rules in question constrain innovation, as is the case with net neutrality legislation for the reasons set out in this section.

Imperilling innovation

The many rules affecting mobile (and telecoms as a whole) have a profound effect in terms of setting the boundaries and tone for all activity taking place within the sector. These regulations will have an impact not merely in their direct application, but also in what might be termed a ‘cultural’ sphere – in contributing to what become the basic day-to-day assumptions, parameters and behaviours that must accompany participation in the industry.

Comprehensive telecoms regulation, in other words, induces a way of working. It must be embedded in almost every decision process – and at an early stage, long before resources are committed. It is also exceedingly complex,

requiring dedicated professionals focused on understanding its specifications and ramifications. Non-specialists in other roles will nonetheless be aware that extensive rules exist and must be adhered to. However, they must rely on their colleagues for the detailed knowledge necessary to navigate this territory.

This results in a situation where, when devising a new commercial idea, additional layers must be put in place between the initial phase of ideation and that of any proposal to take action. Those on the commercial ‘front line’, devising fresh ideas for new products and services, will be conscious that their ideas could be brought to earth in an instant should they conflict with an intricate ruleset on which they have little direct expertise. Plainly, this attaches risk to the process of ideation in the first place – the risk that an employee with a new idea might simply be wasting everyone’s time.

Lest this paper be accused of ‘crying wolf’, it is worth concisely reviewing, first, the extent of the regulation impacting operators’ day-to-day decisions and, second, the net neutrality rules in particular, to consider how these might overshadow and curtail the development of innovative new services.

Well-intentioned regulation still burdensome

To summarise very briefly the rolling succession of regulatory interventions made in mobile over the past decade:

- General Conditions refresh c.2016: affecting marketing, billing, complaints handling, etc
- Switching and transparency c.2019: text-to-switch, ban on notice-period double-charging, ban on handset locking, end-of-contract notices
- EECC c.2020: affecting contract summaries, treatment of vulnerable

customers, restrictions on contracts and bundles, termination rights, etc

- Security and vendors c.2021: Telecoms Security Act with rules on high-risk vendors
- Coverage and spectrum c.2020: licences and agreements for shared rural network and coverage obligations
- Roaming and pricing clarity c.2022: affecting roaming transparency, scrutiny of in-contract price rises, support for the financially constrained
- Ban on mid-contract price rises linked to inflation c.2024

Each of these items represent multiple regulatory interventions, and each has also entailed material implementation costs – some of which have been very considerable indeed, for example, the Telecoms (Security) Act 2021. However worthy the motivations, all divert management attention and redirect resources away from market-inspired initiatives and innovations. Together, they leave the sector with lower revenues, lower profitability and less ability to meet its investment obligations and ambitions.

This is not to argue that all regulation is necessarily negative. Instead, the purpose is simply to highlight that it comes with an associated cost. Nor should this cost be perceived in purely financial terms. Additionally, the inherent caution required to work within such an intricate tissue of regulation tends to be antithetical to the development of a more experimental and innovative mindset.

Net neutrality rules are clearly confusing

Net neutrality legislation is in addition to all the above. One especially troubling aspect is the way in which it introduces such uncertainty around the introduction of sophisticated new products known as specialised services – a label referring to any services optimised in ways beyond conventional internet access. In a mobile context, this is likely to mean a service reliant on

network slicing, one of 5G's most powerful new features.

Those insistent that the present-day rules are perfectly compatible with future innovation will need to maintain that net neutrality does not prevent or even deter operators from innovating here. To evaluate whether this is reasonable, it will be helpful to review the process a mobile operator must undergo before contemplating the launch of a 5G specialised service. Might the ambiguities and complexities involved conceivably chill the appetite to innovate?

Consider the most preliminary set of net neutrality-related hurdles that would have to be overcome before a specialised service could be taken forward: it must be demonstrated that, first, the optimisation it provides is necessary to meet the requirements of a specific quality level; and, second, that it is not offered as a replacement for internet access services. The confusions involved and discussed below neatly embody the wider problems with net neutrality regulations.

Ofcom's 2023 *Net Neutrality Review* accepts that the rules had hitherto resulted in uncertainty about how the above-cited optimisation criteria would be assessed. In response, the regulator stated it wanted to be "clear" about what an operator would need to show to demonstrate that the optimisation of the service was genuinely necessary (i.e. that it could not be delivered satisfactorily without that optimisation). What follows, though, is simply a clear statement of highly ambiguous criteria:

ISPs should take into account the "normal operation" of their network, which is the conditions of the network in the absence of exceptional or temporary congestion as discussed in

*Section 6. Any such assessment should take into account whether the requirements could be met using the internet access service through the use of reasonable traffic management by the ISP. We would not generally expect the need for optimisation to be based on assessing content and application requirements when the network (or parts of the network) is experiencing exceptional or temporary congestion, which should occur infrequently and should be addressed using additional traffic management measures.*²⁶

As language, this is perfectly unambiguous, but the assessment process it describes is laden with subjectivity. For example, it talks of “normal operation” of the network, being the absence of “exceptional” or “temporary” congestion occurring “infrequently” (or, as a subsequent statement adds, at “only a small minority of cells”).²⁷ To take just one of those terms, almost any congestion in a network is temporary in one sense or another. Similarly, any telecoms employee contemplating proposing a new service will need to take a view on whether or not the service requirements could be met by “reasonable” traffic management instead. A potentially daunting task, especially for front-line teams that are not regulatory specialists.

A further point is that the very requirement an operator must be able to demonstrate each specialised service is genuinely necessary effectively also implies it must be able to show that the service in question cannot be delivered by other technical means. This, in turn, necessitates a series of judgements on a set of factors that are really in the domain of the individual developer, not the network. For

example, the need for a specialised service could be rendered unnecessary should the app elect to make greater use of video compression or work with a CDN. Taking a view on such matters would demand a knowledge of the application beyond anything an operator is likely to possess externally.

Making the whole area still more uncertain is the fact that subsequent improvements to the network’s general capabilities might undermine the need for the specialised service, resulting in a regulatory requirement that it be withdrawn. This very obviously creates a ‘sword of Damocles’ situation that acts to deter the launch of new specialised services. Not only must it be established that any prospective new service does not breach the rules today, but there is also the prospect of being obliged to continuously measure and assess this matter going forwards. Network enhancement decisions would be further complicated by the need to evaluate their effect on any specialised services previously put in place. Indeed, this creates a set of perverse incentives, wherein an operator would be discouraged from upgrading the broad capabilities of its platform lest it undermine any specialised services already in place.

This is only the first half of the assessment criteria. Additionally, specialised services must be evaluated as to whether they have been introduced alongside “sufficient” capacity such that they are not detrimental to the “general quality” of internet access services, defined as causing the quality of these services to “degrade significantly”.²⁸ This introduces still further subjective judgement (that must be made before the new service is launched, and therefore before its effects on the network can be seen in practice). In summary,

²⁶ Ofcom, *Net Neutrality Review*, 26 October 2023, p.131.

²⁷ Ibid, p.134.

²⁸ Ibid, p.138.

the detail of the ruleset here is hardly inviting of experimentation.

Casting a shadow over 5G

Indeed, Ofcom accepted that “[t]here is a risk that any dampening effect on innovation could be more significant in future, in particular in relation to 5G networks.” Moreover, these concerns were not confined to cellular: “Similar concerns may also arise in relation to fixed networks as ISPs begin to deploy services to support applications such as enhanced virtual reality and new business/industrial applications.”²⁹

Reflecting these misgivings, Ofcom concluded that the net neutrality framework suffered from “a lack of clarity and flexibility in relation to specialised services. This may hinder our objectives given the potential benefits from innovation and efficient investment.”³⁰ However, the regulator was of the view that this could be addressed with clarification of the guidance, explicitly disavowing Virgin Media O2’s submission that the optimisation criteria set too high a bar.³¹

Here, though, we might turn to empirical evidence. Has Ofcom been borne out by the market’s subsequent development? The dearth of activity doubtless reflects many factors, but in itself can hardly be said to affirm the notion that clarification alone is sufficient. What may be needed instead is clearer cut reform.

In all, whether evaluated specifically from the perspective of an employee thinking about new specialised services, or more broadly in terms of the type of operational culture that the stream of regulatory demands is likely to engender, it seems unlikely net neutrality will do much to stimulate creativity or innovation in the sector. Of course, this is hardly the primary function of

regulation, but it is nonetheless important to ask what kind of message net neutrality legislation likely conveys? Such complex and, in places, highly subjective rules must inevitably have a chilling effect on ingenuity and experimentation in the telecoms industry. Moreover, given this chilling effect, it will hopefully be clear that an appropriate response is not to pile yet further rules and clarifications on top of the profuse set already in place.

Hardware rules for a software world

At this stage it will be fruitful to stand back still further to consider the different degrees to which regulations impact, on the one hand, telecoms, and on the other, software. There will surely be little argument that telecoms is subject to intense regulation. By contrast, software has not faced the same burden – although, as the tech giants’ powers have waxed, it has certainly begun to attract much more attention. Nevertheless, it remains fair to say that software historically laboured under far fewer rules, something that was particularly the case during its ascendancy.

To proffer only the most obvious of examples, telecoms operators still face numerous and significant instances of direct price regulation, whereas tech companies have only experienced this in relatively few cases. This burden is somewhat lighter (though emphatically not light) on the mobile side of the sector. Price controls have been present, but in general regulators have been able to rely on the ferociously competitive state of the market.

Net neutrality itself can be seen as, in part, a price control: one in which the tech sector is shielded from any possibility of having to pay a price for quality of service enhancements. This results in the surprising situation where the price controls in mobile protecting the likes of big tech are more substantial than those protecting the

²⁹ Ibid, p.129-30.

³⁰ Ibid, p.130.

³¹ Ibid, p.132.

UK consumer. (Note this blanket shielding referred to above is applied despite the fact that some tech sector participants might actually welcome the new services that would be available in the absence of net neutrality constraints – as providing a way to compete more effectively against larger rivals or simply to take advantage of the service innovations that would become available).

Historically, there are all sorts of reasons behind this state of affairs, many of them no doubt perfectly reasonable at the time. For example, the dominance enjoyed by big tech players has emerged relatively recently, over the past one to two decades, while patterns in regulation tend to be set over extremely long cycles. Today's telecoms rules are, in essence, permutations of the same regime originally put in place when competition was just being introduced into the fixed-line sector, back in the last century.

The regulations were built for the type of industry then prevailing. Telecoms was seen as an infrastructure-centric activity reliant on lengthy network deployments that necessitated prolonged and detailed planning efforts. It was therefore regarded as an industry able to bear a heavy and proscriptive regulatory load, because its own activities were generally guided by longer-term planning processes. For example, many new products depended first on the roll out of new physical equipment. To the extent this required a national (or at least national/urban) deployment, this would necessarily be a protracted undertaking. The detailed planning inevitably involved created a context in which there was scope to incorporate thorough consideration of complex regulatory requirements.

Technology rules have been lighter touch

This approach would have been much more problematic in the software domain. Here technologies do not require national deployments before they become relevant. The pace of change has been very rapid, making it

inherently challenging for regulations to be devised and applied in a timely manner. The pace of iteration has made that too difficult.

Still, regulators have begun to catch up as concerns have accumulated about the dominance of big tech and the effects of certain of their services. Privacy requirements relating to the GDPR and wide rulesets such as those of the EU's Digital Markets Act (DMA) and Digital Services Act (DSA) have made an impact. However, it is interesting to note the type of regulation that has resulted. Although there are broadly applicable regulations such as the GDPR that affect every participant in the market, no matter how small, many of the rules in the DMA are restricted to so-called 'gatekeepers' of a magnitude that excludes all but a handful of the very largest companies in the world. Moreover, note that much tech innovation has taken place and is taking place in the US, which is obviously not subject to the DMA, DSA or the AI Act.

Furthermore, even these European regulations generally don't attempt to divide a dynamic marketplace up into individual subcomponents and then subject each of these to a detailed series of individually tailored requirements. It would plainly have been folly to have attempted to do so, given that the marketplaces themselves are subject to continuous change. A few short years ago, the impending battlefields in tech were seen as blockchain and AR/VR, whereas today AI rules the roost – at least for the time being.

This has all enabled more of a free-wheeling, experimental attitude among tech companies. Whatever one's views about whether tech needs tighter scrutiny in future, the relationship between innovation and light-touch regulation to date is clear-cut. It is also reflected in the academic literature, with numerous studies evidencing the inverse relationship between

innovation and regulation, both in the broader economy as well as specifically in tech.³²

Having originated a new service idea (very likely in the US), a tech company's first questions would generally have been around technical practicability and market potential, not regulatory feasibility. Even within Europe, although there are a few exceptions such as the GDPR, the tech sector has historically faced far less regulation pre-emptively governing its activities. Relatively free of such constraints, tech has delivered innovation in abundance. The critical difference seen between tech (as well as, indeed, almost all other sectors) compared with telecoms is that the latter has been consistently subject to extensive *ex ante* regulation. In tech, the introduction of such rules, starting with the GDPR, has only been a comparatively recent phenomenon.

As is set out in a later section of this paper, in the decade or so before the introduction of net neutrality legislation in the UK, there had been no serious complaints about the networks' behaviour. Despite this, on a misguided precautionary principle, and in a market subject to ferocious competition, a set of initiative-sapping rules were put in place to prevent behaviours that were never witnessed in the UK in the first place. By contrast, technology regulation has tended to avoid chilling innovation by acting pre-emptively, and has been introduced only when clear issues have emerged requiring remedy (for example, the GDPR in the aftermath of proliferating privacy concerns).

The purpose of this discussion is not to suggest that regulation is in itself inherently problematic. Indeed, over the past decade or so, many policymakers have taken the view that the tech sector could use rather more constraints. Rather the point being made here is simply that rules do

not – culturally, aside from anything else – tend to encourage innovation, but instead have a tendency to depress it. A balance is required, ideally one tempered with an understanding of the reality that more regulation is liable to mean less innovation.

The lighter touch that has generally been applied to the tech sector in the past suggests that policy makers recognise that narrow and prescriptive rulesets do not work well for rapidly evolving and innovative industries. Arguably, the problem is not so much with this intuition as with the failure to recognise that telecoms in general (and mobile in particular) is increasingly a software industry itself – and so needs more of a tech-style ruleset that is innovation-friendly, experiment-friendly and creativity-friendly.

Mobile is going soft

Mobile networks rely, and will continue to rely, on substantial quantities of physical equipment. Base stations, for example, still comprise of arrays of antennae linked to complex banks of electronics. However, increasingly, network 'smarts' are being provided by software rather than hardware.

The drivers behind this are various. In part it reflects the tremendous cost pressures to which the industry has been subject. It is simply more cost effective if upgrades can be delivered by download rather than dispatching engineers to physically swap out circuit boards and so on. This is not the whole story, though. Another aspect is that it enables dynamic reconfiguration of the platform to adapt to network and traffic conditions as they emerge, for example to cope with equipment failures or sudden usage spikes.

In Japan, Rakuten generated considerable waves by implementing a cutting-edge network based on what is known as OpenRAN technology. Although this certainly relies on many elements

³² For example, Philippe Aghion et al., *The impact of regulation on innovation*, American Economic Review, November 2023; Adam Thierer, *Permissionless*

Innovation, Mercatus Center/George Mason University, 2014.

of cellular-specific electronics – not least the antennae themselves – it incorporated generic components to an unprecedented degree, in particular relying on software utilising conventional servers to provide functionality that would previously have depended on telecoms-dedicated hardware. In the light of such developments, it is hardly a coincidence that operators have been pushing equipment vendors for more software-centric solutions. Plans for 6G are leaning heavily in this direction.

The next generation of mobile networks will be building on foundational capabilities that are already a part of 5G. The afore-mentioned network slicing functionality is effectively a means of virtually dividing up one physical cellular network into multiple virtual ones, each with their own service characteristics that can be tailored to the needs of certain clients and applications. Once upon a time, this type of exercise would have required each of the slices to have its own, independent electronics – making the entire project economically unfeasible. Now, however, the separate slices can run side-by-side over the same equipment, thanks in no small part to flexible, software control.

In this regard, the future direction of mobile technology is fairly clear. Wherever possible, in place of dedicated electronics, networks will rely on software – employing something akin to a cloud solution. This should bring a series of advantages. First, the resulting systems should be more cost effective, since they will be able to make use of servers that are produced in vastly greater numbers (and thus subject to far greater economies of scale) than telecoms-dedicated electronics. Second, such platforms will be more readily upgradable, which in turn has the potential to substantially accelerate the innovation cycle in mobile services.

The bottom line here is that, while the telecoms industry of the past has been hardware-centric, that of the future will increasingly revolve around

software. This, in turn, raises the question of what type of regulation will in future be most appropriate. As discussed above, the sector's ruleset emerged from its history as an industry engaged in long-duration planning around hardware deployments that followed upgrade cycles lasting a decade or more. In the future, by contrast, there is the scope for a much more agile and dynamic sector that is able to innovate and experiment on the fly with its very network technology. But will regulation adapt to match this newfound technological flexibility, or will it remain wedded to the past – and so hold the industry back?

For the software-centric mobile platforms of the future, the range of services that would become possible (were net neutrality rules to be rolled back) represent no more than an embarkation point in what would then be an evolutionary journey. As befits any software-based offering in the age of the app, these services would then be subject to a continuous cycle of upgrades, leveraging techniques such as A/B testing. What beckons is a new era of service development and enhancement that is set to reward the agile and the innovatory – provided only that the rules permit it in the first place.

You get what you regulate for

The salient message here is that the UK will get the telecoms industry that it regulates for: a prescriptive, pre-emptive ruleset imposing complex rules to forestall problems that have never arisen in the UK is liable to produce a sector that is reactive, cautious and lacking in both creativity and dynamism.

Adopting a 'wait and see' approach essentially guarantees that the UK will not be in a position to join the front ranks of global innovators. If the existing rules remain in place, new service development will take place elsewhere (in those many markets where regulation permits greater flexibility), as will the first waves of adoption.

However, the ongoing review of the mobile market now presents the opportunity to send a

clear message to the operators. While the open internet remains fundamental, reform of the net neutrality rules would signal to operators that the government would in fact value a telecoms market embodying otherwise imperilled characteristics like risk taking and innovation. In fact, this decision has the capacity to ‘fire the starting gun’ on a new round of telecoms innovation. Frankly, UK citizens and the economy on which they depend would be better served by a sector focused on innovating new solutions that exploit the full capabilities of the impending generation of software-centric networks, rather than being obliged to privilege the process of ensuring its services comply with backward-looking box-ticking.

It might be objected that the network operators should already maintain teams on the lookout to exploit the commercial opportunities associated with new technologies as a matter of course. Do these functions really require encouragement in the form of government policy signalling? The answer to this reflects the difficult history of the sector, and its presently parlous condition.

As Ofcom has long documented, and as the *Call for Evidence* correctly highlights, mobile sector revenues have been subject to relentless pressure – especially when considered in real terms.³³ Meanwhile, there have been significant cost challenges, chiefly of two types. First, cellular networks require many inflationary inputs to run – including energy, a cost item that has once again come very much to the fore. Combined with top-line stresses, this has resulted in a marked contraction of EBITDA (essentially a measure of profits before various items but in particular capex, i.e. network

investment) in real terms. Second, cash flows have had to support massive infrastructure investment with the introduction of 5G – as well as other burdensome requirements, such as the swapping out of equipment from designated vendors on security grounds.³⁴

These intense pressures mean that network operators have had to heavily economise on every conceivable front, in an effort to keep costs in check so as not to be overwhelmed by the deteriorating top line. It is to the sector’s credit that, despite all this, it has continued to innovate. However, its efforts have had to be tightly focused on the practicable rather than on hypothetical opportunities.

Operators’ innovation efforts have therefore been concentrated on network upgrades: fibre deployments in the fixed-line subsector and 5G in mobile. Companies lack the resources to fully leverage the capabilities that a software-centric network enables but that regulation often forbids. Given the industry’s strong track record in investing heavily, there is every reason to believe that, under the right circumstances, operators would want to make this commitment. However, considering how financially pressured and thinly stretched these companies are already, they will need a clear signal first.

Regrettably, it looks unlikely that any such messaging can emerge from continental Europe, despite the clear narrative on the challenges faced by the telecoms sector presented in both the Draghi and Letta reports.³⁵ The UK, though, is in a position to press ahead with the necessary reforms and thereby lead the way.

³³ Ofcom, *Communications Market Report 2025: Interactive data*, 17 July 2025; DSIT, *Mobile Market Review: Call for Evidence*, 10 February 2026.

³⁴ Gov UK Press Release, *Legal notices issued to 35 UK operators*, 13 October 2022.

³⁵ EC/Mario Draghi, *The future of European competitiveness: A competitiveness strategy for Europe*, September 2024; Enrico Letta, *Much more than a market: Speed, Security, Solidarity, Empowering the Single Market to deliver a sustainable future and prosperity for all EU citizens*, April 2024.

4. A process of elimination

Let me count the ways

The array of options available to telecoms operators in looking to finance prodigious build costs is not extensive. Helpfully, DSIT's *Call for Evidence* document discusses many of them directly. Several are flatly ruled out, such as price rises or what has become known as 'fair share'. Even a brief survey of the industry's history would serve to eliminate further possibilities, in particular when factoring in the prevalent levels of intense competition.

This really leaves only one alternative, innovation: harnessing the novel capabilities provided by technologies like 5G to deliver a superior quality of service meriting a premium. Fortunately, 5G – especially in its standalone (SA) format – brings with it powerful advances such as network slicing that could act as the basis of a whole range of new services. Unfortunately, though, many of these would simply be incompatible with the constraints imposed by net neutrality legislation (as discussed previously in the *Opportunities foreclosed* section).

The scale of the challenge

DSIT's *Call for Evidence* is to be commended for its candour on the state of the UK mobile telecoms market. While focused on the mobile subsector, many of the conditions it describes would apply equally well to the fixed-line side of the business: in particular the enormous capex burden facing operators as they upgrade their platforms, to 5G in the case of mobile and to fibre-to-the-home (FTTH) in the case of fixed-line.

There is certainly a consensus on the importance of telecoms infrastructure. To quote Baroness Lloyd of Effra CBE, Minister for Digital Economy:

*This government has made growth a priority. As Minister for Digital Economy, I am clear: if we want a more prosperous, innovative and inclusive UK, world class connectivity is not optional, it is essential.*³⁶

Realising this vision will entail heavy investment, again something that the *Call for Evidence* clearly acknowledges:

*progress depends on networks that are robust, widely available and backed by sustained investment. The government therefore has a vital role to play in ensuring that the policy and regulatory framework supports investment in our national networks and does not act as a barrier.*³⁷

The *Call for Evidence* itself cites estimates of up to £34bn as required for deployment of advanced 5G through to 2030. This, of course, comes on top of other significant outgoings, including annual licence fees of approximately £250m per annum and the expense of complying with the designated vendor direction rules set out in the Telecoms (Security) Act of 2021.

The central question, of course, is where the industry is to find the prodigious sums required for this work. Again to quote the Minister:

*delivering on our ambition requires bold, long-term investment from industry. I recognise that the recent investment environment has been challenging*³⁸

³⁶ DSIT, *Mobile Market Review: Call for Evidence*, 10 February 2026.

³⁷ Ibid.

³⁸ Ibid.

“Challenging” is hardly an understatement, given that mobile revenues declined from £21bn in 2014 to £14.1bn in 2024.³⁹

The substantial deterioration in the top line inevitably has negative consequences for cash flows. The *Call for Evidence* itself states that EBITDA (which captures profitability before various items but in particular capex) has declined in real terms by 18% over the past five years. This measure represents the cash flow generated out of which network investment must be funded.

Ofcom’s reduction in the spectrum annual licence fees (ALF) by some £60m per annum is a move in the right direction. However, as a figure, it is dwarfed by the magnitude of the industry’s investment requirements.

Wouldn’t it be preferable if the sector could pay its own way? If the mobile operators had the wherewithal and incentive to lead the 5G investment pack globally? Why is the government having to put its hand in its pocket to subsidise network build?⁴⁰ Why is the UK in a position where an industry providing a service that everyone agrees is utterly essential to modern life – and therefore inherently valuable – isn’t able to invest at the pace that government, economy and society would wish?

If the UK mobile sector is to invest more rapidly and extensively, it very simply requires more revenues. More revenues would translate through into more cash flow, and more cash flow means more money available to fund network investment.

It might be objected that additional revenues need not find their way through into capex. Empirically, however, there is a positive relationship between better EBITDA (in

comparison with levels seen in the UK) and higher capex investment.⁴¹ And without higher EBITDA, the brutal reality is that there simply won’t be the money to fund anything incremental.

Frankly, this shouldn’t be controversial. If the sector is going to invest more money, it is going to need to make more money. It is going to need to make more money so that it has the cash to invest in the first place, and also to demonstrate to its own investors that it is rational to do so. The *Call for Evidence* is to be particularly commended for drawing specific attention to this vitally important point that is too often overlooked:

*Given the global nature of investment decisions by investors, it is essential we maintain a supportive framework to avoid the risk of capital being directed elsewhere.*⁴²

Investors will want to know where their money is going. If the answer is into 5G SA network, they will want to know about the revenue potential of the new services this infrastructure can enable. The unfortunate reality is that, when questioned on this opportunity, operators will have to concede that net neutrality curtails their scope to leverage some of the most exciting capabilities of the new technology, including its ability to offer precise control over quality of service parameters. Investors are then going to query whether the network investment can be justified in the first place. Furthermore, they are very liable to ask whether the capital should not be returned so that it can be redirected more fruitfully to other markets.

The recent Vodafone-Three merger, and the cost synergies to which this gives rise, should enable

³⁹ Ofcom, *Communications Market Report 2025: Interactive data*, 17 July 2025, CPI adjusted 2024 prices.

⁴⁰ Gov UK Press Release, *Shared Rural Network: £1bn deal to end poor rural mobile coverage agreed*, 9 March 2020.

⁴¹ François Jeanjean, *What causes the fall in prices of mobile telecommunications services?*, *Economia e Politica Industriale: Journal of Industrial and Business Economics*, September 2015.

⁴² DSIT, *Mobile Market Review: Call for Evidence*, 10 February 2026.

the new, combined entity to continue investing, which is certainly welcome. However, even with this combination, the UK marketplace remains intensely competitive, particularly given the continued rise of MVNOs, which tend to focus on headline pricing (and, by definition, do not invest in cellular infrastructure themselves). Moreover, while the consolidation will obviously assist its two participants, it leaves the competing networks no better off than before in terms of finding the cash flows necessary for their investment. This deal was certainly a logical response to the heavy revenue pressure that has been witnessed in mobile, but it can hardly be expected to pay for the entire sector's capex needs.

More investment will need more revenues

The mobile sector, then, needs more revenues to justify its heavy network investment, but from where are these to come? One option would be to identify entirely new sources, two of which are in fact cited in the *Call for Evidence*.

The first potential new revenue prospect would involve tapping the global tech giants – the very companies generating a major portion of the traffic that network investment is required to support. The topic of what have been termed 'fair share' contributions has proven extremely contentious in recent years. However, in the context of the *Call for Evidence*, there is no need to examine the pros and cons of this measure any further, because the document explicitly rules it out as a policy option:

The government is not considering any measures that would require content providers to contribute to operators' infrastructure build costs otherwise known as 'charging' or 'fair share'.⁴³

A variation on this would be to charge a levy to fund network build and impose it not on the tech

giants but on customers themselves – an approach that has been adopted (for example) in the UK water sector. While this might raise considerable sums, it has several major drawbacks. First, albeit depending on the details of implementation, it can tend to be economically regressive. Second, it would in effect equate to a price rise (something the government may be keen to avoid in the context of concerns over the cost of living).

Another alternative would be to open up a new market opportunity in fixed-wireless access (FWA), in other words the use of mobile platforms to provide connectivity services (i.e. internet access) that would more conventionally be delivered over fixed-line infrastructure. Indeed, certain product offerings in this category are already available in the UK.

However, it is extremely unlikely that FWA can provide anything like the additional revenues that the industry requires. First, there is the question of the competitiveness of the service itself. Mobile platforms are inherently what is referred to as contended. In other words, their capacity is finite (limited by, among other things, radio spectrum). Although the technological details are somewhat complex, in essence, if one user is utilising a portion of radio spectrum, it cannot be simultaneously utilised by another. The network capacity really is finite. Mobile network capacity can be augmented by adding extra base stations and spectrum, but these too are finite (as well as expensive).

In short, the capacity of a mobile network is unlikely to ever match that of a fixed-line one. Moreover, while 5G speeds are fast, they cannot attain the bandwidths available over fibre-to-the-home (FTTH) infrastructure.⁴⁴ The reality is, therefore, that mobile networks lack the capacity or the bandwidth to compete successfully for any large share of the fixed-line

⁴³ Ibid.

⁴⁴ Compare maximum bandwidths cited in Ofcom, *Connected Nations UK Report 2025*, p.13, with Ofcom,

Mobile Matters: Using crowdsourced data to assess people's experience of using mobile networks, p.5.

connectivity market, even if FWA can still make a helpful contribution (for example by catering to the connectivity needs of certain hard-to-reach rural customers).

A second important consideration to raise with regard to FWA is whether it would even be desirable for this technology to take a material portion of fixed-line revenues? The mobile sector is not alone in facing a heavy investment burden. Fixed-line operators are currently confronted with a network upgrade challenge every bit as demanding (perhaps even more so) than that mobile networks face with 5G. The cost of FTTH upgrades is expected to reach £25bn for the UK by 2028,⁴⁵ and many of the operators involved are already struggling. If the UK wants to see rapid, ubiquitous fibre deployment, then frankly the last thing that would help is for a substantial portion of this market to migrate to mobile. This is a nil sum game – any additional revenues cannibalised from fixed-line simply mean the latter is deprived of the revenues it requires to fund its own network upgrades.

Satellite could represent another alternative connectivity service, but it will be difficult for UK telecoms operators to carve out a profitable business in a market that is dominated by players such as SpaceX. UK operators simply lack the scale required in what is a global, not a national, market.

Might it be possible to expand the market in other directions? IoT (Internet of Things) has long been touted as an opportunity but is in fact already well established: there were already 27.7 million connections in 2025, generating 2PB of monthly traffic representing 2% year-on-year growth.⁴⁶ In other words, this is already a relatively mature market – one that will hopefully continue to grow but which is unlikely to suddenly become transformative.

Operators can of course also bundle in additional offerings from outside the sector, with pay-TV having been the most widespread example. For cable operators, indeed, this was integral to the original business model. However, pay-TV consumption has increasingly shifted towards streamed services provided by global behemoths like Netflix, Amazon, Disney and Apple. Mobile operators would lack much negotiating leverage and consequently any additional revenues generated would essentially be pass-through, paid onto the content provider rather than retained in the telecoms sector.

If ‘fair share’ or a levy are ruled out, if expanding the market into fixed-line is unrealistic (as well as undesirable), and if other options are too small and/or too unprofitable for the operators to make a real difference, then the remaining option to lift revenues is simply for operators to make more from selling mobile connectivity services. The equation here is a relatively straightforward to summarise. For a mobile company, revenues are the product of two numbers: customers and revenue per customer (ARPU, average revenue per user). Mobile operators therefore either need new customers or for these customers (on average) to generate more revenue.

As will be abundantly obvious, almost everyone in the country of an appropriate age to do so already takes a mobile phone service. Individual operators may win customers from one another (the UK is an extremely competitive market), but in aggregate for the industry as a whole, there are not large numbers of net new customers available.

That leaves lifting ARPU as the only feasible source of additional income available. Of course, the most obvious way to boost ARPU would be to lift prices for the services mobile operators

⁴⁵ Point Topic, Annual INCA / Point Topic Altnet Sector Report, 25 April 2024.

⁴⁶ Ofcom, *Connected Nations UK Report 2025*, p.52.

already provide. This, though, presents a pair of difficulties.

First, in the ferociously competitive UK mobile market, it is extremely difficult to put through price rises. Indeed, as the sector's dismal track record makes plain, it has even proven impossible to sustainably charge more for faster bandwidths and larger monthly capacity allocations (i.e. GB per month). Over the decade 2014-24 mobile data traffic increased approximately 20-fold,⁴⁷ reflecting the continued improvements in bandwidths and capacity that have accompanied progressive network upgrades. Yet – and this bears repeating – over the last decade mobile revenues have collapsed from £21bn in 2014 to under £14.1bn in 2024.⁴⁸

Second, in the context of the ongoing cost-of-living crisis, government plainly wants to shield citizens from price rises. Indeed,

*the Secretary of State has asked Ofcom to review recent regulatory changes, such as the January 2025 ban on inflation-linked price rises and improvements to switching processes, to assess whether further protections may be necessary.*⁴⁹

In summary, government wants to avoid price rises and the sector is so ruthlessly competitive that it has not even been able to charge for the larger data allocations that it has provided over time. Indeed, enormous increases in bandwidth and capacity have been rewarded only by a marked fall in revenues.

Only new services remain

If operators can't charge more for existing services (i.e. price rises) or for broad network improvements (i.e. faster speeds and larger GB

allocations), the only remaining option to lift revenues is the introduction of new services.

All telecoms services are clearly dependent on the underlying network, and with the upgrade to new technology generations, it becomes possible to add innovative features that might command a premium – provided this is not competed away and that there is the necessary demand in the first place. With the advent of 5G, customers desiring enhanced quality of service parameters for a specific app could pay a premium, with networks delivering this capability via network slicing functionality (though only if the rules so permitted).

It is important to highlight that this type of pricing approach has been widely studied in the academic economic literature, and its broad benefits have been extensively validated.⁵⁰ A quick summary would be that, particularly in a fixed-cost structure industry such as telecoms, the result is more affluent customers cross-subsidising their less well-off counterparts.

Unfortunately, however, many of the new services possible (see the discussion of use cases in the *Opportunities foreclosed* section of this paper) would fall foul of the net neutrality regulations. Of course, even without the latter constraints, these new services might not succeed commercially. Customers would ultimately have to decide whether or not they valued them. And even if they did, the intense competition present in the sector might rapidly whittle away any premia. But at least operators could experiment with the only remaining avenue that might make an appreciable difference to revenues.

Against the backdrop of the cost-of-living crisis, it is important to emphasise that the innovative services under discussion here would involve

⁴⁷ Ofcom, *Communications Market Report 2025: Interactive data*, 17 July 2025.

⁴⁸ Ibid, CPI adjusted 2024 prices.

⁴⁹ DSIT, *Mobile Market Review: Call for Evidence*, 10 February 2026.

⁵⁰ Robert Kenny and Brian Williamson, *The importance of differential pricing for good consumer outcomes in telecoms*, Communications Chambers, May 2019.

creating new offerings, not repricing existing ones. As such, they would not be inflationary. Existing offerings would remain in place, subject to all the competitive (and regulatory) pressures that have crushed revenues over the last decade.

Note that the above discussion is not to exclude other levers available to the government to promote telecoms investment by working on the cost side of the equation. The exorbitant expense of spectrum is one obvious case in point. Spectrum fees come in addition to a host of other expensive obligations, including the cost of complying with security regulations that have necessitated the swapping out of certain suppliers.

Any assistance in these areas would be welcome. But, in view of the magnitude of the investments required, if the government's worthy ambitions for UK connectivity are to be realised, a very great part of the solution has to come from within the sector in the form of enhanced revenues.

There is no alternative

The key take-away from this section is that the real and important objectives set out by the government in the Mobile Market Review *Call for Evidence* have very direct implications:

- If massive sums of money are needed for 5G infrastructure investment, the sector will need revenue growth if it is to fund these obligations to anything like the timetable and extent that the government would wish
- If new sources of revenue ('fair share', levies, FWA) cannot fill the gap (respectively: ruled out, undesirable, nil sum game) and if the market is already saturated (everyone already takes a mobile service), then this revenue lift

must come from ARPU (average revenue per user) growth

- If price rises are undesirable and also impossible due to the ruthlessly competitive nature of the market, then new services become the only available option to raise ARPU
- If new services are to generate additional revenues, operators will need the flexibility to charge for those aspects of these services that customers value. Net neutrality deprives operators of this liberty
- If operators are to have the freedom to experiment that is vital if they are to be able to grow ARPU, then net neutrality's shackles must go

At this point, it is worth returning to foreword of the *Call for Evidence* and quoting at length:

This government has made growth a priority. As Minister for Digital Economy, I am clear: if we want a more prosperous, innovative and inclusive UK, world class connectivity is not optional, it is essential.

Mobile connectivity sits at the heart of this mission. Fast, reliable and secure mobile networks will support everything from remote healthcare to cutting-edge manufacturing, from smart cities to the everyday services that we all now rely on. That is why we are setting out a framework so that everyone in the UK can benefit from high-quality mobile connectivity, delivered by the latest technology – standalone 5G by 2030.⁵¹

These ambitions are worthy and surely uncontroversial. But, as the present section of this paper has sought to elucidate, they in fact have very direct consequences. The degree of build envisaged is prodigiously expensive and

⁵¹ DSIT, *Mobile Market Review: Call for Evidence*, 10 February 2026.

the revenues to fund it must come from somewhere. The only readily available somewhere are the types of new services set out in this paper.

Net neutrality decision an investment signal

The mobile industry will therefore be watching closely, and gauging how serious government is about its connectivity and technology goals through the simple lens of the decision on net neutrality. If government really is committed to network upgrade investment, then surely it will be prepared to take the very modest step of giving the industry the freedom it needs to try to grow its revenues once more? If that modest step is deemed too much, how serious then really are government's build ambitions? By their net neutrality decision, ye shall know them.

The telecoms industry does a lot for the UK. It employs approximately 183,000 people⁵² and invests £9-10bn pa in network and infrastructure (of which £1.8bn is spent on mobile).⁵³ The sector faced its stiffest challenge during the Covid-19 pandemic. It was not found wanting. The intensive technology deployments of the previous decades kept the country working despite nationwide lockdowns. Without a robust telecoms infrastructure, the UK economy would literally have ground to a halt. What the sector now requests is merely a freedom almost any other industry would take for granted: the freedom to innovate.

⁵² DSIT, *Economic Estimates: Employment in the Digital Sector, January 2023 to December 2023*, 5.2.

⁵³ Ofcom, *Connected Nations UK Report 2025*, 19 November 2025, p.21.

5. Risks of inaction vs reform

Risk is all around

Risk is ever present. When making a decision, what's important is that *all* the risks are equitably weighed. The risks of taking the decision. The risks of not. On the topic of net neutrality, it's vital to recognise that maintaining the *status quo* is emphatically *not* risk-free. Indeed, as this section of the paper will set out, it in fact represents the high-risk course of action. Removing net neutrality restrictions, on the other hand, is the risk averse choice for UK citizens, their economy and their polity.

The empirical evidence

Net neutrality advocates have hardly been shy in warning of dire consequences in the absence of this rule set. Looking back to the 2000s, when the topic first emerged as an issue, a charitable interpretation of the circumstances surrounding net neutrality's adoption might be that, at this stage, it was rather uncertain how the market would develop. At the very least, it was difficult to incontrovertibly refute the doomsayers.

However, while there is indeed an interesting debate to be had as to whether these onerous rules were justified even at the time, it is perhaps one for another occasion. What is important instead today is that assessing the merits of net neutrality regulation need no longer rest on theoretical projections.

Thanks to the diversity of approaches to this regulation globally – encompassing everything from countries that have largely ignored these rules through to those that have pursued net neutrality vigorously – we can compare how the different regulatory regimes have fared. In particular, control experiments are available in the form of modern economies where net neutrality was never meaningfully imposed. Moreover, now is a pertinent time to examine this matter, given that services based on the

enhanced capabilities of technologies such as 5G SA and URSP are getting underway internationally (as discussed in the *Opportunities foreclosed* section).

Several Asian markets are world-leaders in terms of telecoms technology and yet have largely eschewed net neutrality legislation:

- South Korea, which is widely regarded as a leader in 5G, has relied since 2011 on what might be termed soft net neutrality guidelines only
- Japan runs with a similar regime, and is another country held in high regard for its telecoms technology leadership. The Ministry of Internal Affairs and Communications (MIC) adopted net neutrality guidelines in 2010, rather than relying on actual legislation
- Singapore likewise does without net neutrality laws and permits internet traffic to be managed based on commercial considerations (subject to certain caveats)
- China has made a concerted push to compete for telecoms technology leadership, has undertaken a remarkably thoroughgoing upgrade of its networks to 5G and also hosts a thriving tech sector. Yet it has accomplished all this without net neutrality legislation

The absence of net neutrality legislation in these markets can hardly be said to have resulted in major disruptions to customers. That said, there is the example of the withdrawal from Korea of Twitch (which is owned by Amazon and streams video gamers) on the grounds that fees for delivering its content had made its business

unprofitable.⁵⁴ While there haven't been other high-profile departures from the market, what there has been is a scramble to take the business Twitch vacated, led in particular by CHZZK, a home-grown service launched by Korean internet group Naver.⁵⁵ A dispute between SK Telecom and Netflix on network usage fees was settled out of court.⁵⁶

As regards these two instances, in other words, customers have either been able to continue with existing services or have found a ready substitute. In the light of this, it seems fair to characterise the practical impact of the lack of net neutrality legislation in Korea as comparatively modest. Moreover, note that (as will be discussed below) even these disputes found no parallel in the UK in the years before net neutrality was legislated in 2016.

It should be added that an absence specifically of net neutrality legislation does not mean there is an absence of *any* relevant legislation. In each of these countries, there remain the protections afforded by competition law and consumer protection law. It will be interesting to observe what new services emerge in these markets, especially as the full app-based network slicing functionality of 5G standalone (SA) networks with URSP becomes available.

However, while the lack of net neutrality rules will have been one contributory factor to the world-leading infrastructure deployments showcased in these countries, it could plausibly be argued that these markets are culturally rather removed from the UK – and thus limited in their utility when serving as parallels. Fortunately, though, there are good examples from the Anglo-sphere to reinforce the point that an absence of net neutrality rules needn't cause problems.

In New Zealand, there is neither net neutrality legislation nor even informal rules, and yet no substantial issues have arisen. The same situation holds in Australia: neither net neutrality legislation nor informal rules, with no substantial issues arising. Both countries have been perfectly able to rely on general competition and consumer protection law, as could the UK.

US regulation removed without undue incident

A sceptic might contend that the impact of rolling back net neutrality rules could conceivably be different from that of never having instituted them in the first place (though it is rather hard to see how). Yet there is even a clear precedent for this, namely the USA – ironically the market that originally gave rise to the net neutrality concept in the first place.

US policy on net neutrality has seen a series of separate phases. In the early 2010s, there were clear indications that the FCC (the US telecoms regulator) intended to set rules on net neutrality, with regulation entering force in 2015. However, these rules were subsequently withdrawn in 2018. Of course, this reversion still left in place a competitive market together with the backstop of competition and consumer protection law. Furthermore, debate on this topic continues, with the FCC actually reinstating net neutrality in 2024, but being successfully challenged in court at the start of 2025.

With the decision to remove rules at the federal level, a minority of individual states chose to take independent action of their own. Therefore, even today, the situation is not unambiguous. However, many of the state-level interventions have been subject to successful legal challenge, with the result that it would be fair to characterise the USA as, at present, a market without net neutrality regulations. Note

⁵⁴ The Asia Business Daily, "10 Times Higher Network Usage Fees Than Other Countries" Telecom Industry Calls Twitch Withdrawal Reason "Unreasonable Claim", 8 December 2023.

⁵⁵ Stream Hatchet, *The State of Korean Live Streaming*, 6 March 2025.

⁵⁶ Netflix, SK Telecom, SK Broadband & Netflix Establish Strategic Partnership to Enhance Customers' Entertainment Experience, 18 September 2023.

also the largest operators like AT&T and Verizon, while running national mobile networks, are distinctly regional in their fixed-line footprints. Verizon, for example, need have little regard to California's stance on net neutrality for its fixed-line customers in New York. In other words, state-level rules do not remove the potential for controversies to emerge.

US net neutrality advocates were vociferous in warning about what would come next. Yet outcomes have hardly lived up to warnings that the rules were vital to preserve a free and open internet. Back in 2018, there were allegations that throttling of video services had taken place, though note that operators denied this and the analysis was based on external inference using a disputed methodology. Video traffic does place a particularly heavy burden on mobile platforms that may necessitate traffic management (something that can be difficult to distinguish externally from throttling). It should also be repeated that there were no similar material issues in the UK prior to the net neutrality legislation – despite this period being one when video traffic would have represented an even greater challenge to the networks (given their lower capacity at the time).

While the prior presence of net neutrality in the US will undoubtedly have had some chilling effect on telecoms network investment incentives there, it can be argued that – specifically and exclusively as it relates to traffic handling practices – the successive changes made in regulation since have created a benign environment. Operators have had ready experience with restrictive rules and will therefore have a firm desire not to return there. As a result, they are likely to be cautious about any moves that might be perceived as mispractice. Suffice it to say that the UK would be in exactly this position were it also to remove net neutrality restrictions.

It might be argued that the US experience should not be relied upon as a guide for the UK given the different nature of competition in the two countries. Much ink has been spilt on the degree of competitiveness seen in the US telecoms sector, including in its three-player cellular market. Few would contend, however, that US mobile is *more* competitive than Europe in general and the UK in particular.

A simple comparison of ARPUs should suffice to make this point. According to Juniper Research, US ARPU in 2025 stood at a 63% premium to that in the UK (although it should be noted that US operators are in consequence able to invest much more heavily in network upgrades).⁵⁷ It would therefore be difficult to argue that the UK cannot follow the US example on net neutrality because its mobile networks are subject to weaker competitive pressures.

A possible further difference between the two countries is the strength of the tech giants. In the US, these companies (which understandably wield tremendous influence) are on home turf, and are far larger than are the telecoms operators – although the latter are themselves substantial. Turning to the situation in the UK, while the tech giants are plainly not home grown, their disparity in size versus the domestic telecoms operators is extremely marked. It is again difficult to see how this leaves the UK telecoms sector able to throw its weight around in ways that were unavailable to its (much larger) US peers. And, to repeat, those US peers have not caused any major issues subsequent to the removal of the net neutrality rules.

In the current tumultuous geopolitical context, even regulatory changes can conceivably give rise to international friction. It is therefore important to remember that, were the UK to reform its net neutrality rules, it would simply be following the US example – and not striking out on its own. The USA originally devised net

⁵⁷ Juniper Research, *Understanding Mobile ARPU: Top 10 Countries in 2025*, 16 May 2025.

neutrality regulation but then later repealed it. The UK would merely be following the same course of action that the US has itself found appropriate. Hence the removal of these restrictions should not cause a stir across the Atlantic.

The risks of reform are negligible...

As well as assessing how international markets have fared in the absence of net neutrality restrictions, it is also possible to look at the track record of the UK itself in the years prior to net neutrality entering the statute books.

The domestic history of these rules is highly informative. The UK did without any net neutrality regulation for many years, up until 2016. Ofcom, much to its credit, stuck to a light-touch approach.⁵⁸ In arriving at this stance, the regulator will obviously have been informed by its assessment of how the market had behaved during this period, when the sector upheld open internet principles without the need for legislation.

In fact, it was only as a result of the European Commission deciding to codify net neutrality that this ruleset came to the UK. Now that the country is no longer part of the EU, policy makers can make their own choice about the merits and demerits of these laws. Clearly, legal change is a matter for government rather than Ofcom, but it is interesting that the latter has drawn attention to the potential for how legislation might take an alternative approach.⁵⁹ It is also encouraging that the government is seeking input on a series of specific questions relating to the net neutrality ruleset.⁶⁰

What it is crucial to add is that strong safeguards would very much remain in place even were the legislation itself to be repealed. The UK's telecoms market is intensely competitive:

witness, *inter alia*, the sharp decline in mobile revenues over the past decade. Making the case for the removal of net neutrality constraints is only to argue that such specific *ex ante* rules are not required. All the protections afforded by a competitive marketplace, as well as competition and consumer protection law, would remain in full force.

Competition provides ample safeguards

UK telecoms is not some cosy commercial backwater – it is one of the most cut-throat markets of the present day, to the extent that (as the *Call for Evidence* document accepts on repeated occasions) investment goals are in real jeopardy. The point here is that customers have the most dependable and dynamic of protections available: that afforded by competition.

Lest it be neglected, it is worth underlining that regulation should serve where competition fails. Competition is hardly failing in the telecoms market. While there is no evidence that UK operators have indulged in unreasonable practices vis-à-vis net neutrality in the past (as discussed above), consider the hypothetical case where, in the future, net neutrality rules were removed and those same operators did behave with impropriety. What would be the consequences?

The reality is that customers would soon have the opportunity to respond by voting with their feet. Decades worth of regulations (going far beyond what is seen in most other industries) have smoothed the task of jumping ship and changing operator. For instance, the process of switching mobile networks has been subject to repeated regulatory intervention (as partially itemised earlier in this paper).

If a mobile company were to engage in unacceptable practices – as decided not by

⁵⁸ For example, see Ofcom, *Ofcom's approach to net neutrality*, 24 November 2011.

⁵⁹ Ofcom, *Net Neutrality Review*, 26 October 2023, 13.30.

⁶⁰ DSIT, *Mobile Market Review: Call for Evidence*, 10 February 2026.

interested third parties, but instead by the people who really count, namely customers – it would soon be called out. Customers would begin to depart, and management would need to course correct. Even having amended its ways, however, lasting reputational damage would have been done. All of which would give operators pause for thought before making any alterations to their services.

Perhaps the uncomfortable reality, though, for net neutrality advocates is that customers might welcome these changes. They might very well approve of the more efficient network that would result were operators no longer compelled (for example) to stream video in the same quality to a smartphone as to a home theatre screen. Plus, they might like the new services that would become possible with the reform of the rules (though, if they didn't, they certainly wouldn't be under any obligation to take them). This isn't a matter that can be decided purely from theory today. The market should be freed up so that customers themselves can make these choices, all with that most powerful of backstops in place throughout – an intensely competitive market that will reward innovation but swiftly punish poor decisions.

The ferociously competitive nature of the marketplace provides more than sufficient safeguards. Yet operators not only face these intense pressures but are additionally subject to highly burdensome regulation in almost every sphere of their activities, including net neutrality rules imposed *despite there being no evidence of any associated UK problems*.

For a market to be both highly competitive and highly regulated is certainly an ungainly way of proceeding, but this might conceivably be overlooked if the regulation in question were modest in its impact. As has already been documented above, though, this is simply not the case with net neutrality, where the rules are

today materially constraining the operators' ability to innovate.

A generic counter-argument to the proposal that regulation be withdrawn from a market that is already more than sufficiently competitive, is that its very status as sufficiently competitive is itself dependent on the preservation of the regulation in question. However, it is extremely hard to understand how the competitive intensity of the telecoms market would meaningfully diminish in the absence of net neutrality. To give merely one example, these are not the rules on which a customer's ability to smoothly switch networks depends.

To repeat, the UK did without net neutrality legislation for many years without serious incident. The current rules are severely constraining the operators' freedom of action. This has been justified on the basis of preventing behaviours that the UK telecoms networks never practiced historically. And, if they were to behave irresponsibly in future – by curtailing the open internet – they would bleed customers, as a result of the highly competitive state of the market.

...the risks of inaction are not

To recap, the international evidence, as well as that from the UK prior to the instigation of net neutrality legislation, indicates that the risks of reform are minor. By contrast, though, the risks associated with inaction are very real. These can be discussed under two broad headings. First, there is the risk of forsaking the economic benefits of net neutrality repeal, as documented over the previous three sections: new services that go unlaunched, a culture that is deficient in innovation and a sector that lacks the cash flows necessary for ambitious network build. Then there is a separate, second, category of risk: that to sovereign autonomy.

The risk of sacrificing sovereignty

Against the backdrop of the present geopolitical upheaval, the importance of a robust and highly capable national telecoms infrastructure should be lost on no one. In the words of the Minister, “world class connectivity is not optional, it is essential.”⁶¹ This is not only from the perspective of the economy, but also in terms of the country’s resilience in an increasingly unstable international environment.

Additionally, likely near-term technological developments with clear sovereign implications are about to further raise the stakes. One likely next step in AI technology will be a shift towards the edge of the network, closer to the end user, so as to minimise factors such as latency. What remains an open question, however, is who will install and be responsible for the equipment required for this edge compute? Decisions taken today, like that on net neutrality, that are liable to hobble domestic telecoms operators will only cede the ground for these investments to be led by others. Such policies are unlikely to age well.

The telecoms companies are natural candidates to build and maintain edge capabilities in the UK, housing the necessary equipment in locations such as base stations and local exchanges. Not only does this enable the smoothest integration of services and communications platforms, but it also has the significant advantage that this functionality will remain under the direct control of UK telecoms regulators and policy makers.

However, the operators will need the cash flows necessary to fund this investment, and here (as previously discussed) revenues generated from the new services made possible with the reform of net neutrality, together with associated network efficiency gains, could make a helpful contribution. For national and strategic

considerations alone, it is surely desirable that there be deep participation by UK operators in deploying this capability.

A startling possibility that has recently emerged is the prospect of compute being stationed in low earth orbit. Servers deployed on satellites would be beyond the direct reach of UK policy makers and their legislation. In this context, it is notable that Russia has suffered considerable setbacks as a result of a concerted effort by SpaceX to remove the military’s access to its satellite communications platform in the region. While UK policy makers might welcome the intervention in this specific instance, the ramifications in terms of sovereignty will be obvious.

With this sovereign risk in mind, it should be even more apparent that removing outdated regulation from operators that employ UK staff, pay UK taxes, invest in UK infrastructure and are directly subject to UK lawmakers is surely in the interests of citizens, the economy and the country alike. To be clear, the innovations global players have brought about have provided great benefits. This should not be a case of either global or domestic investment, but both. With the right regulation, government can help to ensure UK operators are able to play their part.

In summary, the risk of withdrawing net neutrality regulation is negligible, but the risks of retaining it are real and immediate. These rules deprive operators and customers of innovative new services that would help fund network upgrades – and could thereby push infrastructure critical to the future running of the economy beyond the direct reach of UK policy makers and parliament. The risk averse choice is therefore to roll back this unnecessary and obsolescent regulation.

⁶¹ DSIT, *Mobile Market Review: Call for Evidence*, 10 February 2026.

6. Conclusions

The benefits of reform

- Net neutrality is the principle that all packets of data must be treated identically by a telecoms network, even though certain data is more time-critical – for instance, when using a map app to navigate at an upcoming junction. Operators would like to accord such data an enhanced quality of service to improve the user experience, but are substantially impeded from doing so
- The same rules severely hamper even customers themselves from specifying which traffic they'd like to see accorded more importance. For example, operators could provide functionality giving priority to the payment service selected by a SME. By helping to cut down on queues and accelerate sales, this would clearly be valuable. Yet net neutrality precludes this, to the detriment of the entire economy
- Without change, innovations such as agentic AI may not be able to reach their full potential in the UK. These apps will have agency to access network resource so will require some framework to help manage this. Yet net neutrality makes even a simple rule like 'prioritise human communications over those initiated by AI agents' (or *vice versa*) very difficult
- Neither specialised services nor differentiated retail offers provide a practicable alternative, each involving complex and cumbersome rules that will slow innovation and adoption
- Net neutrality repeal would not only deliver productivity gains from the innovative services that are now technically possible, but would also open up a new services market, potentially worth a broad range of between £174m and £871m per annum

- Network efficiency gains could amount to a further £384m (non-recurring)
- Additional mobile capex and improved efficiency in the utilisation of existing infrastructure would be worth around £142-557m a year, equivalent to 8-31% of current investment levels
- Reform of net neutrality could underpin 8-33% of 5G capex, thereby enabling £1.9-7.3bn of the cumulative national economic benefits attributable to 5G – a substantial portion of which would relate to SMEs

A more innovative sector

- Regulation has a profound cultural impact on telecoms. Personnel coming up with an idea for a new service will know it could be torpedoed in an instant should it conflict with an intricate ruleset on which they are not expert, attaching risk to the very process of ideation
- The caution needed to navigate regulation is simply antithetical to the development of a more innovative mindset. The highly subjective nature of many criteria in the details of the net neutrality rules (e.g. on specialised services) introduces further challenges
- Tech hasn't historically faced the same burden, enabling a more free-wheeling attitude. Tech companies think first about technical practicability or market potential, not regulatory feasibility
- Tech regulation has recognised that prescriptive rulesets don't work well in rapidly evolving sectors. But telecoms itself is becoming much more software-centric and thereby faster paced, thanks to technologies like 5G and OpenRAN. These can usher in the prospect of exciting new services – provided the rules don't hold the industry back

- The UK will get the telecoms industry it regulates for: prescriptive, pre-emptive legislation imposing complex rules to forestall problems never seen in the UK will produce a sector that is reactive, cautious and deficient in dynamism
- While continuing to adhere to open internet principles (as it always has done, even before net neutrality legislation), the sector would be of greater benefit to UK citizens if it were able to focus on creating new services instead of being obliged to privilege backward-looking box-ticking

No other options

- The Mobile Market Review *Call for Evidence* cites up to £34bn as being needed for advanced 5G deployment through to 2030. Further outgoings include spectrum fees and costs from the 2021 Telecoms (Security) Act
- Meanwhile, mobile revenues have collapsed over the last decade, from £21bn in 2014 to £14.1bn by 2024 (CPI adjusted 2024 prices)
- Where is the money to come from? The *Call for Evidence* is unsympathetic to price rises and rules out 'fair share'. An infrastructure levy (like that in the water sector) would presumably also be unwelcome. FWA is a nil sum game for the sector. Competition is ferocious
- In an already saturated market, this leaves only one alternative: leveraging the novel capabilities of 5G and network slicing to deliver a superior quality of service justifying a premium. Unfortunately, offerings of this type are severely limited by net neutrality
- Therefore the industry will be watching the Mobile Market Review closely. Removing net neutrality constraints is the signal that would indicate the government wanted an innovative sector able and willing to invest

The risk of doing nothing

- Evidence globally indicates the risks associated with removing net neutrality are negligible
- World-leading Asian technology markets, such as South Korea, Japan Singapore and China, have largely done without net neutrality legislation, with only minor issues. Nor has its absence caused significant problems in New Zealand or Australia
- US net neutrality advocates warned vociferously about the consequences of removing this regulation in 2018. In fact, there have been few problems other than a controversy over video traffic handling in that same year (the facts surrounding which remain disputed)
- Most importantly of all, there were no major issues in the UK prior to the net neutrality legislation's implementation, which only took place in 2016
- UK customers would continue to benefit from consumer protection and competition law, as well as from the most effective shield of all: a highly competitive market. Any operator taking poor decisions would soon be called out and lose customers to rivals
- The risks of reform are negligible, but the risks of inaction are real, starting with missing the economic benefits that removing these rules would bring in terms of productivity-enhancing new services, faster innovation and a better funded industry more able to invest
- In the current global environment, the importance of a robust and capable telecoms infrastructure subject to national lawmakers is self-evident. Removing obsolete rules constraining operators employing UK staff, paying UK taxes, investing in UK network and directly subject to the UK government is surely in the interests of citizens, the economy and the country alike

Risks of inaction vs risks of action	
Risks of inaction – major	Risks of action – minor
Limiting scope of new services including agentic AI	Japan, NZ, Australia have had few issues
Depriving telecoms of £174m-£871m pa revenue	Korea saw Twitch (videogame streamer) exit
Depriving telecoms of £384m in cost savings	US little impact (2018 throttling controversy)
Undermining £142-557m pa in capex	UK had no issues prior to legislation in 2016
Undermining £1.9-7.3bn cumulative economic GVA	Consumer protection & competition law remain
Reinforcing culture of caution not innovation	Intense competition provides further safeguard
Accepting sector will miss desired network spend...	
...or preferring unpalatable alternatives e.g. levies	
Jeopardising capable network under UK jurisdiction	

Source: Communications Chambers