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Funding improvements in the European broadband experience

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COMMUNICATIONS CHAMBERS

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1. Executive summary

The European Commission preliminary consultation on the future of electronic communications did not find wide support for 'direct compensation' (also referred to as 'fair share'). However, Thierry Breton noted that "*…finding a financing model for the huge investments needed is an important issue that we will need to deal with".*

One option is to continue, and potentially expand, State Aid coupled with the removal of barriers to investment. Another option would be to introduce a European Universal Service Fund (EUSF) with a wide funding base and competitive allocation of funds to eligible projects aimed at delivering on the EU's Digital Decade Targets for 2030. We consider the pros and cons of such an EUSF.

An EUSF would have some advantages over direct compensation of telcos, in particular compensation would be merits based rather than simply tied to traffic and, crucially, it would be tied to delivery of incremental network investment. Funding could also be decoupled from traffic (where a charge would discourage digitisation) to include a broad base covering the entire ecosystem or economy.

Whilst a EUSF would have advantages it would also have disadvantages. There are complexities and potentially contentious issues that would need to be addressed. What investment would be eligible, who would pay and who would decide on the allocation of funds? Further, given that the intention is to contribute to delivering targets for 2030 there is limited time to address these questions and for a new scheme to contribute.

Particularly contentious may be the fact that those states that have invested the *least* to date in delivering on the Digital Decade Targets would likely be the greatest net beneficiaries, whilst consumers and/or taxpayers in those member states that have made the *most* progress would be net contributors. This is unlikely to be seen as fair.

Finally, some commercially attractive investment might be put on hold pending implementation of EUSF, whilst member states may seek to substitute EUSF money for state aid. Given these near-term incentive effects, there is a real possibility that an EUSF would hinder rather than help delivery of 2030 targets. A superior option would appear to be to double down on state aid coupled with removal of barriers to investment.

2. A digital platform funded USF for Europe?

Europe has set targets for 2030 for deployment of gigabit fixed and 5G wireless networks. Two policy strands have been pursued to complement private sector investment to help deliver these targets: reducing regulatory barriers, and funding under State Aid and by the European Investment Bank.

There is ongoing discussion of whether existing private and public initiatives could be complemented in some way to accelerate investment. One suggestion has been that large tech companies should contribute funds to telcos. 'Fair share', a model which would appear to have been rejected, is briefly touched on below before focussing on an alternative which is the focus of this paper, namely a European Universal Service Fund (EUSF).

'Fair share'

One mechanism for a contribution directly from tech companies to telcos is a fee on traffic related to consumer use of the relevant tech company's applications. This has been referred to as 'fair share' by telcos and 'direct compensation' by BEREC. This approach was not supported by BEREC[1], nor by a broad set of stakeholders (beyond incumbent telcos)[2] and did not receive majority support from member states.[3] At the conclusion of the EC exploratory consultation Thierry Breton deemphasised 'fair share' whilst also noting that "*…finding a financing model for the huge investments needed is an important issue that we will need to deal with…*".[4]

A European Universal Service Fund

Another option would be to introduce a European Universal Service Fund (EUSF) with a wide funding base and competitive allocation of funds to eligible projects aimed at delivering on the EU's Digital Decade Targets for 2030. Funding could broad-based, covering the entire ecosystem or economy.

Such a fund would break the 'direct compensation' associated with 'fair share' with funds going to eligible investments on a competitive basis and revenue raised from telcos, tech companies and potentially

[1] BEREC, *BEREC preliminary assessment of the underlying assumptions of payments from large CAPs to ISPs*, October 2022
[2] EC, *Results of the exploratory consultation on the future of the electronic communications sector and its infrastructure*, 10 October 2023
[3] Reuters, *Majority of EU countries against network fee levy on Big Tech, sources say*, 3 June 2023
[4] Thierry Breton, *A 'Digital Networks Act' to redefine the DNA of our telecoms regulation*, 10 October

others involved in the broader ecosystem (for example, car companies that may benefit from widespread 5G). Funding would likely be based on something other than traffic flows, for example, the revenues of contributing companies.

Whilst in response to the EU exploratory consultation *"…the majority of respondents stressed that setting up an EU-wide dedicated fund for universal service purpose would not be useful',* an EUSF could have advantages compared to 'fair share':

- It could be designed to ensure that there was competition for funding including from entrant[5] wholesale network investors (rather than favouring incumbents carrying traffic) and to include investment obligations[6] for those receiving funds.
- It could leave the interconnection market intact, whereas a data traffic charge with a threshold would disrupt the interconnection market and introduce competitive distortions[7].

In the EC White Paper[8] the Commission note that achievement of 2030 fibre targets is "in doubt" and that the current financial situation of the EU electronic communications sector raises concerns for its capacity to fund the investment needed. The White Paper does not propose an expanded USF, but notes that "sector financing has so far been limited to electronic communications providers".

Potential disadvantages, explored in the following section, include the time taken to establish a EUSF given the complex set of issues that would need to be resolved and potentially contentious questions such as which member state customers (ultimately) are net contributors or net beneficiaries of the fund.

[5] 53% of cumulative fibre to the premise investment in Europe to 2023. Analysys Mason (for ETNO), *State of Digital Communications 2024*, January 2024 (Figure 1.28)
[6] To help ensure that investment is additional rather than additional revenues going to shareholders. By way of contrast, Barclays, in an analysis of 'fair share' allowed for any incremental revenues to impact the bottom line in full i.e. no additional investment was assumed. Barclays, *Net Neutrality – Positive optionality,* 23 March 2022
[7] BIPT, *Communication of 8th of November 2023: Analysis regarding the request to impose mandatory contributions by internet platforms to telecom operators for the use of their networks (fair share)*
[8] EC, *How to master Europe's digital infrastructure needs?*, White Paper, 21 February 2024.

3. Design questions for deployment of an EUSF

In order to establish an EUSF, a number of complex questions would need to be resolved. In this section we consider questions related to the deployment of a EUSF:

- What are the objectives of the EUSF?
- What should be eligible for funding?
- Who would be responsible for allocating funds?

In the next section we consider how an EUSF might be funded.

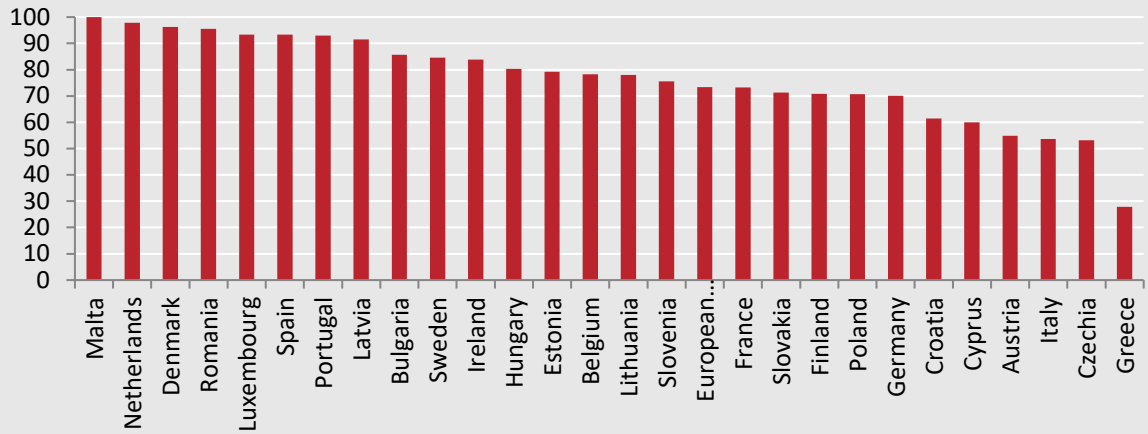
Objectives

Much of the recent discussion of intervention to support telcos has been in the context of the Digital Decade goals, and in particular the targets for gigabit connectivity and 5G availability. However, if these goals were the objectives of the EUSF, there would be two significant practical issues.

Firstly, timing: building political support for an EUSF, designing it, passing relevant legislation, establishing an administrative body, levying funds, determining where funds should be spent and making grants to relevant providers will all take time. In practice, there is little prospect of material funds being granted before 2030, the deadline for the Digital Decade goals.

Secondly, if the Digital Decade goals are the objective, then this will inevitably create significant inter-member-state issues. Progress to the coverage targets is very uneven. Figure 1 shows gigabit coverage, for example, which (as of 2022) ranged from 28% to 100% depending on member state:

Figure 1: Gigabit broadband coverage, 2022 (%)[9]



If funds from an EUSF are deployed to support the coverage targets, then by definition they are likely to flow primarily to those countries that have made least progress to the targets. However, if it is funded on a pan-European basis, then net contributions will come substantially from consumers in countries that already have their own FTTP and 5G (and where consumers are effectively already carrying the cost of *that* investment).

Of course, the EUSF could be given other objectives rather than support for the coverage targets – and indeed, objectives such as supporting uptake (in addition to or instead of availability) might be in the interests of citizens, as we discuss below. However, this would require the building of consensus around these alternative objectives.

Eligibility for funding

Assuming for the moment that the purpose of an EUSF does remain the Digital Decade targets, then this raises the question of which gigabit and 5G investments to support.

The approach of defining white and grey areas for broadband state aid is already familiar, and this could be carried over to EUSF funding of fixed broadband. That said, there would need to be pan-European 'mapping' of black areas that won't see purely private investment (similar to that undertaken in the US) to build a comprehensive picture of the deployment challenge, and where funds might be most effectively deployed.

[9] EC, Digital Scoreboard [accessed 4 April 2024]

The challenge for 5G would be rather greater, for several reasons. Firstly, 5G 'coverage' can have multiple meanings – ability to get a signal, or a certain specified bandwidth? Indoor or outdoor? At peak hours or average across the day? Further, even if a certain location passed whatever test was specified at a certain point in time, it might fail it in future years as demand grew and increased loading on the relevant cell. Secondly, regardless of the test, it is a complex question of radio planning to determine whether it is passed – a much more involved exercise than whether a particular premise has FTTP in the street outside.

Any determination of 'white areas' is also, by its nature, an exercise in forecasting – will future revenue streams be sufficient to offset upfront investment. But this highlights a further challenge for 5G. While 5G is expected to enable a wide array of value-added services from operators, their adoption and revenue is today very uncertain. Thus forecasting commercially viable 5G coverage (particularly out to 2030) is difficult.

Finally, how would 5G provided over LEO satellites be treated? Eutelsat has conducted successful technical trials of this.[10] Would such 5G coverage be deemed as sufficient to meet the Digital Decade target? Or alternatively would EUSF funds be provided to terrestrial mobile operators to compete with Eutelsat?

Responsibility for allocating funds

Broadly speaking, funds could either be awarded directly to operators by a new EU-level body, or alternatively funds could be allocated as block grants to relevant member states for onward allocation and distribution to operators in each country. Both approaches present their own advantages and challenges.

A pan-European approach could ensure a consistent approach, and facilitate targeting to the areas of greatest need on a European basis. However, it might require a new body, and central aggregation of much data currently held at the national level (if anywhere), such as coverage maps. Great care would be needed to avoid cutting across similar interventions at the member state level. It would also require a wide array of local operators to engage at the Commission level, which might be unfamiliar to many of them.

In the alternative of block grants, the detailed funding decisions would be made closer to the point of need. However, the allocation

[10] Eutelsat Oneweb, *Constellation connects to 5G, paving the way for high-speed internet access to remote mobile phone users*, 19 October 2023

of these block grants would nonetheless need very careful analysis, and may well be contentious. There would likely also be need for audit, to evaluate the projects that ultimately were funded.

Potential adverse consequences

Substitution

There are also some potential adverse consequences of an EUSF that would need to be carefully considered. In particular, once a scheme is anticipated or in place, there will be a reduced incentive for member states to fund non-commercial investment via State Aid – why use national funds when EU funds are available? In this scenario, the EUSF doesn't actually contribute to the Digital Decade goals, but instead simply substitutes for national funding. The net effect would be a subsidy to the relevant countries' government coffers, and no wider deployment of networks.

Delay

A second risk is delay. If an EUSF is to be implemented, then there will be a temptation for member state to wait for this funding, rather than putting national programmes in place. Thus, the EUSF could actually *worsen* progress towards the Digital Decade goals, by introducing delay.

Revenue and income mismatch

A challenge for USF – particularly those with tightly defined goals – is to balance income and disbursements. If income exceeds disbursements, then funds can become 'stranded' in the fund, sitting in the bank rather than being used productively. This has happened in Malaysia for example, where the USF now has a balance of €2.1bn.[11]

Such a mismatch is a risk for an EUSF focused on the Digital Decade goals, given that they may be largely met before the fund is in place.

[11] MCMC, *Universal Service Provision Annual Report 2022*, 13 December 2023

4. Funding of an EUSF

Public or private funding?

A pivotal question for any EUSF would be its funding. USFs have in the past generally been funded by a telecoms levy, usually based on a percentage of revenue. It has been suggested that a EUSF might be funded by a wider group, to include other private companies such as (for example) digital players.

By contrast, existing public interventions in Europe – the various forms of state aid for broadband – have of course been funded by the public purse.

A key problem with a USF funded by a levy on telcos (and perhaps other companies) is that it is taxing the very connectivity/applications ecosystem that the Digital Decade targets are intended to support. Taxing the sector, wherever the levy is applied, will diminish the sector, since the tax burden will ultimately be passed through in the form of increased prices for applications and connectivity, reducing demand.

A better approach from an economic perspective is to raise necessary funds from as broad a base as possible – that is, via general taxation -to reduce the distortion of economic activity, and in particular to avoid unduly burdening connectivity and applications.

Further, a USF involves a form of hypothecated tax, which is inflexible given that there competing demands for public funds and given that priorities change over time.

General taxation is the source of funds for existing State Aid in the EU, but it is also increasingly the source of funds for non-commercial network investment in the US.[12]

Mechanism for raising a levy at EU level

If the EUSF *is* to be funded by a levy, then there is the question of the legal means. The EU does not have its own powers of taxation. There has been discussion of various mechanisms to increase the EU's 'own resources', including a share of emissions trading income, a share of border carbon adjustment mechanism, and a levy on the profits of

[12] The White House, *Fact Sheet: Biden-Harris Administration Announces Over $40 Billion to Connect Everyone in America to Affordable, Reliable, High-Speed Internet*, June 2023

large multinationals. There is already an existing contribution related to non-recycled plastic packaging waste.

In each case, these are funds that come from member states, not a direct levy by the EU. They also generally 'piggy back' existing revenue streams, rather than requiring new levies at the member state level.

These various mechanisms are already controversial, but are being pursued to support existing EU challenges, such as the rising cost of debt, climate change, the war in Ukraine and so on.[13]

A new EU mechanism to support an EUSF would:

- Require new supporting levies within member states
- Be hypothecated rather than being available to meet the wider financial challenges facing the EU
- Address needs already receiving considerable financial support via Connecting Europe, the Recovery Fund and many national interventions

These factors are likely to make it particularly challenging to get an EUSF mechanism approved.

Which private parties to contribute?

If a levy on the sector is to be applied, then there are questions of scope (which companies) and mechanism (based on what metric). There is also an administrative question as to which entity would be responsible for gathering the funds.

Companies in scope

Historically, USFs for voice services were in part justified on the basis that each incremental user (subsidised by the USF) brought value to all other users, since those users could now call the new user. This justified a levy on telcos generally (and by extension on all users) to support network expansion.

However, this logic is much less clear for gigabit broadband and 5G. If (say) a rural user today has 20 Mbps broadband, then other users can already communicate well with them, via email, video calling and so on. The benefits for that user of upgrading to 1 Gbps are predominantly private – the ability to watch Amazon Prime in 4K, or to download a Sony console game quicker, for example. Thus it's not

[13] See, for instance, Politico, *EU lawmakers urge Commission to tax big biz in face of soaring debt*, 10 May 2023

obvious why other users might be expected to support those benefits.

It might be argued that application providers benefit, but that is not clear either. In the above examples, neither Amazon nor Sony receive any greater revenue than they would if the user remained on a 20Mbps line. Many major applications today – such as Google Search, Facebook or Netflix – need only modest bandwidth in the access network,[14] and are in no way dependent on upgrades to Gigabit or 5G.

Indeed, the main beneficiaries of gigabit and 5G may be quite different from the large digital players. For example, Deutsche Telekom has referred to 5G as a "foundation for autonomous driving".[15] If this is right, then BMW, Renault and Fiat may see greater benefits than Apple and Meta from widespread 5G. On what basis would these auto manufacturers be excluded from contributing to an EUSF?

Mechanism

As noted, in the past USFs have often been funded on the basis of a percentage of telecoms operator revenue. This is viable within telecoms, since the different companies will have broadly similar economics and consistently high gross margins. There is also little question of revenue attribution – telecoms services are predominantly national.

If the scope of USF funders were to be expanded beyond telcos, these questions become considerably more complex. Firstly, different companies may have very different profitability and gross margins – consider Amazon, Google and BMW, for example. There is a real risk that a levy based on a flat percentage of revenue could have distortionary effects. (Sector specific levies might address this, but raise other contentious and complex issues).

Further, which revenues would be subject to levies? Digital players in particular might have revenues that are global in nature which might need to be allocated to Europe. Would hardware and services revenue both be included? Apple's App Store and its iPhone sales might both be supported by 5G, for example. Samsung's phones and 8K TVs benefit from 5G and gigabit respectively.

[14] They do of course drive material traffic in the core network because of their large number of users, but that is not relevant to the question of whether they benefit from upgrades at the edge of the network

[15] Deutsche Telekom, *5G network as foundation for autonomous driving* [accessed 16 November 2023]

Other mechanisms besides a percentage of revenue are possible – a portion of profits for example – but questions of scope will still apply. Further, if an EUSF is to be funded by a profits levy on those companies that benefit from improved internet access, then – given how widespread the benefits of the internet are to the economy – the EUSF might as well be funded from general taxation.

Revenue raising body

As discussed above, disbursements of EUSF funds might be made primarily at an EU or member state level. A similar issue arises for the raising of funds – would contributions to an EUSF be levied centrally or at the member state level? If the latter, there will still be a need for an EU-level fundholding body, to receive the funds from member state, and presumably monitor that collection is happening on a consistent basis across member state.

5. Eligible investment

Europe's Digital Decade targets for 2030 are broad in scope, in recognition of the fact that infrastructure is one part of the solution. Appropriately, most of the targets are about use of the internet, rather than network capabilities.

Fixed and mobile internet do not have value in-of-themselves. Rather, they are (essential) enablers of consumer and business use of valuable applications, and improved user experience.

However, 5G and gigabit are not the only mechanisms to enhance user experience and to increase the number of people who can use a particular service. Technology companies are making their own investments to these ends, including:

- Local caching to improve service experience. For example, Netflix Open Connect provides servers closer to end users to ensure a smooth and reliable streaming.
- Improved compression, which delivers higher resolution video within the same bandwidth, enabling wider availability of (say) 4K without the need to upgrade access networks.[16]
- New formats for interaction, which may not only enrich presence but also substantially reduce bandwidth and data traffic requirements. For example, photorealistic 3D avatars[17] that capture facial movements and allow virtual meetings that are "much more bandwidth efficient than transmitting a full video or especially a 3D immersive video…".[18]

The above examples are all being pursued commercially by digital players, without the need for subsidy. However, it may be possible to use public funding to accelerate and deepen progress in these areas. This could provide enhancements to the user experience equivalent to those provided by network investment. Consideration should therefore be given to using EUSF funds to support initiatives in these areas consistent with the goals of scheme.

Making use of this wider set of mechanisms will make the most efficient use of any funds raised under an EUSF to improve user experience.

There may also be merit in supporting uptake. The incremental benefit of bringing a non-user online is likely to be much greater than

[16] An example is work on AV1 compression format supported by the *Alliance for Open Media*
[17] Meta, *Meta's New Photorealistic Avatars Show Metaverse is Real*, 2 October 2023
[18] Lex Fridman Podcast, *Transcript for Mark Zuckerberg: First Interview in the Metaverse*, September 2023

the benefit of improving speed for an existing user. Mechanisms to support uptake might include investment in digital skills for those not yet online, or vouchers or social tariffs for those for whom cost is a barrier.

6. Conclusion

As Telefonica have noted, an EUSF "*would represent a heavy regulatory intervention and significant effort … to define rules among all member states about who should contribute and benefit.*"[19]

An EUSF would almost certainly result in significant transfers between member states, and this alone would make it challenging to agree. Further, given the time to establish such a programme, it would likely arrive too late to benefit the Digital Decade connectivity goals. Indeed, by giving member states a reason to pause state aid in the hope of receiving EUSF funds, it might actually delay progress to those goals.

If the connectivity goals are not the right objectives for an EUSF, then this calls into question its purpose. Connectivity goals may anyway not be the appropriate overarching focus of policy in this area, since the ultimate goal is better user experience, and there are likely more efficient ways to deliver this than ever-more bandwidth.

[19] Telefónica, *Strengthening Europe's digital infrastructure to enable our digital future*, 26 May 2023