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Digital Services: European Solutions for Fair Taxation of Multinational Digital Service Providers

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The proliferation of cross-border digital services and the rise of multinational platforms to become some of the world's most valuable companies has led to the question of how digital business models can be fairly taxed in future. In many EU Member States, multinational digital service providers pay very little tax even though they generate high profits there. Base erosion and profit shifting (BEPS) can be most effectively prevented through international tax treaties. But approaches such as the OECD proposal (redistribution of taxing rights and global minimum tax) are not easy to implement in the short term. This study discusses options for unilateral instruments that could potentially be used by the EU to establish fair taxation and a level playing field for digital business models.

- The provision of digital services is largely automated. Intangible assets, especially software and software licences, are particularly important in this context. Digital services can also be transported quickly and at low cost, making them particularly vulnerable to BEPS.
- Digital services primarily pose a methodological problem for the traditional tax system. Forward-looking solutions to the BEPS problem have to consider future technological developments such as a fully virtualised "metaverse".
- One possible solution is a "synthetic concept" based on breaking down the digital service value chain into i) the data service (the individual information), ii) the system service (the software, servers and algorithms) and iii) the network service (the infrastructure).
- This produces three possible solutions for taxation at the "last identifiable source": (i) a digital sales tax on the domestically consumed service under the market jurisdiction principle, (ii) a digital duty on the imported system service and (iii) a digital fee for using the network infrastructure provided domestically and used by foreign providers.
- cep supports the implementation of the OECD proposal but sees it as – at best – a partial solution to the root problem. In parallel, the EU should develop unilateral instruments in order to protect digital competition in the EU and digital sovereignty, and, above all, to enforce fair taxation.

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1 Introduction

Here's a figure that has caused something of a furore: 0.005. This is the percentage that Apple pays in tax on its profits in Europe – in other words, just 50 euros on one million euros of profit. It was only thanks to the intervention of the EU Commission that Apple was prevented from getting away with it. The company now has to pay around thirteen billion euros in back taxes. Apple is not unique in its attempts to minimise and shift profits (BEPS: base erosion and profit shifting), but it is still a special case. Between 1985 and 2018, the global average corporate tax rate halved from 49% to 24%.[1] One reason for this is the increasing tax competition between states due to aggressive tax planning by multinational companies. Many of these companies are digital service providers. Digital services have some special features[2] that allow these companies to avoid taxes particularly effectively. For example, providers of digital services, especially of platform services, are often very large and organised on multinational lines. Digital services can be delivered from almost anywhere. This raises both conceptual and policy issues that will be discussed in this study.

1.1 Digital services and multinational platforms

The importance of digital services will continue to grow. Many services have already been fully or partially digitalised. For example, work meetings and doctor's appointments are increasingly being held digitally instead of physically. Travel is often booked online and taxi rides via a platform. Banking services and audiovisual media are also increasingly being provided digitally. In addition, many goods have also acquired a digital service component, representing a trend away from ownership towards sharing. Many people today own neither a car nor a bicycle; instead, they use mobility services such as car or bike sharing services. An extreme form of the trend toward services is described by the term "everything as a service." The aim here is to offer the complete internet infrastructure - such as the server infrastructure, software and computing power - as a cloud service. Ultimately, almost all consumption can be traced back to a service. Take the car, for example: it is not the car itself that is consumed, but the mobility service provided by the car. It is no longer necessary to own the car in order to use it as a flexible means of getting from A to B. By providing real-time information on where and when a car is available, the service intensity of the car (still a physical item) is dramatically increased. The specific asset is no longer the car, but the information about the car. The service offered by the car is thus separated from the physical car. The platforms earn a great deal of money with this information (which is based on the increasing amount of user data and thus becomes better and better) without having to provide the cars themselves or help to finance the road infrastructure.

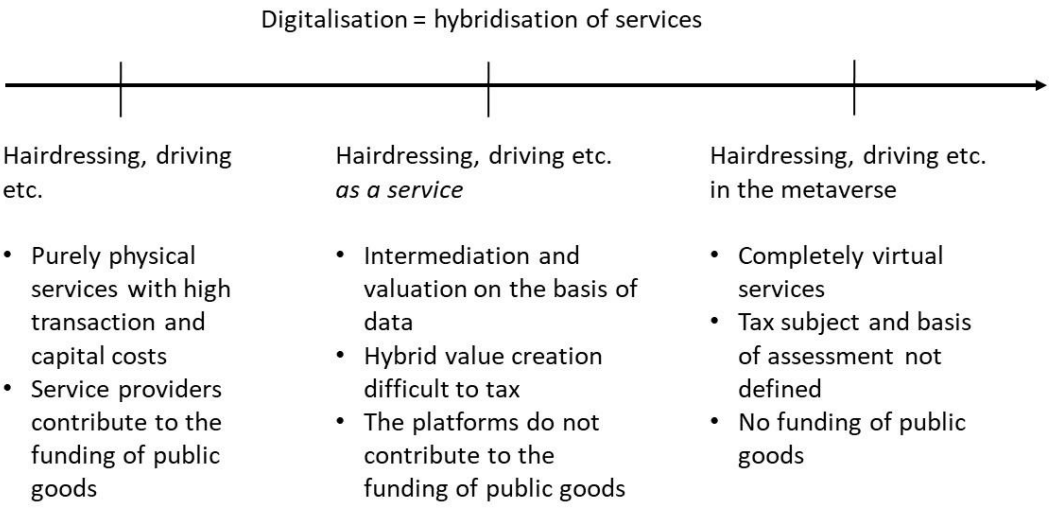
There is no end in sight to this advancement. The creation of the metaverse suggests that even more areas of our lives are likely to be digitalised in future and ultimately, everything that can be virtual will be virtual. The increasing hybridisation of services through digitalisation means the components of value creation are becoming unbundled (see Figure 1). The actual service continues to be provided physically using tangible capital (e.g. cars) and, if necessary, infrastructure (e.g. roads); its location – both geographical and temporal – can be pinpointed. Other components of the service, however, such as the matching of service provider and service user, are provided digitally. This digital part of the service can be geographically separated from the user and provided from anywhere. The digital service

[1] Tørsløv, T./ Wier, L. / Zucman, G. (2022), The Missing Profits of Nations, The Review of Economic Studies, rdac049, https://doi.org/10.1093/restud/rdac049.

[2] For the special features, see Section 3.

is mostly monetised through multi-sided platform markets, which means that the revenue does not come directly from the users. It is not the digital service directly that is monetised, but the reach of the platform. Reach is maximised by setting a price of zero against a user side. The greater the reach, the higher the advertising revenue that can be generated from the reach.

Figure 1: How digitalisation hybridises physical services

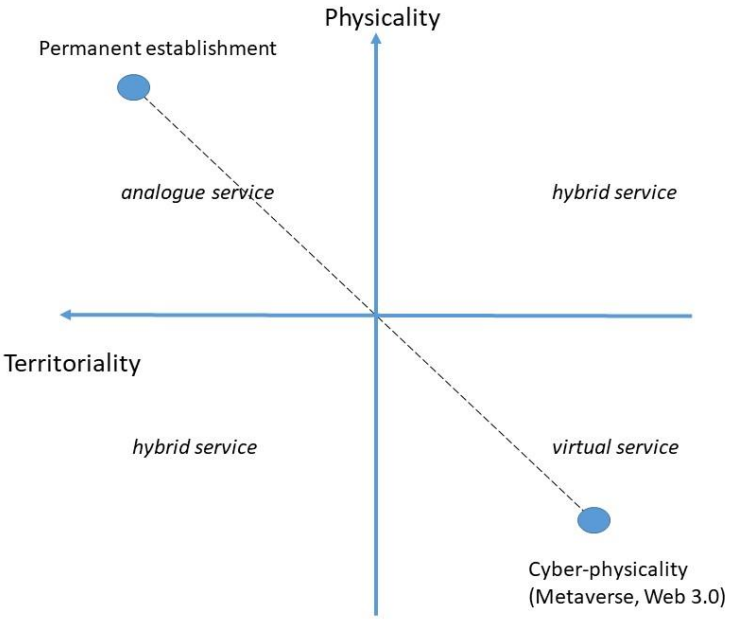


Source: Authors' illustration.

This hybridisation of services means that taxation is also hybridising along the same lines because traditional concepts of tax law and categories of the tax system are no longer directly applicable. However, the digital (virtual) part of the hybrid service relies on physical conditions and infrastructure, and thus on public assets financed by the general public. It is therefore right that the revenue and profit from the digital (virtual) service should also be taxed. However, the traditional tax system cannot adequately identify these revenues and profits. To tax them, three conditions must be met. Firstly, a company's tax liability in the market jurisdiction must be established. Secondly, the amount of tax payable must be determined. And thirdly, both must be enforced.

When developing solutions and new systems and concepts, it is important to remember that the current state of digitalisation is merely a stepping stone on the way to a digital society and a virtual economy. The idea of the metaverse, where the territoriality and physicality of things is almost completely abolished, makes a good basis for a thought experiment to examine the economic and social consequences of a fully digital society. This is the diametric opposite of the traditional "permanent establishment" (see Figure 2).

Figure 2: Physicality and territoriality of the service as a continuum



Source: Authors' illustration.

Box 1: Taxation in the metaverse - a thought experiment

The analogue world is familiar to us. We know that everything we do happens at a certain place and a certain time. The world that we experience works much like Newton's "classical mechanics". In quantum mechanics, however, position and momentum cannot be sufficiently known at the same time – the world in its usual coordinates becomes blurred. We are experiencing something comparable with digitalisation: the analogue is blurring with the virtual. We are living in a hybrid world. As we transition from the analogue to the virtual world, we cannot easily apply our existing definitions and metrics because we are now dealing with novel phenomena.

To get an idea of the reasons why transitions from the analogue to the virtual world cause problems with established systematics and practices, it is helpful – as a thought experiment – to imagine the extreme opposite of the analogue world, namely the completely virtualised world. The "metaverse", currently the topic of much debate, comes closest to this idea. All technologies are absorbed into a virtual world in which there is neither physicality nor territoriality, two principles that are characteristic of the analogue world. We cannot even give an unequivocal answer to the question of a person's identity – real or virtual.

With reference to the problem being examined in this study, the questions arising are: What does it mean to levy taxes in the "metaverse"? How can tax liability be defined, how can tax payable be measured and – even more radically – do we need taxes in the "metaverse" at all? In the "metaverse", what are the public assets that need to be financed collectively? And beyond that, back in the analogue world: What does it mean for taxation if we are all present in the "metaverse" with our avatars and we create value and generate income there (either for us in the analogue world or for our avatars in the virtual world)?

There are no clear-cut answers to these questions, which shows that our definitions and metrics do not work in the virtual world. We still do not have a clear idea of whether an avatar's haircut really provides a "benefit", whether it represents any "value creation" at all, let alone what we use to pay for it – NFTs or cryptocurrencies. The virtual world is being charted for the first time. And although it has only just begun, in some areas it may soon be too late to make a difference.

1.2 Political dimensions

Digital platforms are now the largest companies in the world and the most valuable by market capitalisation. Most platforms of relevance in the EU are based in the United States, make substantial profits in Europe and yet pay hardly any taxes in many Member States. The platforms are now quasi infrastructure for international data transfer. However, the big data platforms are in the hands of private companies with high market concentration. They are acquiring data in ever greater quantities as users have fewer and fewer options and choices. The resulting reach is monetised via advertising income, among other things. With the rise of the big platforms and the increase in the economic and social power of data, not only has competition changed in many markets, but the boundary with the state and its sovereign rights has also shifted. The shift in power between digital power on the one hand and state power on the other, and the resulting extraterritoriality of digital power, has produced three sets of problems that all have an economic, political and social dimension:

1. The enforcement of the taxing right (→ fair taxation)
2. The enforcement of digital rules (→ digital sovereignty)
3. The enforcement of competition (→ contestable markets)

The theory of economic policy and regulation shows that multiple policy instruments must be used to manage multiple policy targets to ensure regulatory efficiency and exclude conflicting economic policy objectives ("Tinbergen rule"). Fair taxation of large digital service providers cannot and should not mean taxing away their economies of scale resulting from the initial conditions, or extracting monopoly rents. It should therefore be emphasised at this point that a variety of instruments and a holistic approach are needed to regulate the new digital world, the beginnings of which we are only now witnessing, in terms of competitive order, digital sovereignty and fiscal fairness.

1.3 Object of investigation

There are three aspects to the conceptual and policy problem of taxing digital services: (i) the determination of tax liability; (ii) the calculation of tax payable; and (iii) the enforcement of the first two aspects. This paper will argue that there is a concrete and overriding public interest in the fair taxation of, and adequate funding contributions from, these service providers. However, the characteristics of digital services and the market power of multinational service providers make this difficult. It will argue that it is not solely the practical aspects of tax structuring, but also – and indeed primarily – the conceptual problems of the tax system that need to be solved here. The current system of taxation must address these challenges.

Against this background, the aim of this study is to discuss various ways in which digital service providers can nevertheless be made to contribute adequately to public spending in their market jurisdictions. In addition, the study examines whether the instruments under consideration increase the EU's digital sovereignty or provide incentives to reduce data traffic. In Section 2 below, we begin by defining the term "digital service". Section 3 then sets out the special economic features of digital services. Section 4 analyses the economic and social consequences of these special features for the market and trade structure, profit taxation and network use. Section 5 discusses possible policy solutions in the area of tax and trade policy. In this context, we contrast the global tax solution currently being promoted by the OECD (two-pillar solution) with proposals for the introduction of digital duties on system software, a digital sales tax and a digital fee for network access as instruments that can be introduced at the European level. Section 6 concludes with a summary of the strengths and weaknesses of the instruments analysed.

2 Digital services - a definition

2.1 Definitions in academic literature and in EU law

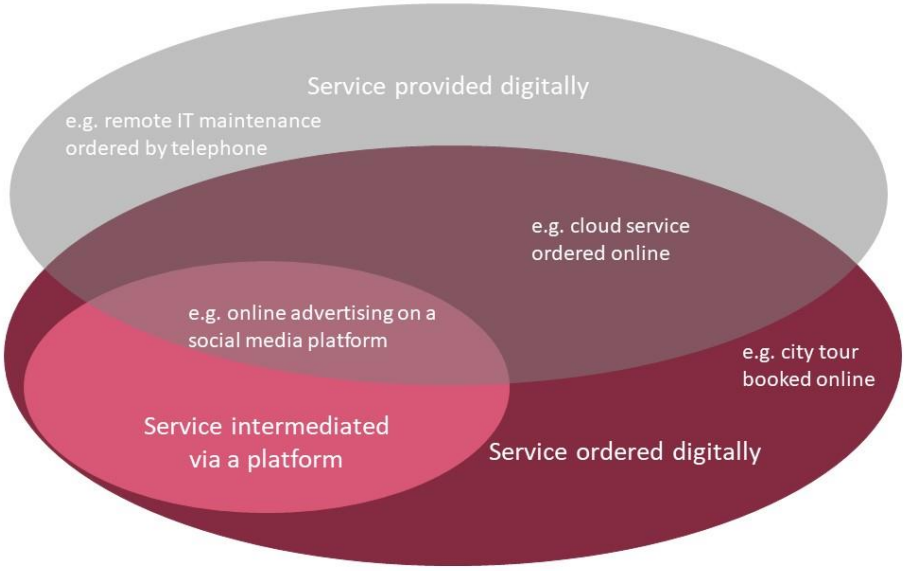
There is no universally accepted definition of the term "digital service". The *Handbook on Measuring Digital Trade*[3] published by the OECD, WTO and IMF alone contains three different definitions of the term. The first focuses on the fact that a service is ordered digitally. Accordingly, a ride service ordered via an app such as Uber would be a digital service, but a traditional taxi ride where the passenger uses a taxi waiting for passengers at a taxi rank, or orders a minicab by phone, would not. According to the second definition, what matters is that the service is provided digitally. This would not cover either the Uber ride or the conventional taxi ride, since in both cases the service is provided physically. The third definition focuses on whether a service has been mediated via a platform. The characteristics of a platform are that there are several buyers and sellers who interact directly with one another and that the platform does not itself provide the services offered. According to this understanding, too, the ride service ordered via Uber is a digital service, whereas the conventional taxi ride is not.

Services mediated via platforms are always ordered digitally, but – as the example of the Uber ride service shows – not necessarily provided digitally. Similarly, services ordered digitally can be delivered digitally, but do not have to be.

Figure 3 below illustrates the differences and points of intersection between the three definitions.

[3] OECD/WTO/IMF (2020), Handbook on Measuring Digital Trade, https://www.oecd.org/sdd/its/Handbook-on-Measuring-Digital-Trade-Version-1.pdfhttps://www.oecd.org/sdd/its/Handbook-on-Measuring-Digital-Trade-Version-1.pdf, (11 July 2022). See also Fritsch, M. / Lichtblau, K. (2021), Die digitale Wirtschaft in Deutschland: Grenzen der Datenverfügbarkeit und erste Schätzungen, IW-Trends, Vol. 48/1, pp. 95-115 (p. 98 et seq.); OECD/WTO/IWF (2020), Handbook on Measuring Digital Trade, p. 32; Ahmad, N. / Ribarky, J. (2018), Towards a Framework for Measuring the Digital Economy, Paper prepared for the 16th Conference of IAOS, https://www.oecd.org/iaos2018/programme/IAOS-OECD2018_Ahmad-Ribarsky.pdf (11 July 2022).

Figure 3: Definitions from the Handbook on Measuring Digital Trade



Source: Authors' illustration.

There are also different definitions of the term "digital service" in EU law. One definition can be found in the Digital Content Directive[4] and the Sale of Goods Directive[5]. Both directives relate to consumer protection. The Digital Content Directive regulates the rights of consumers in contracts concluded between consumers and businesses for the provision of digital content or digital services[6]. The Sale of Goods Directive regulates the rights of consumers in sales contracts between consumers and sellers[7]. According to Art. 2 (2) of the Digital Content Directive and Art. 2 (7) of the Sale of Goods Directive, a digital service is defined as

"a service that allows the consumer to create, process, store or access data in digital form; or

a service that allows the sharing of or any other interaction with data in digital form uploaded or created by the consumer or other users of that service."

According to the recitals of the Digital Content Directive, digital services are services that enable the creation, processing, accessing or storage of data in digital form. This includes "software-as-a-service, such as video or audio sharing and other file hosting, word processing, or games offered in the cloud computing environment and social media".[8] Internet access services, on the other hand, are not covered by the definition.[9] The recitals to the Sale of Goods Directive add that digital services

4 Directive (EU) 2019/770 of 20 May 2019 on certain aspects concerning contracts for the supply of digital content and digital services [Digital Content Directive], ELI: http://data.europa.eu/eli/dir/2019/770/oj.

5 Directive (EU) 2019/771 of 20 May 2019 on certain aspects concerning contracts for the sale of goods, amending Regulation (EU) 2017/2394 and Directive 2009/22/EC, and repealing Directive 1999/44/EC [Sale of Goods Directive], ELI: http://data.europa.eu/eli/dir/2019/771/oj.

6 Digital Content Directive, Art. 1.

7 Sale of Goods Directive, Art. 1.

8 Digital Content Directive, Recital 19.

9 Digital Content Directive, Recital 19.

interconnected with 1a good may include services "which allow the creation, processing or storage of data in digital form, or access thereto, such as software-as-a-service offered in the cloud computing environment, the continuous supply of traffic data in a navigation system, or the continuous supply of individually adapted training plans in the case of a smart watch."[10] According to the Digital Content Directive, neither the intermediation of a ride service nor the ride service itself are digital services.

Another definition of the term "digital services" can be found in the NIS Directive[11]. This contains cybersecurity regulations for Member States and for providers and operators of certain services. Art. 4 (5) defines "digital service" as

"a service within the meaning of point (b) of Article 1(1) of Directive (EU) 2015/1535 of the European Parliament and of the Council which is of a type listed in Annex III."

Annex III, in turn, lists three types of digital service:

"1. Online marketplace.

2. Online search engine.

3. Cloud computing service."

Under this definition, an app like Uber is to be classified as an online marketplace and thus as a digital service. This is because, according to Art. 4 (17), an online marketplace is a digital service that allows consumers and/or traders to conclude online sales or service contracts with traders. The individual ride services do not constitute a digital service.

A third definition of digital service can be found in the proposal for a directive laying down rules relating to the corporate taxation of a significant digital presence[12]. The aim of this proposal was to be able to tax digital companies operating in a Member State even without a physical presence, provided there is a "significant digital presence". In view of the increasing level of digitalisation, the Commission saw the need to move away from the traditional system of taxing corporate profits at the location of a physical permanent establishment. Art. 3(5) of the Significant Digital Presence Proposal defines digital services as

"services which are delivered over the internet or an electronic network and the nature of which renders their supply essentially automated and involving minimal human intervention, and impossible to ensure in the absence of information technology."

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10 Sale of Goods Directive, Recital 14.

11 Directive (EU) 2016/1148 of 6 July 2016 concerning measures for a high common level of security of network and information systems across the Union [NIS Directive], ELI: http://data.europa.eu/eli/dir/2016/1148/ojhttp://data.europa.eu/eli/dir/2016/1148/oj. The NIS Directive will be repealed with effect from 18 October 2024 pursuant to Art. 44 of Directive (EU) 2022/2555 of the European Parliament and of the Council of 14 December 2022 on measures for a high common level of cybersecurity across the Union, amending Regulation (EU) No 910/2014 and Directive (EU) 2018/1972, and repealing Directive (EU) 2016/1148 [NIS 2 Directive], ELI: http://data.europa.eu/eli/dir/2022/2555/oj. The NIS 2 Directive does not contain any reference to Annex III in its definition (Art. 6 (23)).

12 European Commission (2018), Proposal COM(2018) 147 of 21 March 2018 for a Council Directive laying down rules relating to the corporate taxation of a significant digital presence [Significant Digital Presence Proposal].

Although the Proposal was voted down in the Council by Denmark, Finland, Sweden and Ireland,[13] the definition is part of EU law in that it corresponds almost word-for-word to the definition of "electronically supplied services" in Art. 7(1) of the Implementing Regulation to the VAT Directive[14]. Like Art. 11 (1) of the Regulation it replaced[15], it defines electronically supplied services as

"services which are delivered over the internet or an electronic network and the nature of which renders their supply essentially automated and involving minimal human intervention, and impossible to ensure in the absence of information technology."

With regard to the criterion of minimal human intervention, what matters is the human intervention on the part of the supplier. The user's involvement is irrelevant.[16] Human intervention is still deemed to be minimal if the supplier sets up a system, regularly maintains the system or repairs it in cases of problems linked with its functioning.[17]

Digital services in this sense include, for example, intermediation of an Uber ride service, hosting websites,[18] providing software and associated software updates,[19] providing online storage space on demand,[20] providing online advertising space[21] and providing access to an online marketplace[22] such as Amazon. In contrast, the provision of a digitally ordered ride service, the purchase of goods via such a marketplace[23] or another online medium[24], the provision of access to the internet,[25] videophony[26] or the provision of consulting services via e-mail[27] are not digital services.

Digital services under the NIS Directive are also digital services within the meaning of the Significant Digital Presence Proposal. They can also be digital services according to the Digital Content Directive, but do not have to be, because the consumer status of the users does not play a role under the NIS Directive, in contrast to the Digital Content Directive. For the same reason, the Significant Digital Presence Proposal also covers services that are not digital services under the Digital Content Directive. Conversely, the Digital Content Directive can cover services that the Significant Digital Presence Proposal does not, as only the latter requires that the service be automated with minimal human intervention.

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13 Real Instituto Elcano (2019), An unfair tax policy de-legitimizes the EU, https://www.realinstitutoelcano.org/en/commentaries/an-unfair-tax-policy-de-legitimizes-the-eu/ (4 August 2022).

14 Council Implementing Regulation (EU) No. 282/2011 of 15 March 2011 laying down implementing measures for Directive 2006/112/EC on the common system of value added tax [VAT Implementing Regulation], ELI: http://data.europa.eu/eli/reg_impl/2011/282/oj.

15 Council Regulation (EC) No 1777/2005 of 17 October 2005 laying down implementing measures for Directive 77/388/EEC on the common system of value added tax, ELI: http://data.europa.eu/eli/reg/2005/1777/oj.

16 Significant Digital Presence Proposal, p. 9.

17 Significant Digital Presence Proposal, p. 9.

18 Significant Digital Presence Proposal, Annex II (a); VAT Implementing Regulation, Annex I (1) (a).

19 Significant Digital Presence Proposal, Art. 3 (5) (a); VAT Implementing Regulation, Art. 7(2)(a).

20 Significant Digital Presence Proposal, Annex II (e); VAT Implementing Regulation Annex I (1) (e).

21 Significant Digital Presence Proposal, Annex II (r); VAT Implementing Regulation, Annex I (3) (g).

22 Significant Digital Presence Proposal, Art. 3 (5) (d); VAT Implementing Regulation Art. 7 (2) (d).

23 Significant Digital Presence Proposal, Art. 3 (5).

24 Significant Digital Presence Proposal, Recital 6.

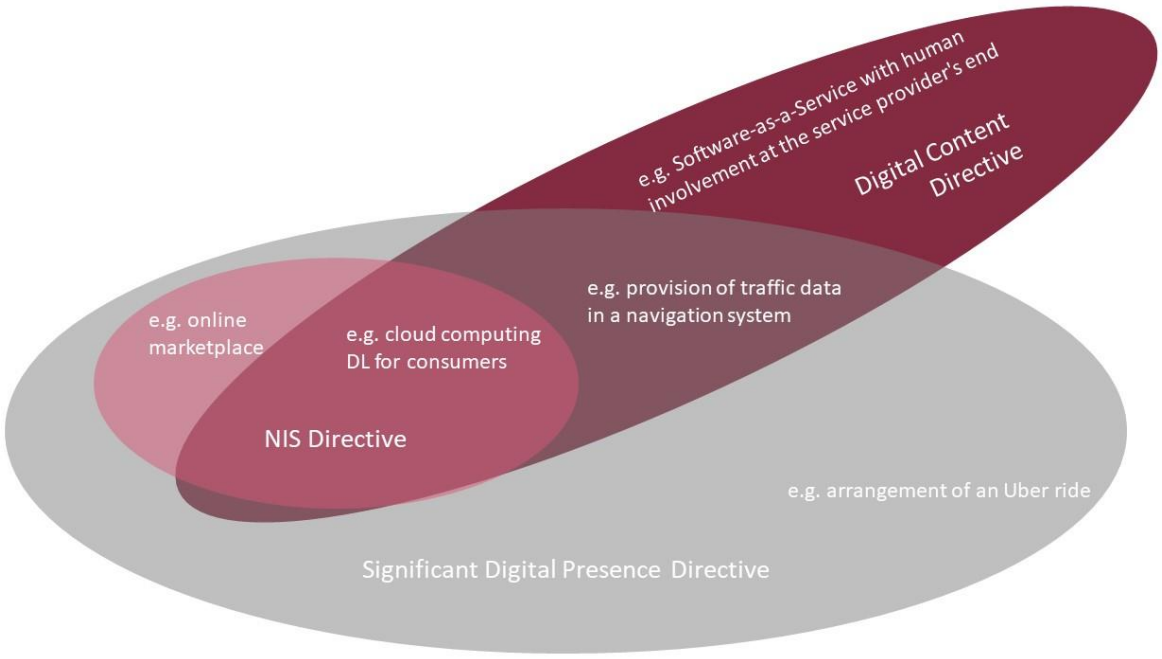
25 Significant Digital Presence Proposal, Annex III (r); VAT Implementing Regulation Art. 7 (3) (b) in conjunction with Art. 6a (1) (g).

26 Significant Digital Presence Proposal, Annex III (q); VAT Implementing Regulation Art. 7 (3) (b) in conjunction with Art. 6a (1) (a).

27 Significant Digital Presence Proposal, Annex III (i); VAT Implementing Regulation Art. 7 (3) (i).

Figure 4 below illustrates the differences and points of intersection between the three definitions in EU law.

Figure 4: Definitions in EU law



Source: Authors' illustration.

2.2 Discussion about the suitability of the definitions

Focusing on the digital ordering or provision of the service, or on intermediation via a platform, is not appropriate for the purposes of this study for a number of reasons. As illustrated, if the classification hinges on whether a service is ordered digitally, then an Uber ride, for example, would be a digital service. But the provision of such a ride service is not made possible solely by information technology and digitalisation. Focusing solely on digital delivery, on the other hand, would also cover services such as customer-specific online support, which in economic terms are significantly different from services such as search engines or social networks, as they lack characteristics such as economies of scale or network effects. Focusing solely on services mediated by platforms would in turn exclude services such as cloud computing services (there is no intermediation between software provider and user) and at least parts of the online advertising market (where advertising space is booked directly with the provider, without the intervention of an intermediary).

The definition of service used in the Digital Content Directive and the Sale of Goods Directive is specific to consumers and therefore not suitable for B2B transactions, such as the intermediation or delivery of online advertising. It is thus not appropriate for a study that focuses, among other things, on the taxation of digital companies whose customers are by no means limited to consumers.

The definition set out in the NIS Directive is also too narrow, covering only online marketplaces, online search engines and cloud computing services. It leaves out important business areas such as online advertising in social networks.

The definition used in the Significant Digital Presence Proposal is considerably more pertinent because, as shown, it comes specifically from the context of taxation of digital companies. It is also appropriate because it looks specifically at whether a service is, by its nature, essentially automated with minimal human intervention and can be provided only through information technology. It thus focuses specifically on those services that have only become possible through digitalisation and will therefore form the basis for this study.

3 Special economic features of digital services

Digital service providers have some special characteristics that set them apart from other service providers. Although some of these special features also apply to traditional companies and not all of them apply to all digital service providers, they are nevertheless characteristic of digital service providers.[28] The special economic features of digital services are presented in the following six subsections. They also help to explain the rise of "platforms" as vehicles for the use and monetisation of data.

3.1 Importance of network effects

Digital service providers often offer platform services. Platform services consist of connecting platform users with one other. For example, an e-commerce platform connects suppliers of a product with potential buyers, while a social network enables interaction between users. A media sharing platform connects users who are looking for media with users who want to share media. In addition, platforms often connect advertisers with potential consumers. An operating system also serves as a platform, as it connects the users and programmers of an app.

The connection that a platform creates usually improves in correlation to the number of active users on the platform. The more sellers there are on an e-commerce platform, for example, the greater the chances of a potential buyer finding a suitable offer. The same is true in reverse. This means that existing active platform users benefit directly or indirectly from every new platform user.[29] On social media, platform users are also generators of platform content and thereby directly create value for other users. This “network effect” is self-reinforcing: the more users a platform has, the more attractive it is for new users. Network effects are therefore beneficial to users of a platform.

However, the concentration of lots of users on one platform also favours the establishment of a small number of platform providers on the market, who thus become very powerful.[30] Digital markets, in which network effects play a significant role, therefore often have an oligopolistic market structure.[31] This can lead to restricted competition and consequently higher costs for users.

3.2 Importance of economies of scale

Companies that provide digital services often benefit from economies of scale.[32] Economies of scale exist when a company's average costs decrease as the production volume of a good increases. This correlation is not exclusive to digital service providers – it also exists for companies in other industries, such as car manufacturers or pharmaceutical companies. However, the economies of scale available to digital companies are particularly large because the costs incurred by an additional transaction are

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28 See OECD (2014), OECD/G20 Project on Base Erosion and Profit Shifting – Addressing the Tax Challenges of the Digital Economy. Action 1: 2014 Deliverable, p. 98.

29 See Schweitzer, H. et al. (2018), Modernisierung der Missbrauchsaufsicht für marktmächtige Unternehmen, p. 9.

30 See Marsden, P. / Podszun, R. (2020), Restoring Balance to Digital Competition – Sensible Rules, Effective Enforcement, p. 13.

31 There are also effects that counteract concentration. These include, in particular, means by which the platforms can differentiate themselves as well as the capability of individual platform sites to multihome or to switch providers.

32 See Schweitzer, H. et al. (2018), Modernisierung der Missbrauchsaufsicht für marktmächtige Unternehmen, p. 93.

usually close to zero.[33] The cost to Google of another search request, for example, is vanishingly small. The same applies to the costs incurred by a hotel booking platform through an additional hotel booking. The reason for the low cost of an additional transaction is the high level of digitalisation and automation and the minimal human intervention. Digital service providers can thus increase their reach and size enormously with only a small amount of additional manpower ("scale without mass").[34]

Economies of scale mean that digital service providers benefit more from an increase in the size of the sales market than companies in other industries. Like network effects, economies of scale have a concentration-enhancing effect. This is because the cost per user is significantly lower for large digital service providers than for small ones.

3.3 Importance of economies of scope

Another characteristic is economies of scope. This refers to the phenomenon whereby the cost of providing a service decreases as the company's product range grows. This can take several forms in the context of digital services. Existing server infrastructure can be used to expand or differentiate website content, making it cheaper to tap into new digital markets than it would be for a start-up. On the development side too, an existing market presence can reduce costs as existing technical knowledge and information about customer behaviour can be applied to related digital services. Finally, users can also experience a form of economies of scope, namely when a provider's various service offerings are networked together. Users can use their existing user accounts and familiar user environment to access additional services. Compared to isolated competitor systems, the entry costs are lower. Economies of scope thus reinforce the trend toward concentration in individual markets. At the same time, exploiting these economies of scope can help to expand the radius of action to related markets, both horizontally and vertically. Trading platform operators can use the knowledge gained about customer preferences to sell and supply their own products via their platforms or buy out existing product suppliers (vertical integration). Likewise, they can expand their business to adjacent areas.

3.4 Importance of data

Many companies collect and evaluate data from their customers, but digital service providers are particularly well placed to do this for a number of reasons. Firstly, communication with their users is digital and the data is therefore already available in digital form. This makes the collection of data very cheap. Secondly, as explained above, there are often only a handful of digital providers operating in a market. Digital service providers thus have a very large number of users from whom they can collect data. And thirdly, users of digital services often interact extensively with the service provider because they are actively involved in content creation. For example, users of a video-sharing platform not only watch the videos available there, but also comment on them, forward them to other users or create videos themselves, which they then make available on the platform. All three phenomena mean that digital service providers often have more data about their users than other companies have about their customers. Digital service providers use this data to improve their service. For example, Facebook's

[33] See Marsden, P. / Podszun, R. (2020), Restoring Balance to Digital Competition – Sensible Rules, Effective Enforcement, p. 13.

[34] See OECD (2014), OECD/G20 Project on Base Erosion and Profit Shifting – Addressing the Tax Challenges of the Digital Economy. Action 1: 2014 Deliverable, p. 101.

auctioning algorithm ensures that ads are targeted at specific user groups, which increases the value of the advertising space.

3.5 Importance of lock-in effects

Lack of interoperability between systems of different digital service providers and lack of portability of user data when switching providers create a shielding effect which ensures that, once gained, a dominant position can be locked in. First movers are thus given the opportunity to build up a dominant position both in depth (growing number of users for existing products) and in breadth (transfer of market power to neighbouring markets) and to maintain it over the long term. This is accompanied by growing income potential, especially through greater reach and more data.

3.6 Importance of intangible assets

Intangible assets are becoming increasingly important for the competitiveness of companies.[35] Intangible assets can be subdivided according to whether or not they can be legally protected. Legally protected intangible assets include patents, registered designs, utility models and trademarks. Intangible assets that are not legally protected include the human capital of the workforce, data and – especially in the case of platforms – the size of the network.

According to International Accounting Standard 38, an intangible asset is "an identifiable non-monetary asset without physical substance."[36] An asset is further defined as "a resource

(a) controlled by an entity as a result of past events; and

(b) from which future economic benefits are expected to flow to the entity.“[37]

Intangible assets are particularly important in the provision of digital services[38] because the profits of companies that provide such services depend to a large extent on their intangible assets.[39] Google's success, for example, is due in large part to the search engine's algorithm. A global ranking of companies by the value of their intangible assets confirms the importance of intangible assets for digital service providers. For example, seven of the top ten places are occupied by companies that provide digital services.[40]

Since intangible assets can generate income, for example through royalties, multinational corporations can reduce their tax burden by allocating such assets to a subsidiary in a low-tax country and paying

35 See OECD (2021), Statement on a Two-Pillar Solution to Address the Tax Challenges Arising from the Digitalisation of the Economy.

36 Commission Regulation (EC) No 1126/2008 of 3 November 2008 adopting certain international accounting standards in accordance with Regulation (EC) No 1606/2002 of the European Parliament and of the Council, ELI: http://data.europa.eu/eli/reg/2008/1126/oj.

37 Commission Regulation (EC) No 1126/2008 of 3 November 2008 adopting certain international accounting standards in accordance with Regulation (EC) No 1606/2002 of the European Parliament and of the Council, ELI: http://data.europa.eu/eli/reg/2008/1126/oj.

38 See OECD (2018), Tax Challenges Arising from Digitalisation – Interim Report 2018, p. 24.

39 See OECD (2018), Tax Challenges Arising from Digitalisation – Interim Report 2018, p. 53.

40 See Brandirectory (2021), GIFT 2021, p. 32.

tax on the income generated by these intangible assets there.[41] These are often countries with so-called patent box regimes, under which profits from intangible assets are taxed at a lower rate.[42]

It is easy to change the allocation of intangible assets within a group because such assets are highly mobile compared with plant or buildings. They can also be managed remotely.[43] The transfer prices actually payable in the case of an intra-group transfer and the associated tax payments can be minimised relatively easily.[44] Intangible assets are often company-specific, which means no market value can be determined. The effect of the tax-optimised allocation of intangible assets is that intangible assets are no longer utilised nor therefore taxed in the country where they were developed.[45] The country in which the service is provided can thus be decoupled from the country of taxation.

3.7 Locating the service provision

It is a fundamental problem of digital services that the place where the service is provided cannot be clearly determined. In the case of analogue services such as hairdressing or transport services, the service provider and the service recipient must come together geographically, in one place, as this is the only way the service can be provided. This is not the case for digital services, as the transport of data via digital networks enables geographical separation. In the case of these services, it is possible to take the position that the service consists of programming algorithms or using them to deliver the actual service. In that case, the services would be provided at the location of the provider. On the other hand, a service always requires a performance vis à vis a specific person. Accordingly, one could also take the view that the service is only provided when a user successfully retrieves digital content. The place of service provision would then be the user's location. The issue firstly gives rise to confusion regarding the theory for determining the actual location of digital value creation, which is exacerbated by the metaverse. And secondly, the geographical separation also enables companies to serve their target markets from afar which has practical implications for the international taxation system (see Section 4).

3.8 Physical presence in the target market

Digital service providers are often able to provide their service in countries where they have no physical presence.[46] Unlike numerous other services such as a visit to the cinema, a business meal or an operation, the provision and consumption of a digital service do not have to occur in the same place. Then there are the short transport times and low costs of digital services. Both these factors mean that in many cases, it is no longer necessary to have a branch in the user's country. Due to increasing

41 European Commission (2018), Communication COM(2018) 146 of 21 March 2018, Time to establish a modern, fair and efficient taxation standard for the digital economy, p. 5.

42 See ZEW (2017), Steuerliche Standortattraktivität digitaler Geschäftsmodelle, p. 51 onwards.

43 See Fuest, C. et al. (2018), Die Besteuerung der Digitalwirtschaft. Zu den ökonomischen und fiskalischen Auswirkungen der EU-Digitalsteuer, p. 31.

44 For an example of how intangible assets are transferred, see Fuest, C. et al. (2013), Profit Shifting and 'Aggressive' Tax Planning by Multinational Firms: Issues and Options for Reform, ZEW Discussion Paper No. 13-004, p. 4 onwards.

45 See OECD (2014), OECD/G20 Project on Base Erosion and Profit Shifting – Addressing the Tax Challenges of the Digital Economy. Action 1: 2014 Deliverable, p. 98.

46 European Commission (2018). Questions and answers on a fair and efficient tax system in the EU for the digital single market. European Commission – Fact Sheet, 21 March 2018, MEMO/18/2141, https://ec.europa.eu/commission/presscorner/detail/en/MEMO_18_2141 (4 August 2022).

digitalisation, however, this also applies to companies in other sectors. They too are often able to serve customers in countries where they do not have a branch.[47]

As proximity to the customer becomes less important, other factors become more significant for the choice of location, such as energy costs, taxation level[48] or the regulatory framework. Competition between states to attract companies thus becomes more intense. Small states, in particular, may find it advantageous to entice digital service providers into the country by offering low taxes. After all, if a digital service provider, operating across the EU, pays tax on all its EU profits, in one small country, this can represent a significant revenue stream for a small Member State, even when the tax rate is low.

One example of this is *Google Ads*. Although Google has numerous offices in the EU, this advertising service is provided centrally by Google Ireland Limited, based in Dublin.[49] This has far-reaching tax consequences because the payments made by *Google Ads* customers in Germany flow to Ireland. The income generated in Germany by *Google Ads* cannot be taxed in Germany.[50]

The geographical separation between the provision and consumption of a digital service stretches the principle of the permanent establishment as a basis for taxation to its limits. Service providers with users in a country are economically active in that country even if they don't have a physical presence there. They collect data in the user's country, but this economic activity is not taxed because the user does not receive any payment for it. Instead, the user is allowed to use the service partially or even entirely for free. The user's activities, such as rating, sharing or creating content, also constitute economic activity that takes place in the user's country. The user is not usually paid for this activity, so it is not taxed in the state where it takes place. In addition, digital service providers benefit from public services in the user's state, such as the administration of justice or public security.

Digitalisation has also led to companies being able to distribute individual business activities and their assets across several states while managing them centrally. This is particularly true for digital service providers, as the production of their services and related business activities, such as data collection, information processing or research, are usually not tied to a specific location.[51]

3.9 Importance of user contributions ("prosumers")

In many digital services, especially platforms, users contribute to the value creation of the digital service. This can happen simply through their use of the platform, as this generates positive network effects for the platform operator, increasing the value of the platform. Platform users are not merely passive consumers of digital content – they also provide various types of content through their activities. They are therefore also producers of a digital good, hence the term "prosumer" used in the literature[52]. This begins with rating and comment functions, and on social media extends to an information system kept alive entirely by users. In this way, every user contributes to the attractiveness

47 See OECD (2018), Tax Challenges Arising from Digitalisation – Interim Report 2018, p. 53.
48 ZEW (2017), Steuerliche Standortattraktivität digitaler Geschäftsmodelle. Steuerlicher Digitalisierungsindex 2017.
49 See Google (2022), Local Services Additional Terms for Providers, https://www.google.com/ads/localservices/TC-BE-de-2020-09.html (4 August 2022).
50 Buchhaltung-Tipps.de (2016), Double Irish with a Dutch Sandwich using the example of Google, https://www.buchhaltung-tipps.de/steuerrecht/double-irish-with-a-dutch-sandwich-am-beispiel-von-google (4 August 2022).
51 See OECD (2014), OECD/G20 Project on Base Erosion and Profit Shifting – Addressing the Tax Challenges of the Digital Economy. Action 1: 2014 Deliverable, p. 103.
52 Ritzer, G. (2015), Prosumer capitalism. The Sociological Quarterly, Vol. 56(3), pp. 413-445.

of the platform for other users with their content. Here too, there is a clear size-dependent effect: the greater the number of users on a platform, the greater the probability that an individual user will find content that interests them. Larger platforms are also more likely than smaller platforms to allow users to pursue different spheres of interest (membership of different subject groups) via a single access point. This specific network effect for platforms thus reinforces the tendency toward market concentration. Ultimately, consumers contribute to the value creation of a platform by making their data available. The more active a user is, the more extensive the data he or she provides.

However, users receive little compensation for their contributions in the current system. As a result, user contributions give rise to questions about how large platforms are taxed, given that user contributions also increase the potential income that platform operators can generate by renting out digital advertising space, for example, because they make the space more attractive.

4 Market impact and regulatory issues

4.1 Consequences for economic and competition policy

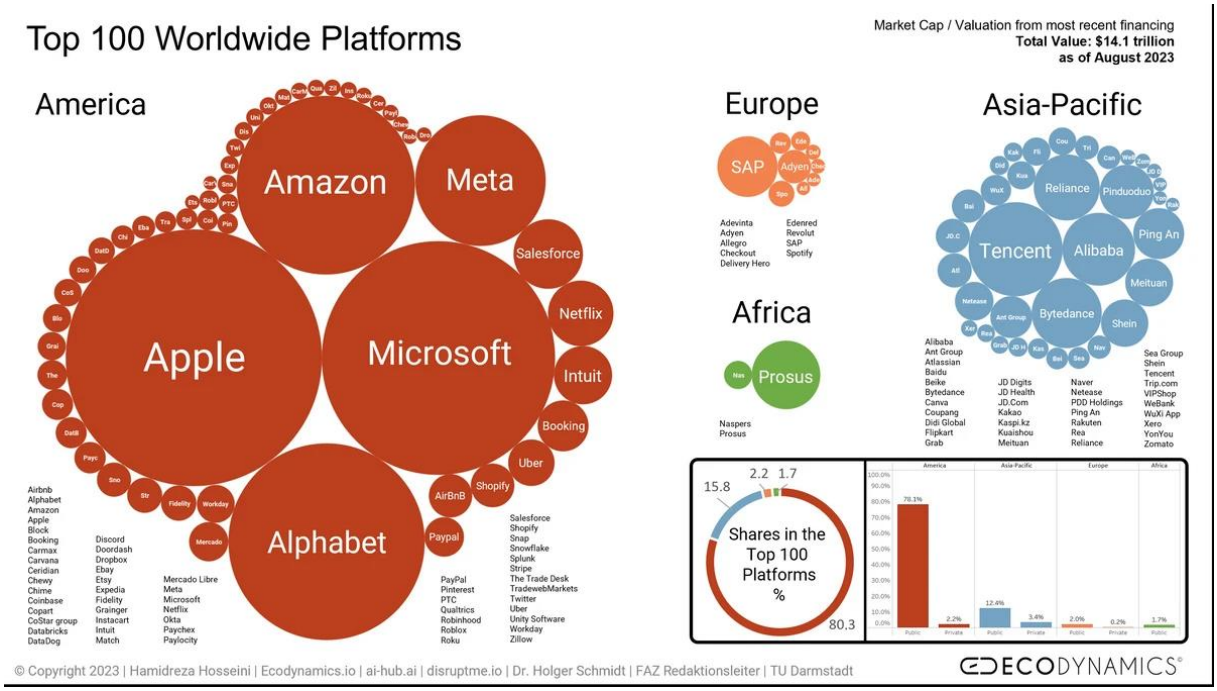
4.1.1 High market concentration

The special economic features of the provision of digital services have implications for market structure. The network effects and the economies of scale and scope, and the mutual reinforcement of these three effects in the provision of digital services have led to a situation where a small number of providers dominate the market in some digital service markets – especially platform markets. The problems this creates for competition in these markets are so great that in 2021, Section 19a was added to the German Competition Act (GWB) to safeguard competition in digital service markets. This provision allows the Federal Cartel Office (*Bundeskartellamt*) to impose special conduct obligations on "undertakings of paramount significance for competition across markets." So far, the Federal Cartel Office has identified five digital service providers as "undertakings of paramount significance for competition across markets", namely Apple[53], Alphabet[54], Amazon [55], Meta[56] and Microsoft. In four cases, the Federal Cartel Office's decision was based partly on the fact that the companies have competitive advantages due to user data. This user data enables the companies to market targeted adverts and continuously develop their services.[57]

All five providers are headquartered in the USA. This is no coincidence, as that is where most of the major[58] digital service providers are based. Specifically, 54 of the largest 100 platforms are based in the US. They account for 66 per cent of the market capitalisation of the 100 largest platforms worldwide (see Figure 5).

53 See Federal Cartel Office (2023), press release dated 5 April 2023.
54 See Federal Cartel Office (2022), press release dated 5 January 2022.
55 See Federal Cartel Office (2022), press release dated 6 July 2022.
56 See Federal Cartel Office (2022), press release dated 4 May 2022.
57 See Federal Cartel Office (2022), press release dated 5 January 2022.
58 Measured by market capitalisation.

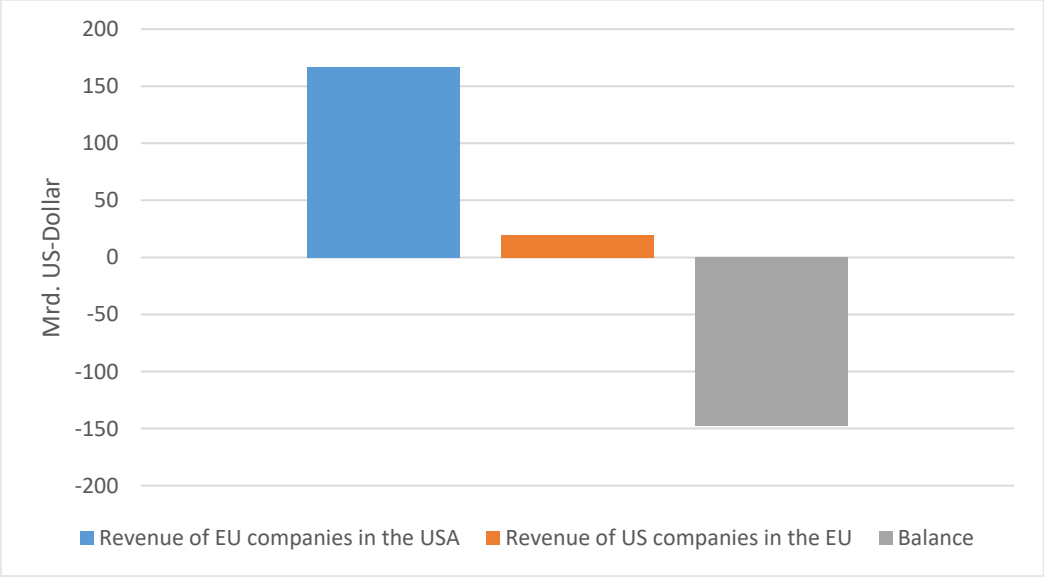
Figure 5: Market capitalisation and platform head office



Source: Schmidt/Hosseini (2020): https://www.platformeconomy.com/blog/newtop100.

However, global market capitalisation does not provide any information on the position of companies on local markets. One way to assess market position on local markets is to use revenue data from the annual reports of multinational digital service providers. The reported foreign revenue of the parent companies also includes the revenue of subsidiaries located abroad. Figure 6 summarises the results of the authors' own estimates of the revenues generated from digital services in 2020 by US digital service providers in the EU and by EU companies in the US (see Box 2 for methodology). It shows a major imbalance between the US and the EU in this regard.

Figure 6: Revenue generated by digital services on foreign markets in 2020



Source: Own calculations.

Box 2: Estimate of foreign revenues of digital service providers

The digital giants often generate their revenue not solely from the provision of digital services, but also, for example, from the sale of hardware. The share attributable to digital services must therefore first be derived from total revenue. The allocation to geographical area also needs to be refined, as US corporations are not yet required to break down the revenues reported in the annual reports to the level of individual country or economic area. We therefore had to estimate our own aggregates for the volume of revenue generated in the EU area, based on the available existing geographical distribution. Given the scope for companies to break down their sales, the steps involved in producing this estimate vary from case to case.

Fundamentally, this type of *bottom-up approach* cannot cover all digital companies operating across borders. It is appropriate to focus on the companies that are significant in terms of revenue size. The starting point is therefore the various ranking lists available on the internet on the global companies with the highest revenues in sectors related to the digital economy. The lists used were firstly the Global Fortune 500 ("Technology" segment), secondly the Forbes Global 2000 ("Software & Programming" segment) and thirdly the "List of largest Internet companies" compiled by Wikipedia authors.

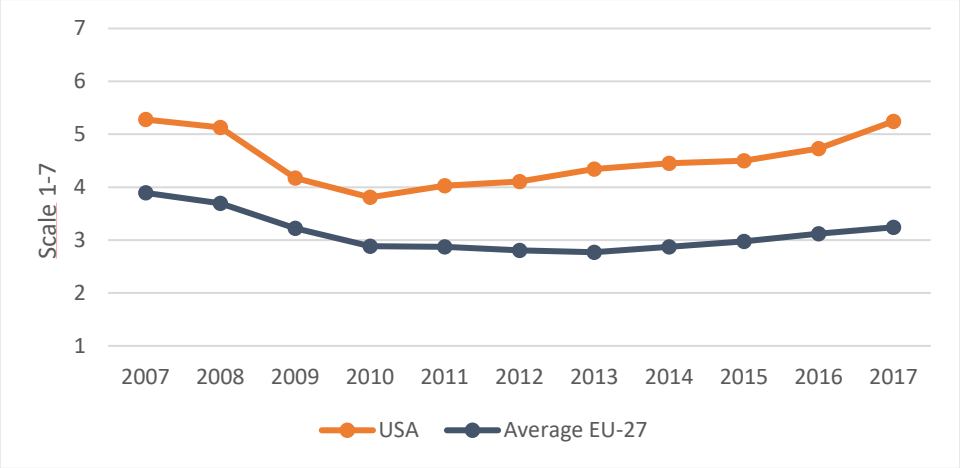
There is some overlap between the lists. The total number of large companies identified in this way was 102. In a first filtering step, companies whose field of activity does not include digital services were removed from the list. The second step was to exclude those companies whose headquarters are not located either in the USA or in the EU. This left 68 companies. Only two of them have their headquarters in the EU: SAP and Spotify. Two other EU digital companies (Amadeus and Atos) were added separately, as they also operate globally. The annex shows the list of included companies with a description of their main business areas. Estimates of the share of digital services as a proportion of total sales were then made for the remaining companies.

A two-part method was used to determine the revenue shares. For the US and EU companies with the highest global revenues, a case-by-case calculation was made based on detailed information from the companies' 2020 annual reports. The US companies were Alphabet, Amazon, Apple and Facebook (Meta). On the EU side, all four companies (Amadeus, Atos, SAP and Spotify) were considered in detail. In the case of the American companies, the procedure consisted of extrapolating the revenues generated in mainland Europe, which can be taken from the annual reports, down to the revenues in the EU market. The revenues generated specifically from digital services were first determined and then split between EU and non-EU Europe. The average revenue per user (ARPU) was one of the parameters used for this purpose. In some cases, the proportion of users within the EU region was taken directly from the business statistics (Facebook), while in others it was estimated from the EU share of the global number of internet users (Alphabet, Apple). The revenues of the EU companies in the USA could be taken directly from the annual reports.

A simplified estimation procedure was used for the remaining companies (based exclusively in the USA). Revenue segments that clearly do not relate to digital services were excluded. The companies' EU revenues were then determined in each case by multiplying global revenues by a uniform factor of 0.15. This is the average of the estimated EU revenue shares of Alphabet, Amazon, Apple and Facebook (Meta) in 2020.

One reason for the dominance of US digital service providers is the size of the US market. Digital companies were able to generate economies of scale, network effects and data very quickly there in the early phase of digitalisation. All three aspects were conducive to rapid growth. Digital service providers in the EU single market were not able to replicate this to the same extent, as language barriers and legal differences in the single market hindered rapid growth. Another factor was the greater availability of venture capital in the USA. The United States has consistently ranked at the top of the Global Competitiveness Report's Venture Capital Availability Indicator ever since it was first compiled. The EU countries, on the other hand, are ranked significantly lower on average (see Figure 7).

Figure 7: Comparison of venture capital availability in the US and the EU



Sources: World Economic Forum (2022); cep.

Another cause is a geographically uneven distribution of ideas due to factors such as the special global attractiveness of the US as a location for research and higher education. International patent statistics support this view. Over the last 25 years, significantly more ICT patents (measured by IP5 patent families[59]) with inventors from the US have been registered each year than ICT patents with inventors from EU Member States, both in absolute terms and per capita.[60]

Finally, government influence has also played a role, which is why US digital companies have grown rapidly. Alphabet, Amazon, Apple, Meta and Microsoft, the five largest companies in the US digital economy, have each received subsidies from US state or local governments that cumulatively total billions of dollars over time.[61] Particularly in the case of subsidies in later growth phases, however, it is not clear to what extent they really drove the growth process or whether the subsidy decision was in fact more of a reaction to favourable growth prospects.

American digital service providers have also benefited from generally favourable government-created conditions, particularly a good government or government-supported research and education

[59] IP5 patent families refer to patents filed in at least two intellectual property offices worldwide, including one of the five largest IP offices (namely, the European Patent Office, the Japan Patent Office, the Korean Intellectual Property Office, the United States Patent and Trademark Office and the National Intellectual Property Administration of the People's Republic of China).

[60] OECD (2022), Patents Statistics, https://stats.oecd.org/Index.aspx?DataSetCode=PATS_IPC# (4 August 2022).

[61] Good Jobs First (2022), Subsidy Tracker, https://subsidytracker.goodjobsfirst.org/ (5 August 2022). However, the available database is incomplete and time-limited.

infrastructure, few regulatory restrictions on data use and a well-developed telecommunications infrastructure.

Last but not least, US-based digital service providers have also benefited from a fortuitously favourable legal situation. One example of this is the option Amazon has long used in the USA of not paying sales tax[62] on sales in US states where it did not have a physical presence (see Box 3).[63]

All these effects facilitated the rapid growth of US digital service providers. By the time they started offering their services in the EU following an initial growth phase in the USA, they were already significantly larger than their European competitors. They were able to offer better and/or cheaper products due to the larger networks and economies of scale, as well as the greater volume of data. Upon entering the European market, US digital service providers were therefore able to quickly take market share from European competitors. In Germany, for example, the market entry of Facebook led to the social network "VZ" being forced out of the market.[64]

In other cases, American digital companies have bought out European competitors. Ebay entered the German market by buying the internet auction platform Alando.de and renaming it Ebay.de. Here too, US digital companies benefited from the economies of scale of the American market because the financial resources of the American digital service providers were greater than those of their European competitors. As a result, US digital service providers often dominate the European domestic market.

62 Sales tax is similar to value added tax but is only levied at the retail level.

63 Owen, R. (2013), The "Amazon Tax" Issue: Washing Away the Requirement of Physical Presence for Sales Tax Jurisdiction Over Internet Businesses. U. Ill. JL Tech. & Pol'y, 231.

64 See Die Presse (2018), Warum Facebook studiVZ ablöste, http://www.diepresse.com/5485439/warum-facebook-studivz-ableoste (5 August 2022).

Box 3: Sales tax case study

Until 2018, online retailers in the USA were not required to collect and pay sales tax* if they did not have a physical presence in the customer's state. This rule was based on two US Supreme Court decisions. *National Bellas Hess v. Department of Revenue of Illinois*** and *Quill Corp. v. North Dakota**** in 1967 and 1992, respectively, in which the US Supreme Court ruled that business owners could not be required to collect and remit sales tax if they did not have a physical presence, i.e. an office or employees, in the customer's state. The background to the decision was that there is no standard federal sales tax in the USA. Instead, sales tax is set at state level. In many states, subordinate public authorities such as municipalities, counties, townships and even school districts may also levy a sales tax.***** This is then added to the state's sales tax. This type of tax structuring results in there being more than 11,000 sales tax jurisdictions in the United States. When the US Supreme Court handed down the two rulings, compliance with the many different sales tax rules would have been extremely burdensome for mail order companies. With digitalisation, however, this became far less onerous. By entering the zip code of the recipient's home address into an appropriate computer program, the sales tax can easily be determined and added to the invoice. Amazon was one of the companies that took advantage of the opportunity to sell goods without sales tax from 1995 to 2012******. This gave it a competitive edge, especially over bricks-and-mortar retailers.

As these two court rulings resulted in lower sales tax revenues and the effort required to calculate the correct sales tax has decreased due to digitalisation, the US Supreme Court overturned its precedent in 2018 (case of *South Dakota v. Wayfair, Inc.*). Since then, an "economic nexus" has been sufficient for companies to have to collect and pay sales tax when they supply goods to a customer. The state of South Dakota has defined economic nexus based on revenue and number of transactions. According to this definition, a company has an economic nexus in South Dakota if it generates annual revenue of $100,000 or more in South Dakota or makes more than 200 separate in-state sales transactions per year. Many other states have followed South Dakota's lead and enacted similar laws.

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* Sales tax is similar to value added tax, but is only levied at the retail level.
** United States Supreme Court, National Bellas Hess v. Department of Revenue of Illinois, 386 U.S. 753 (1967).
*** United States Supreme Court, Quill Corp. v. North Dakota, 504 U.S. 298 (1992).
**** See Sebisch, J. / Päffgen, C. (2020), Besteuerung in den US-Bundesstaaten, https://www.gtai.de/de/trade/usa/recht/besteuerung-in-den-us-bundesstaaten-211592.
***** Wasserman, S. (2012), The Amazon Effect, The Nation 29 May 2012, https://www.thenation.com/article/archive/amazon-effect/.

Entry into the European market enabled US digital service providers to exploit network effects and economies of scale to an even greater extent. It also allowed them to collect even more user data. Additional opportunities for expanding existing market power arose from the use of vertical and horizontal integration, further extending the existing competitive edge over European digital service providers.

4.1.2 Base erosion and profit shifting

In parallel with their expansion into the EU, many American digital service providers began "aggressive tax planning"[65], making intensive use of opportunities offered by international tax law (see Box 4). Aggressive tax planning[66] is made easier by the fact that digital service providers can transport their services quickly and at low cost via the internet. This means they do not have to have a physical presence close to their customers or users. In this way, multinational digital companies can benefit from the revenue potential of large markets without having to transfer part of the profits generated to local or state authorities in the form of taxes. Instead, they can set up shop in countries where they don't have to pay much in taxes and provide their service from there.

Even if they establish a subsidiary in a country, there is no guarantee that that country will be able to tax the profits generated there. This is largely due to the second tax-relevant characteristic of the provision of digital services, namely the major importance of intangible assets. Intangible assets in the form of software not only provide the basis of the digital service providers' business model – they also allow the providers to shift their subsidiaries' profits between different countries for tax optimisation purposes. The difficulty in of determining an objective market value for intangible assets means there is a lot of leeway when it comes to their valuation. In addition, the income from these assets can be used to shift profits towards low-tax countries through internal licensing models. This is achieved by transferring ownership of software patents or other intangible assets to the subsidiaries in these countries. These subsidiaries then grant licences for the use of the assets to subsidiaries in countries with higher tax rates. The payments made by the licensees reduce their taxable profits and increase pre-tax profits in the low-tax country. Since the uncertainty in determining the value of the asset also extends to the question of what is an appropriate level of internal transfer pricing, multinational digital companies thus have a very flexible tool to reduce their global tax burden.

Over time, complex profit-shifting constructs have become established. For example, Apple was able to reduce its tax payment in the EU by having Ireland-based companies "Apple Sales International" and "Apple Operations Europe" as contractual partners for nearly all sales of Apple products in the EU.[67] These two Irish subsidiaries of "Apple Inc. USA" used the intangible assets of their US parent. They also made payments to "Apple Inc. USA" to fund research & development of intangible assets carried out on their behalf in the USA. The Irish subsidiaries' payments have funded half of all the research that the Apple Group conducts in the United States. As a result of these payments to the US parent company, Apple's Irish subsidiary "Apple Sales International" managed to reduce its 2011 profits of 16 billion euros to 50 million euros.[68] Figure 8 below illustrates Apple's tax planning.

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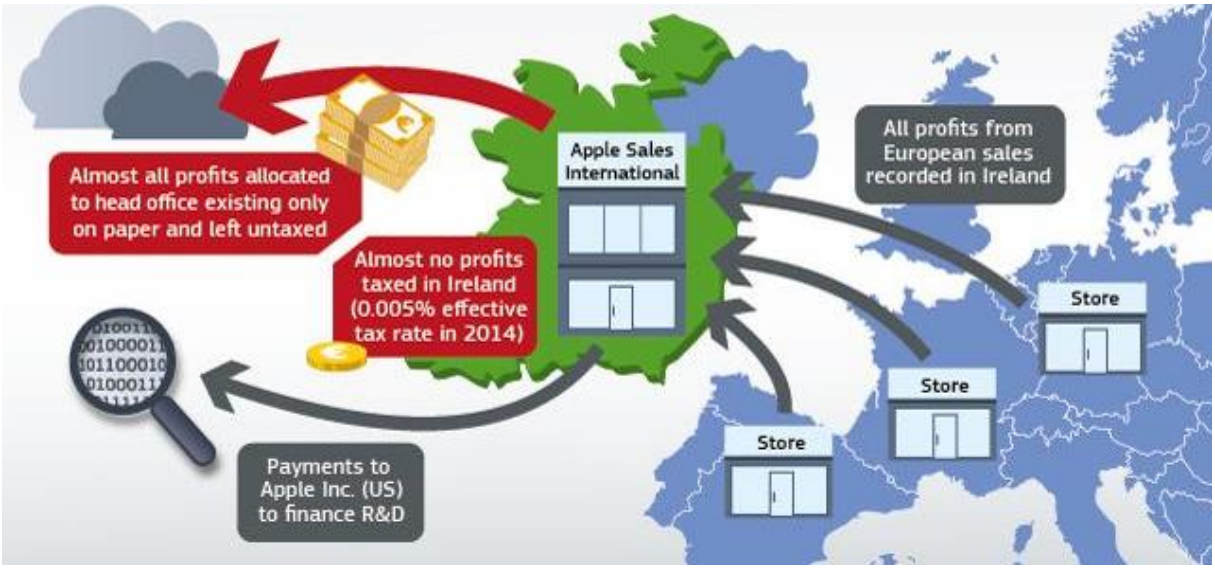
65 European Commission (2017), Curbing aggressive tax planning – European Semester Thematic Factsheet, https://ec.europa.eu/info/sites/default/files/file_import/european-semester_thematic-factsheet_curbing-agressive-tax-planning_de.pdf (5 August 2022).

66 Heckemeyer, J. H. / Spengel, C. (2013), Maßnahmen gegen Steuervermeidung: Steuerhinterziehung versus aggressive Steuerplanung, Wirtschaftsdienst, Vol. 93(6), pp. 363-366.

67 See European Commission (2016), State aid: Ireland gave illegal tax benefits to Apple worth up to €13 billion, press release dated 30 August 2016.

68 See European Commission (2016), State aid: Ireland gave illegal tax benefits to Apple worth up to €13 billion, press release dated 30 August 2016.

Figure 8: Aggressive tax planning using the example of Apple

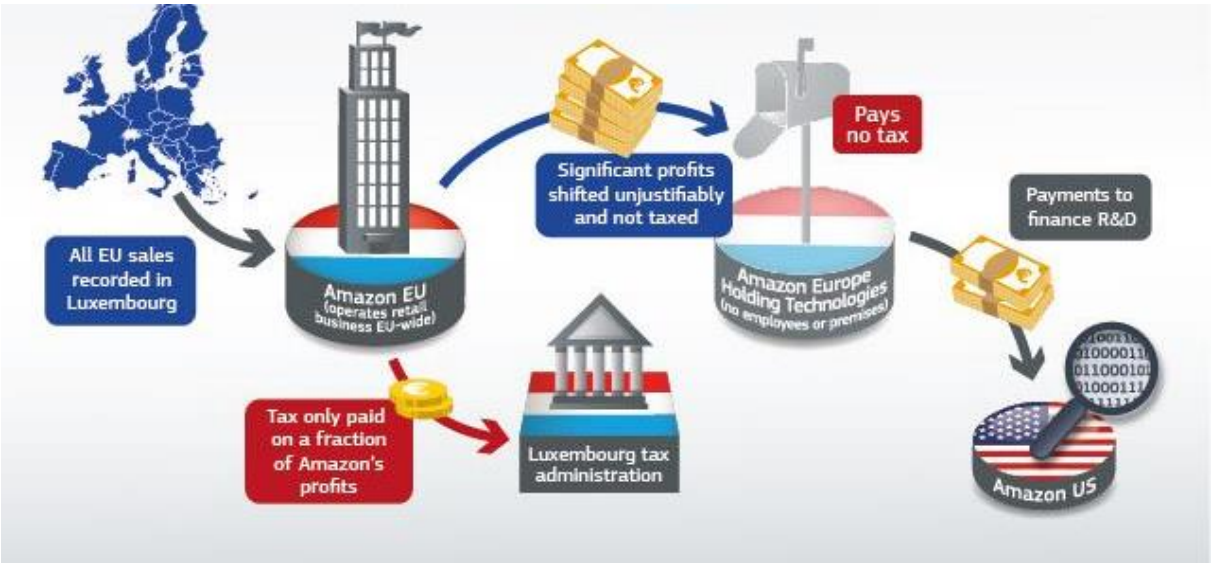


Source: EU Commission (2016): State aid: Ireland gave illegal tax benefits to Apple worth up to €13 billion, press release dated 30 August 2016.

Amazon used a model of aggressive tax planning very similar to that employed in the Apple case (see Figure 9) and, as a result, did not have to pay taxes on three-quarters of the profit made on sales in the EU.[69]

[69] European Commission (2017), State aid: Commission finds Luxembourg gave illegal tax benefits to Amazon worth around €250 million. Press release dated 30 August 2016.

Figure 9: Aggressive tax planning using the example of Amazon



Source: European Commission (2017), State aid: Commission finds Luxembourg gave illegal tax benefits to Amazon worth around €250 million. Press release, 30 August 2016.

The aggressive tax planning of the US digital giants has several economic consequences:

- Taxes are no longer paid where economic value is generated. Instead, companies are established where taxes are low.
- Aggressive tax planning has made it easier for US digital service providers to raise borrowed capital. This means they have more money available for acquisitions, for example, than companies that pay regular taxes.
- The competitive advantages that multinational digital service providers already enjoy due to network effects and economies of scale and scope are further magnified. As a result, there are fewer market entries by potential competitors, i.e. the market is less contestable. The pressure to innovate and price pressure on established digital service providers is thus lower than it might otherwise be.
- Aggressive tax planning may also lead to more and more states being forced to reduce taxes for digital service providers, for example to compensate for the distortions of competition this causes for domestic digital service providers or to attract multinational digital service providers to their country.
- Companies that pursue aggressive tax planning do not contribute to the provision of public assets in the market jurisdiction, or do so only to a small extent. Such contribution is fair, as companies benefit from public services such as the administration of justice and school education in the country.
- Aggressive tax planning puts traditional companies competing with multinational digital service providers at a disadvantage if traditional companies pay the full tax on their profits and thus contribute to the provision of public assets in the country.

Box 4: Base Erosion & Profit Shifting (BEPS) using the example of the double Irish Dutch sandwich and patent boxes

The abbreviation BEPS stands for Base Erosion and Profit Shifting.* In this study it is used synonymously with the term "aggressive tax planning". The first part of the term refers to the way in which companies calculate their pre-tax profit so as to make it as low as possible while the second describes how companies ensure that their pre-tax profit is earned in a tax jurisdiction with "favourable" tax legislation. The goal is obvious: to have to pay as little tax as possible. Base erosion ensures that little profit accrues in high-tax jurisdictions. Profit shifting ensures that profit accrues in countries where it is taxed at a low rate or not at all.

BEPS can be implemented using a number of methods. In many cases, the focus is on the transfer of intellectual property. Two of these methods will be explained in simplified form below: the "double Irish Dutch sandwich" and the use of patent boxes.**

In the **double Irish Dutch sandwich**, the group structure consists of a parent company in the USA, two companies in Ireland – a holding company and an operating company – and an intermediate company in the Netherlands. The holding company is formally domiciled in Ireland, so that under US tax law it is resident in Ireland for tax purposes. However, the holding company has its de facto management in Bermuda and therefore, from an Irish perspective, it is taxable in Bermuda and not in Ireland. Bermuda does not levy corporate tax. The holding company acquires the right from the parent company to use intellectual property and enters into a cost-sharing agreement with it in respect of the intellectual property. The holding company is thus regarded as the owner of the intellectual property for tax purposes. Since this involves transferring intellectual property that is not yet fully developed, it is difficult for US tax authorities to determine an arm's length value for the intellectual property.

This intellectual property is used by the operating company. Customers conclude their contracts with this company.*** However, the operating company does not pay the royalties for the use of the intellectual property to the holding company. As, under Irish law, the holding company is resident in Bermuda for tax purposes, withholding tax would be payable on such royalties in Ireland. Instead, the operating company pays large royalties to the Dutch intermediate company (base erosion). (This structure no longer makes sense to set up today, as Ireland has had broadly applicable arm's length rules since 2010, but these are not applicable to structures set up before 2010). As a result, the operating company only generates low profits in Ireland. The royalty payments in the Netherlands are not subject to withholding tax because they are covered by the Interest and Royalties Directive****. Withholding tax was not generally levied on royalties in the Netherlands until the end of 2020 and even now it is only levied on royalty payments to affiliated companies located in tax havens (which, as of 2022, includes Bermuda)*****. As a result, until 2021, the payment of withholding tax on royalties could be avoided entirely (profit shifting). In Bermuda, as already mentioned, there is no corporate tax. At the same time, the income was not taxable in the United States as long as it was held offshore. This rule was amended in 2017, but with an eight-year transition period and a significantly more moderate tax rate for funds repatriated to the United States.******

Tax avoidance by means of **patent boxes** also works in broadly the same way. Patent boxes are tax regimes that impose significantly lower taxes on intellectual property income or grant credits for expenses incurred in creating intellectual property. The intellectual property right is thus transferred to a company located in a country with a patent box for the purpose of minimising tax. The income it receives from royalties from an operating company is taxed at a low rate thanks to the patent box. It is no longer necessary to pass profits through a Dutch company.

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* See e.g. OECD (2014), OECD/G20 Base Erosion and Profit Shifting Project – Addressing the Tax Challenges of the Digital Economy. Action 1: 2014 Deliverable, p. 3.
** On all this, see Nabben, R. (2017), Intellectual Property Tax Planning in the light of Base Erosion and Profit Shifting, https://arno.uvt.nl/show.cgi?fid=143915 (13 July 2022).
*** See Buchhaltung-Tipps.de (2016), Double Irish with a Dutch Sandwich am Beispiel von Google. (5 August 2022).
**** Council Directive 2003/49/EC of 3 June 2003 on a common system of taxation applicable to interest and royalty payments made between associated companies of different Member States, ELI: http://data.europa.eu/eli/dir/2003/49/oj.
***** PWC (2022), Netherlands. Corporate – Withholding taxes, https://taxsummaries.pwc.com/netherlands/corporate/withholding-taxes (12 August 2022).
****** See Tax Policy Center (2020), What is the TCJA repatriation tax and how does it work? https://www.taxpolicycenter.org/briefing-book/what-tcja-repatriation-tax-and-how-does-it-work (12 August 2022).

4.1.3 Negative congestion externalities in the network

The strong dominance of American digital service providers is also evident in the use of telecommunications networks. Much of the global data traffic generated in digital services stems from a small group of US companies. Sandvine (2022) estimates that by 2021, six companies will together account for more than half of all global data traffic. All of them are headquartered in the USA: Alphabet, Apple, Amazon, Meta, Microsoft and Netflix.[70] Their strong market position is also reflected in their heavy use of the digital infrastructure. This results in social problems, specifically as a consequence of free-rider behaviour. However, the telecommunications networks themselves are not public assets, either legally or economically. They are owned by private network operator companies. Moreover, there are no technical reasons why certain users could not be excluded from these networks.

However, the design of market regulation creates an incentive problem similar to that relating to public assets. Network operators are remunerated for granting network access to third parties via regulated charges that are funded by the user side. But consumers of digital services have limited control over the traffic they generate. Through functions such as the automatic playback of videos when accessing a website, users also unwittingly generate data streams which they may not even have wanted and which are therefore unnecessary.[71] Another example is a high resolution preset by providers of videos. At the same time, providers have little incentive to increase the data efficiency of their services because they do not have to pay the societal costs resulting from unnecessary data traffic. Some of these costs are of a temporary nature: internet users experience speed restrictions when network load

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70 Sandvine (2022), The Mobile Internet Phenomena Report, https://www.sandvine.com/phenomena (5 August 2022).

71 Axon Partners Group (2022), Europe's internet ecosystem: socioeconomic benefits of a fairer balance between tech giants and telecom operators, https://etno.eu/downloads/reports/europes%20internet%20ecosystem.%20socio-economic%20benefits%20of%20a%20fairer%20balance%20between%20tech%20giants%20and%20telecom%20operators%20by%20axon%20for%20etno.pdf (5 August 2022).

is temporarily excessive. In some cases, however, they are also of a long-term nature. More frequent occurrence of congestion may increase the need for network expansion. Since private-sector incentives for network expansion are limited, especially in sparsely populated regions, expansion is supported from public funds provided by the general public. In Germany, for example, the federal and state governments are promoting broadband rollout in areas where there is no private-sector expansion through its "grey spot" funding programme.[72] The general public thus bears part of the additional costs resulting from a lack of data efficiency in the provision of digital services.

4.2 Social and digital policy consequences

4.2.1 Threat to digital sovereignty

From a European perspective, the fact that many digital services markets are concentrated on a small number of large providers headquartered in the USA represents a significant restriction of Europe's own digital sovereignty. Following Floridi (2020), we use a broad definition of digital sovereignty here, i.e. the ability to exercise control over all aspects of the digital sphere (data, software and hardware, services and infrastructures). In this context, we understand control to mean influence over the creation, occurrence or destruction of data or other digital components, as well as influence over their development dynamics over time.[73] This scope for exercising control is severely hampered by the key role played by a few US companies in digital development. It is they who currently decide the direction and speed of innovation in digital services in the EU area. The EU itself can merely seek to exert a corrective effect through regulation. This asymmetry can only be overcome by strengthening the domestic digital sector.

4.2.2 Insufficient contribution to the funding of public assets

Multinational digital service providers contribute less to tax revenue in Europe than other companies, relative to their earning power. This is due to the economic characteristics of digital services, as discussed above. Digital service providers are less dependent on establishing local branches to serve the EU market than companies from other sectors, for example. Multinational digital service providers with a physical presence in the EU can also use the special characteristics of digital services to reduce their tax burden. They can minimise the tax paid in Europe via the "aggressive tax planning" strategies described in section 4.1.2. Compared with companies from traditional sectors, they benefit above all from the particular importance of intangible assets. The intra-group transfer of rights to use these assets is one of several ways in which BEPS can be applied. This has a particularly adverse effect on the income base of most EU countries due to their high rates of taxation compared to global tax havens. At the same time, however, multinational digital service providers benefit from a number of public assets that are provided free of charge in the EU area. These include, for example, a clear and consistent legal framework and administration of justice as well as (digital) literacy provided through public education. They can also use infrastructure services in Europe, in some cases free of charge, in both the digital (telecommunications network) and the analogue (road network) sphere, depending on the business area. Although the latter are not public assets in the economic sense, from the

[72] Federal Ministry for Digital and Transport (2022), Broadband funding by the Federal Government, https://bmdv.bund.de/EN/Topics/Digital-Matters/Broadband-Deployment/Broadband-Funding-Programme/broadband-funding-programme.html (5 August 2022).

[73] Floridi, L. (2020), The fight for digital sovereignty: What it is, and why it matters, especially for the EU. Philosophy & Technology, Vol. 33(3), pp. 369-378.

perspective of digital service providers they are available for use (largely) free of charge and are an indispensable basis for their business model and the value they generate. If digital service providers do not have a physical presence in a country, they are not helping to pay for the foundations on which their business is built.

4.2.3 High network utilisation by foreign providers

Supplier concentration also means that the European market is particularly affected by the problem of network externalities described in Section 4.1.3. As described above, it is primarily large American digital service providers and their content that are responsible for most of the data on the network. However, the costs resulting from network capacity utilisation are currently financed by network operators and the state (subsidies), and are thus ultimately borne by users in general. Even the indirect contribution of multinational digital service providers via the tax system is only small due to the tax avoidance problem discussed above.

Figure 10 summarises the consequences of the current market situation.

Figure 10: Three social problems of the current market situation

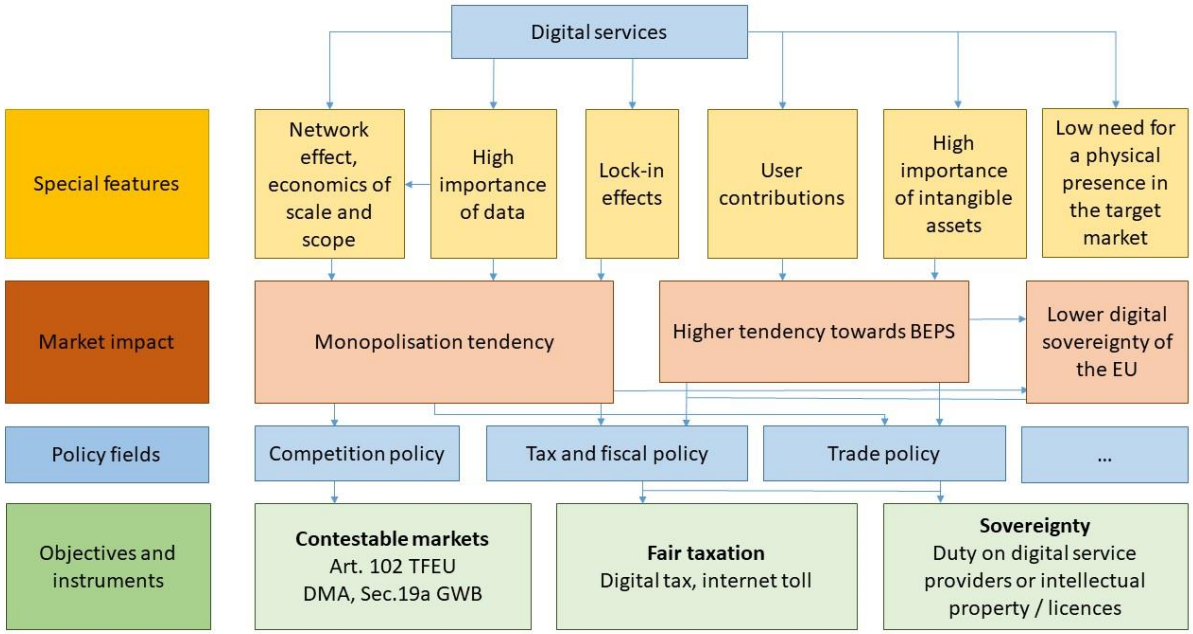
Source: Authors' illustration.

4.3 Regulatory issues

The characteristics of digital services described above lead to serious economic and social consequences. Adequate regulation is needed to contain them, with the objective of ensuring contestable markets, fair taxation and digital sovereignty.

Figure 11 provides an overview of the characteristics of digital services, their consequences and the goals and instruments of regulatory policy. The relevant policy areas include i) competition policy ii) tax and fiscal policy and iii) foreign trade policy. Competition policy has the task of ensuring contestable markets. Tax and fiscal policy is designed to ensure that public spending is financed while keeping distortion of competition as low as possible. Trade policy can both generate income and ensure sovereignty in key economic areas. In the following section, regulatory approaches and possible instruments are developed and discussed.

Figure 11: Digital services - characteristics, market consequences and regulatory objectives



Source: Authors' illustration.

5 Policy instruments

5.1 Theoretical framework

In the previous sections, we have shown that the provision of digital services involves a number of special economic features, some of which lead to a concentration tendency in markets for digital services, particularly platform services. For example, the provision of certain platform services in the EU is dominated by a small number of US-based service providers. The market dominance of US service providers means that the EU's digital sovereignty is limited. In addition, these service providers generate a large proportion of global data traffic and are therefore partly responsible for the high network utilisation. These digital service providers have only limited incentives to reduce data traffic, as they do not currently share in the costs of network expansion.

Box 5: Regulation in the event of market imperfections

It is important to analyse the objectives and instruments of regulation properly because the effects of regulation can sometimes be adverse, i.e. contrary to the actual intention behind the regulation. This is especially true when a condition that is important for a large number of microeconomic propositions – i.e. the existence of complete or even perfect competition – does not hold. Taxing a monopoly, for example, can cause consumer prices to rise by more than the tax rate, thus consumers end up paying for the attempt to extract monopoly rents. As propounded by the Dutch economist Jan Tinbergen, it is therefore important to develop instruments that can be controlled independently of one another depending on the different regulatory objectives.

In addition, the special features of digital service provision mean that multinational digital service providers in particular often – intentionally or unintentionally – fail to make an adequate contribution to financing public spending in their market jurisdictions[74], even though they benefit from public services such as education and the administration of justice. In particular, the difficulty in pinpointing exactly where the service is provided, the low need for a physical presence in the target market, and the major importance of intangible assets in digital service provision present challenges to the current tax system that it is unable to cope with.

These economic and social consequences will become greater in the future, as the trends towards both digitalisation and the service society continue unabated. This is evident in the fast emergence of ever new digital worlds. Against this backdrop, it is important to develop instruments which

- ensure that digital service providers contribute adequately to public spending in their market jurisdictions,
- enhance the digital sovereignty of the EU and
- provide incentives to reduce data traffic.

In sections 5.2 and 5.3 below, various instruments are discussed and evaluated.

Section 5.2 sets out the OECD's two-pillar solution and evaluates it in terms of the three stated objectives. The two-pillar solution is a global model whose implementation is currently being pursued. If the two-pillar solution is not implemented or does not sufficiently achieve the aforementioned goals,

[74] See section 5.2.1.

the EU can use its own instruments to achieve these goals. Possible EU instruments are presented and evaluated in section 5.3. Specifically, these are a digital duty on system software, a digital tax on revenue generated from certain digital services, and a digital network fee for digital service providers. All instruments are evaluated according to the same scheme (see Figure 12).

Figure 12: Digitalisation of services

Instrument	Implementation		Impact assessment			
	Challenges of practical implementation	Legal hurdles	Accuracy	Impact on tax fairness	Impact on digital sovereignty	Impact on network utilisation
Instrument 1	….	…	low to high	negative to positive	negative to positive	negative to positive

Source: Authors' illustration.

Firstly, the practical and legal hurdles to implementation of the discussed instrument are presented. The second step is to assess the impact of the instrument. Here, we assess (1) the accuracy of an instrument, (2) its impact on tax fairness, (3) its impact on the EU's digital sovereignty, and (4) its impact on network utilisation.

An instrument is accurate if it

- affects all digital service providers that currently do not adequately participate in public spending in their market jurisdictions and these service providers have no means of avoiding the instrument, and
- does not impose an additional burden on digital service providers that already participate adequately in the financing of public spending in their market jurisdictions.

An instrument has a positive impact on tax fairness if it ensures that digital service providers that have not previously contributed adequately to public spending in their market jurisdictions then do so as a result of the instrument.

An instrument has a positive impact on EU sovereignty if it improves the competitive position of European digital service providers relative to US multinational digital service providers. This would be the case, for example, if an instrument reduces existing distortions of competition between those digital service providers that can shift their profits to low-tax countries and those that do not.

Finally, an instrument has a positive impact on network utilisation if it provides incentives for digital companies that generate a lot of data traffic to reduce data.

5.2 Global solution: OECD's two-pillar solution

In October 2021, as part of the so-called Inclusive Framework on Base Erosion and Profit Shifting of the OECD and the G20, 137 tax jurisdictions[75] agreed on a model to address the tax challenges posed by digitalisation.[76] This model consists of two pillars: Pillar One provides for a limited redistribution of taxing rights, while Pillar Two creates an effective minimum corporate tax rate of 15%.

[75] For a list, see https://www.oecd.org/tax/beps/oecd-g20-inclusive-framework-members-joining-statement-on-two-pillar-solution-to-address-tax-challenges-arising-from-digitalisation-october-2021.pdf (1 July 2022). The study refers to "tax jurisdictions" because the participants do not necessarily need to be independent states. They also include non-states such as the Faroe Islands, Hong Kong and Guernsey, which are not states but nevertheless have a degree of autonomy in tax matters.

[76] An overview is available at https://www.oecd.org/tax/beps/statement-on-a-two-pillar-solution-to-address-the-tax-challenges-arising-from-the-digitalisation-of-the-economy-october-2021.pdf (1 July 2022).

Box 6: Current status of the implementation of the two-pillar solution

The development and implementation of the two pillars are at different stages. Pillar One is to be implemented via a multilateral convention under international law. The text of this convention has been published in October 2023*. In addition, a simplified and streamlined approach for the application of the arm's length principle to domestic marketing and sales activities has been included in the OECD Transfer Pricing Guidelines.** The signing is to take place by June 2024***. For Pillar 2, the so-called Subject to Tax Rule - model rules of the OECD,**** a multilateral agreement to facilitate the implementation of the Subject to Tax Rule*****, a manual for the implementation of Pillar 2****** and an administrative guideline******* are available.

With regard to Pillar 1, it is doubtful whether the treaty will actually be signed by June 2024, as the USA is unlikely to sign the treaty before the presidential elections in November. Other countries have also expressed concerns about Pillar 1, such as Brazil, India and Colombia.********

Following vetoes first by Poland and then by Hungary, the EU has adopted a directive to implement Pillar 2.*********

* OECD (2023), International tax reform: Multilateral Convention to Implement Amount A of Pillar One, https://www.oecd.org/tax/beps/multilateral-convention-to-implement-amount-a-of-pillar-one.htm (10.04.2024).

** OECD (2024), Pillar One – Amount B, https://www.oecd.org/tax/beps/pillar-one-amount-b.htm (10.04.2024).

*** Bundesministerium der Finanzen (2024), Auf dem Weg zu einer fairen internationalen Besteuerung, https://www.bundesfinanzministerium.de/Content/DE/Standardartikel/Themen/Steuern/Internationales_Steuerrecht/BEPS/schaedlichen-steuerwettbewerb-bekaempfen.html (10.04.2024).

** OECD (2021), Statement on a Two-Pillar Solution to Address the Tax Challenges Arising from the Digitalisation of the Economy, https://www.oecd.org/tax/beps/statement-on-a-two-pillar-solution-to-address-the-tax-challenges-arising-from-the-digitalisation-of-the-economy-october-2021.pdf (14 July 2022).

*** OECD (2020), Tax Challenges Arising from Digitalisation – Report on Pillar One Blueprint: Inclusive Framework on BEPS, https://www.oecd.org/tax/beps/tax-challenges-arising-from-digitalisation-report-on-pillar-one-blueprint.pdf (14 July 2022).

**** OECD (2023), Subject to Tax Rule (Pillar Two), https://www.oecd.org/tax/beps/tax-challenges-arising-from-the-digitalisation-of-the-economy-subject-to-tax-rule-pillar-two-9afd6856-en.htm (10.04.2024).

***** OECD (2023), Multilateral Convention to Facilitate the Implementation of the Pillar Two Subject to Tax Rule, https://www.oecd.org/tax/beps/multilateral-convention-to-facilitate-the-implementation-of-the-pillar-two-subject-to-tax-rule.htm (10.04.2024).

****** OECD (2023), Minimum Tax Implementation Handbook, https://www.oecd.org/tax/beps/minimum-tax-implementation-handbook-pillar-two.htm (10.04.2024).

******* OECD (2023), Agreed Administrative Guidance for the Pillar Two GloBE Rules, https://www.oecd.org/tax/beps/tax-challenges-arising-from-the-digitalisation-of-the-economy-global-anti-base-erosion-model-rules-pillar-two.htm (10.04.2024).

******** EUI (2024), The OECD global tax deal still hangs in the balance, https://www.eiu.com/n/the-oecd-global-tax-deal-still-hangs-in-the-balance/ (10.04.2024).

********* Council Directive (EU) 2022/2523 of 14 December 2022 on ensuring a global minimum level of taxation for multinational enterprise groups and large-scale domestic groups in the Union, ELI: http://data.europa.eu/eli/dir/2022/2523/oj (01.03.2023).

5.2.1 Pillar One: Redistribution of taxing rights[77]

Concept

Pillar One is intended to cover multinational enterprises that have a global turnover in excess of €20 billion[78] and profitability[79] of more than 10%[80]. The plan is to initiate a process to reduce the turnover threshold to €10 billion seven years after the multilateral convention comes into force. Pillar One does not cover the commodities sector ("extractives")[81] or regulated financial services[82].

If an entity is covered by Pillar One, 25% of its residual profit – i.e. that profit which exceeds the 10% threshold – is redistributed for taxation purposes to the tax jurisdictions in which the entity has sufficient economic activity ("market jurisdictions")[83]. Activity is "sufficient" if the entity generates revenue of at least €1 million[84] – or €250,000 in tax jurisdictions with a GDP lower than €40 billion[85] – from that jurisdiction.

Once it has been established which market jurisdictions will participate in the distribution of taxing rights, it must be determined which share of the residual profit is to be taxed in which jurisdiction. The allocation formula has not yet been finally agreed. As a basic rule, profits should be taxed where the revenue is generated. For this purpose, revenue is allocated to individual tax jurisdictions. For example, revenue from the sale of end products to final customers should be allocated to the jurisdiction in which these products are handed over or delivered to the final customer[86]; revenue from online advertising should be allocated to the jurisdiction in which the viewer of the advertising is located[87]; revenue from online intermediation services that facilitate the sale or purchase of goods should be allocated equally between the jurisdictions in which the buyer and seller are located[88]; and revenue from online intermediation services that facilitate the sale or purchase of services should be allocated equally between the jurisdiction in which the buyer of the service is located and that in which the service is provided[89].[90]

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77 Unless otherwise indicated, the source for this section is OECD (2021), Statement on a Two-Pillar Solution to Address the Tax Challenges Arising from the Digitalisation of the Economy, https://www.oecd.org/tax/beps/statement-on-a-two-pillar-solution-to-address-the-tax-challenges-arising-from-the-digitalisation-of-the-economy-october-2021.pdf (4 July 2022), p.1 ff.

78 Art. 1 (2) (a) of OECD (2022), Progress Report on Amount A of Pillar One, https://www.oecd.org/tax/beps/progress-report-on-amount-a-of-pillar-one-july-2022.pdf (28 November 2022). In the discussion of Pillar One, unless otherwise indicated, article references as well as schedule references hereinafter relate to this source.

79 I.e. the ratio between profit before tax and revenue.

80 Art. 1 (2) (b).

81 Art. 1 (3). For the envisaged scope of this exception, see Schedule B and OECD (2022), Public Consultation Document. Pillar One – Amount A: Extractives Exclusion, https://www.oecd.org/tax/beps/public-consultation-document-pillar-one-amount-a-extractives-exclusion.pdf (4 July 2022).

82 Art. 1 (4). For the envisaged scope of this exception, see Schedule C and OECD (2022), Public Consultation Document. Pillar One – Amount A: Regulated Financial Services Exclusion, https://www.oecd.org/tax/beps/public-consultation-document-pillar-one-amount-a-regulated-financial-services-exclusion.pdf (4 July 2022).

83 Art. 6 (2).

84 Art. 3 (1).

85 Art. 3 (2).

86 Art. 4 (5).

87 Abs. 4 (8) (b).

88 Art. 4 (8) (c) (i).

89 Art. 4 (8) (c) (ii).

90 For details, see Schedule E.

If an entity's residual profit is already taxed in a market jurisdiction, the residual profit allocated to the market jurisdiction will be limited by a "safe harbour" adjustment for marketing and distribution profits.[91] The details of the safe harbour are governed by Article 6(5) of the rules proposed in the Progress Report. The basic idea is that the redistribution of taxing rights should benefit those tax jurisdictions where the covered entities have not paid taxes on their profits to date. If a covered entity in a market jurisdiction is already earning and paying taxes on profits through marketing and distribution activities, this should affect how much residual profit is allocated to such a jurisdiction.[92]

In addition, Pillar 1 contains simplified and streamlined rules for the application of the arm's length principle to domestic marketing and sales activities. The precise content of these rules is not yet clear. The aim is to simplify the application of transfer pricing rules by tax authorities and reduce administrative costs for entities. At the same time, it should increase legal certainty and reduce legal disputes between tax authorities and entities.[93]

The multilateral convention includes a commitment for the signatories to abolish all existing "digital services taxes and other relevant similar measures" and not to introduce any such measures. Until the end of 2023, tax jurisdictions that are part of the two-pillar solution were not allowed to impose new digital services taxes or similar measures on businesses. The current schedule envisages signing the multilateral convention in the first half of 2024.[94]

Legal evaluation

As explained above, Pillar One is to be established by a multilateral convention. Its success depends on as many states as possible ratifying and implementing the agreement.

With regard to the EU's competence to conclude international conventions, Art. 216 of the Treaty on the Functioning of the European Union (TFEU) stipulates that the EU may conclude international agreements if this is explicitly provided for in EU primary law, if the conclusion of an agreement is "necessary in order to achieve [...] one of the objectives referred to in the Treaties" or is provided for in a legally binding Union act, or if the conclusion of agreements by Member States could affect EU legislation or alter its scope[95]. The second case ("necessary to achieve the EU's objectives") seems relevant. The so-called parallelism of internal and external competence applies here. In other words, if there is competence to enact an EU law, there is also competence to conclude a corresponding agreement under international law.[96] A proposal for a directive with a similar thrust, which sought to change the allocation of profits for taxation within the EU,[97] was based on Art. 115 TFEU. This would

91 Art. 6 (3).

92 OECD (2020), Tax Challenges Arising from Digitalisation – Report on Pillar One Blueprint: Inclusive Framework on BEPS, https://www.oecd.org/tax/beps/tax-challenges-arising-from-digitalisation-report-on-pillar-one-blueprint.pdf (4 July 2022), p.124 f.

93 OECD (2020), Tax Challenges Arising from Digitalisation – Report on Pillar One Blueprint: Inclusive Framework on BEPS, https://www.oecd.org/tax/beps/tax-challenges-arising-from-digitalisation-report-on-pillar-one-blueprint.pdf (4 July 2022), p. 155.

94 Bundesministerium der Finanzen (2024), Auf dem Weg zu einer fairen internationalen Besteuerung, https://www.bundesfinanzministerium.de/Content/DE/Standardartikel/Themen/Steuern/Internationales_Steuerrecht/BEPS/schaedlichen-steuerwettbewerb-bekaempfen.html (10.04.2024).

95 See Schmalenbach, K. in: Calliess, C. / Ruffert, M. (publ.), EUV/AEUV Kommentar, 6th Edn. 2022, Art. 216 TFEU paragraph 16.

96 Schmalenbach, K. in: Calliess, C. / Ruffert, M. (publ.), EUV/AEUV Kommentar, 6th Edn. 2022, Art. 216 AEUV paragraph 12.

97 European Commission (2018), Proposal COM(2018) 147 of 21 March 2018 for a Council Directive laying down rules relating to the corporate taxation of a significant digital presence

appear to affirm the EU's competence to conclude the international agreement implementing Pillar One. It is not necessary for the EU to have already exercised its competence internally first.[98] Should the EU lack treaty-making competence for part of the agreement, a mixed agreement would have to be concluded, i.e. both the EU and the Member States would become contracting parties.[99]

In any case, the EU has no exclusive competence. For such competence to exist, conclusion of the international convention would have to be necessary for the EU to exercise its internal legislative competence.[100] It is therefore legally permissible for the Member States, rather than the EU, to become parties to the international agreement. If the EU is deemed not to have treaty-making competence, then the responsibility for implementing Pillar One lies solely with the Member States.

Ultimately, however, the consent of all Member States is required in any case, even if the agreement were to be concluded by the EU and not (also) by the Member States. This is because Art. 115 TFEU requires unanimity in the Council. Consequently, under Art. 218 (8) TFEU, unanimity in the Council is also required for the conclusion of a corresponding agreement under international law.

A crucial prerequisite for viable implementation is that the tax authorities know how much of an undertaking's revenue is generated in individual target markets. This will no longer be a problem in the EU once EU Directive (EU) 2021/2101 has been implemented across the board by the Member States. This Directive obliges all undertakings based in EU countries whose group-wide revenue amounted to at least €750 million in each of two consecutive years (i.e. all entities covered by Pillar One) to submit public country-by-country reporting that includes, among other things, the net revenue in the individual Member States.[101]

Economic impact assessment

The idea behind Pillar One is to soften the permanent establishment principle currently applied to the taxation of profits. At least part of the assessment basis for profit taxation is to be redistributed on the basis of market-related sales. This corresponds to the alternative market jurisdiction principle, under which profit would be taxed where the income base is located. One fundamental justification for such an approach with regard to digital service providers can be found in the particular importance of market access for profitability growth, as this is a prerequisite for exploiting the particularly significant economies of scale and network effects (see Section 3). The larger the market, the more valuable the market access. Since the growth of a market for digital services is to a certain extent also the result of public funding (establishment of telecommunications networks, increasing the digital literacy of consumers through education), redistribution based on the size of the market could be seen as compensation for the advantages granted in terms of market access.[102]

In addition, especially in the case of platform services, users in the relevant markets also make their own contributions to increasing the value of the services offered (see section 3.9). One way they do this is by generating data about their usage behaviour that can be sold by platform service providers

98 Schmalenbach, K. in: Calliess, C. / Ruffert, M. (publ.), EUV/AEUV Kommentar, 6th ed. 2022, Art. 216 AEUV paragraph 12.
99 Schmalenbach, K. in: Calliess, C. / Ruffert, M. (publ.), EUV/AEUV Kommentar, 6th ed. 2022, Art. 216 AEUV paragraph 5.
100 Schmalenbach, K. in: Calliess, C. / Ruffert, M. (publ.), EUV/AEUV Kommentar, 6th ed. 2022, Art. 216 AEUV paragraph 13.
101 Directive (EU) 2021/2101 of 24 November 2021 amending Directive 2013/34/EU as regards disclosure of income tax information by certain undertakings and branches, ELI: http://data.europa.eu/eli/dir/2021/2101/oj.
102 Ditz, X. / Pinkernell, R. (2019), Neudefinition internationaler Besteuerungsrechte durch das OECD Inclusive Framework on BEPS–Eine Würdigung aus deutscher Sicht. Internationale SteuerRundschau, Vol. 8(11), pp. 377-389.

or used to improve their services. They also directly provide content for other users, which increases the attractiveness of the offering from a user's perspective. Attracting a larger number of users in turn increases the platforms' income potential from the sale of advertising space. However, in many cases, users are not monetarily compensated by the platforms for this contribution. It is therefore often not possible for the state in which the user resides to tax the profit generated by the user.

A more specific question is whether revenue in the market jurisdictions is the most appropriate indicator for identifying market size or user contributions. From a theoretical perspective, the number of users or the volume of data streams generated by users could also be considered as alternatives. The latter metric in particular would be a more direct way of measuring user contributions than the market revenue method. In terms of corporate tax, however, the key criterion should be the profitability contribution associated with the user activity. And the increase in the value of advertising space also depends on the purchasing power of users in the market jurisdiction.

In addition to these fairness-related arguments, the intended redistribution of taxing rights can also be justified on the basis of economic efficiency considerations. The redistribution would have the effect of reducing the importance of the local tax system as a criterion in a company's choice of location. This is particularly true for digital service providers because, as described, they can serve markets largely independent of location, so their position in different markets (and thus the distribution of their revenue-related tax burden) has little to do with their choice of location. As a result, the incentives for states to minimise taxes in order to position themselves as an attractive business location decrease. The risk of a "race to the bottom" on tax rates, which is often cited in this context, can thus be reduced. Since the ability to fund public assets also depends on this, at least in the medium term, Pillar One could thus help to increase global resource efficiency.

However, the actual structure envisaged under the two-pillar solution will significantly limit the effectiveness of this instrument. This starts with the double threshold, under which even very large companies would be exempt from redistribution unless they achieved the required pre-tax profit margin of 10%. Among the Big Five US digital companies, this would most likely exclude Amazon, judging by past metrics.[103] The proposed two-step calculation method would also result in only a small portion of covered companies' profits being subject to redistribution.

Against this background, the **accuracy of** the instrument can be rated overall as **relatively high**. The Pillar One approach, with its focus on the market jurisdiction principle, is basically correct. It would ensure that companies that currently pay very little tax in the EU due to a lack of physical presence in the EU area or aggressive tax planning would be called upon to make a greater contribution to the funding of public spending. The scope for avoidance would be very small. Non-EU companies would have to reduce their share of revenue in the European market in order to avoid a redistribution of the assessment basis for their profit taxation to the EU area. However, the thresholds set in the OECD proposal will significantly limit its effectiveness with regard to large multinational digital service providers.

The impact on **tax fairness** would be **positive** as the partial redistribution of taxing rights reduces the opportunities for lowering the global tax burden through profit shifting. Large multinational digital service providers would be less able to benefit from aggressive tax planning than at present if Pillar

[103] Macrotrends (2022), Amazon operating margin 2010-2022, https://www.macrotrends.net/stocks/charts/AMZN/amazon/operating-margin (5 August 2022).

One is implemented. However, full tax fairness is not achieved because only a small portion of the taxing rights will be redistributed. The unequal treatment compared to those digital service providers that operate purely nationally would thus be reduced, but not eliminated. Estimates suggest that implementation of Pillar One in Germany would lead to additional tax revenues of €0.8 to €1.9 billion.[104] The medium-term impact on Europe's **digital sovereignty** would therefore also be **positive**. The greater financial burden on multinational digital service providers improves the competitive position of EU providers.

Table 1: OECD Pillar One - Implementation and impact assessment

Instrument	Implementation		Impact assessment			
	Challenges of practical implementation	Legal hurdles	Accuracy	Impact on tax fairness	Impact on digital sovereignty	Impact on network utilisation
Redistribution of taxing rights (OECD Pillar One)	– Multilateral convention required	**EU law:** – Unanimity in the Council or conclusion of an agreement by Member States	**Relatively high:** – Focus on the market jurisdiction principle targets the right companies; but impact curbed due to high thresholds and limited redistribution	**Positive:** – Very large digital service providers would no longer be able to avoid funding public spending in the market jurisdiction	**Positive:** – Competitive advantages from aggressive tax planning by US digital companies would be partially offset	**No direct impact**

[104] Fuest, C. / Herold, E. / Neumeier, F. (2021): Die Neuordnung der internationalen Unternehmensbesteuerung, in ifo Schnelldienst 10/2021, p. 34.

Box 7: Introduction of a significant digital presence

The EU Commission's proposed introduction of a significant digital presence* is an instrument similar to Pillar One of the OECD's two-pillar solution. A significant digital presence is intended to give states the ability to tax profits when a digital service provider earns profits in a state without maintaining a physical presence in that state. On 21 March 2018, the EU Commission presented a proposal for a directive to introduce a significant digital presence.

According to the Commission Proposal, a significant digital presence exists if a digital service provider conducts business in a Member State and at least one of the following conditions is met:

- The total revenue from the provision of these digital services to users in the tax period exceeds €7 million
- The number of users of one or more of these digital services in the tax period exceeds 100,000
- The number of business contracts for the supply of these digital services in the tax period exceeds 3,000.

Under the proposal, the profits attributable to a significant digital presence correspond to the profits that the digital presence would have earned had it been a separate enterprise performing the same or similar business activities under the same conditions. The special features relating to the provision of a digital service should be taken into account in the allocation. These include, in particular, the possibility of providing a digital service without personnel in the market jurisdiction. The Commission proposes expenses incurred for research, development and marketing, as well as the number of users in a Member State and the data collected per Member State as possible criteria for profit allocation.

In principle, the Directive is intended to apply to companies based in the EU as well as in third countries. If the company is based in a third country with which the relevant Member State has concluded a double taxation agreement, the Directive only applies if the double taxation agreement contains rules on significant digital presence and the allocation of profits that are comparable to the Directive.

The EU's proposal is to be welcomed in principle. As with Pillar One of the OECD's two-pillar solution, the EU proposal means a softening of the permanent establishment principle currently applied in profit taxation. This can be justified by market access, among other things, as this is a prerequisite for exploiting network effects and economies of scale and scope. In addition, for some digital services, users contribute to value creation but since they do not receive any monetary reward for this contribution, it cannot be taxed. As a rule, users receive free access to the service as compensation for their contribution.

The greatest obstacle to the practical application of the Commission's proposal is presented by existing double taxation agreements of the Member States, which hinder the introduction of a significant digital presence. The EU Commission addresses this issue appropriately. It proposes that, in the case of digital service providers based in a third country with which the Member State concerned has concluded a double taxation agreement, significant digital presence only applies if the double taxation agreement contains corresponding provisions. Since the EU cannot order the insertion of such provisions in double taxation agreements, it recommends that Member States negotiate appropriate adjustments to their double taxation agreements with third countries.

* EU Commission (2018), Proposal for a Council Directive laying down rules relating to the corporate taxation of a significant digital presence. COM/2018/0147 final.

5.2.2 Pillar Two: Effective minimum tax of 15%

Concept

Pillar Two provides for a minimum effective tax of 15% of profit. Unlike Pillar One, it is not implemented by means of an agreement under international law. Instead, the OECD rules presented have the status of a "common approach". This means that while OECD tax jurisdictions are not required to implement the rules, if they choose to do so they must implement them in a way that is consistent with Pillar Two and takes into account the model rules and the guidance on this.[105]

The minimum tax is applicable to multinational groups of companies with annual group revenue of at least €750 million.[106] Exempt from the application are governmental entities, international organisations, non-profit organisations, pension funds and investment funds that are the ultimate parent entity of such a group of companies, as well as entities that are at least 95% owned by such excluded entities.[107]

The annual financial statements prepared in accordance with acceptable financial accounting standards[108] are the starting point for the minimum tax and its calculation. To ensure a minimum degree of uniformity, the financial statements are modified in accordance with certain OECD requirements. For example, exchange losses or gains resulting from the fact that a group entity uses different currencies for accounting and for tax purposes and that the exchange rate between these currencies fluctuates, are excluded from the calculation of the minimum tax.[109] The same applies to disallowed expenses such as bribes[110] or gains and losses from the sale of an equity investment of at

[105] OECD (2021), Statement on a Two-Pillar Solution to Address the Tax Challenges Arising from the Digitalisation of the Economy, https://www.oecd.org/tax/beps/statement-on-a-two-pillar-solution-to-address-the-tax-challenges-arising-from-the-digitalisation-of-the-economy-october-2021.pdf (4 July 2022), p. 3.

[106] Art. 1.1.1. Article references in this section refer to the OECD Model Rules unless otherwise indicated; see CD (2021), Tax Challenges Arising from the Digitalisation of the Economy – Global Anti-Base Erosion Model Rules (Pillar Two): Inclusive Framework on BEPS, https://www.oecd.org/tax/beps/tax-challenges-arising-from-the-digitalisation-of-the-economy-global-anti-base-erosion-model-rules-pillar-two.pdf (1 July 2022).,

[107] Art. 1.1.3 in conjunction with Art. 1.5.

[108] Art. 3.1.2 in conjunction with Art. 10.1.1

[109] Art. 3.2.1.f in conjunction with Art. 10.1.1.

[110] Art. 3.2.1.g in conjunction with Art. 10.1.1.

least 10%.[111] In addition, income from international shipping is exempt from the application of the minimum tax rules.[112]

The core of Pillar Two is that covered groups must pay a minimum effective tax of 15% on their income in every tax jurisdiction in which they operate[113] (if there are multiple group entities in a tax jurisdiction, they are aggregated for purposes of determining whether the 15% threshold is met).[114] If the effective tax rate of a group in a tax jurisdiction is below 15%, a "top-up tax" is due in the amount of the difference between the effective tax rate and 15%.[115] However, for the purposes of calculating the top-up tax, companies have the right to reduce the net income for a tax jurisdiction through use of a "substance-based income exclusion", so that the basis of assessment is reduced.[116] The substance-based income exclusion is equal to 5%[117] of the wage costs of the employees working for the group in the relevant tax jurisdiction[118] and 5%[119] of the carrying value of the tangible assets located in the tax jurisdiction[120].

As a basic rule, the group parent company must pay the top-up tax.[121] If it is located in a tax jurisdiction that does not participate in Pillar Two, the tax liability applies to intermediate parent companies – i.e. companies held by the group parent company which themselves hold other group companies[122] – located in a participating tax jurisdiction.[123]

If it is not possible to ensure minimum taxation in this way, the "undertaxed payments rule" (UTPR) is applied. In this case, an adjustment is required at the level of subsidiaries resident in a participating tax jurisdiction – e.g. the deduction of a payment to the group parent company is denied – which increases the subsidiary's tax burden.[124] The resulting increases in the tax burden of the subsidiaries amount to the same sum that would be due as top-up tax. The tax share of the individual companies is based on their share of the group's assets and employees.[125]

In addition, a de minimis rule applies if the profits of the group entities in a tax jurisdiction are less than €1 million and the revenue is less than €10 million. In this case, there is an option to claim exemption from the top-up tax, so that no top-up tax is due even if the effective tax rate is below 15%.[126] In addition, no top-up tax is due in the first five years of a group's international operations if

111 Art. 3.2.1.c in conjunction with Art. 10.1.1.
112 Art. 3.3.
113 For transition rules for tax years beginning no later than 31 December 2026, see OECD (2022), Safe Harbours and Penalty Relief: Global Anti-Base Erosion Rules (Pillar Two), https://www.oecd.org/tax/beps/safe-harbours-and-penalty-relief-global-anti-base-erosion-rules-pillar-two.pdf (1 March 2023).
114 Art. 5.1.1. in conjunction with Art. 10.1.1.
115 Art. 5.2.1.
116 Art. 5.3.1.
117 Starting at 10% in 2023 with gradual reduction to 5% by 2033.
118 Art. 5.3.3.
119 Starting at 8% in 2023 with gradual reduction to 5% by 2033.
120 Art. 5.3.4.
121 Art. 2.1.1.
122 Art. 10.1.1.
123 Art. 2.1.2. in conjunction with Art. 2.1.3.
124 Art. 2.4.
125 Art. 2.6.
126 Art. 5.5.

the group has entities in no more than six tax jurisdictions and the net book value of all its tangible assets does not exceed €50 million.[127]

The "subject-to-tax rule" applies to interest, royalty payments and other payments between affiliated companies. If, under tax treaties between two tax jurisdictions, a withholding tax of less than 9% is levied on such payments, developing countries are able to levy a tax similar to a top-up tax equal to the difference between the actual tax rate and 9%. The subject-to-tax-rule is based on an understanding that where, under a tax treaty, a source State has ceded taxing rights on certain outbound intragroup payments, it should be able to recover some of those rights where the income in question is taxed in the State of the payee at a rate below 9%.

Legal evaluation

In contrast to Pillar One, no agreement under international law is envisaged for the implementation of Pillar Two. Instead it has been implemented by the EU – after months of blocking by Hungary and Poland – with the adoption of Directive 2022/2523 on 15 December 2022.[128] The legal basis for this Directive – as for the Anti Tax Avoidance Directive (ATAD)[129], which was also enacted in implementation of the OECD measures to combat BEPS[130] – is Article 115 TFEU. Individual Member States were able to delay adoption for so long because this requires unanimity in the Council. But even though this agreement has now been reached, the success of Pillar Two depends on it being implemented by as many jurisdictions as possible.

Economic impact assessment

The basic idea of harmonisation through a minimum tax rate is sound. The exploitation of international differences in the effective taxation of corporate profits is a major impetus for aggressive tax planning. Alignment – even if only partial – via a minimum rate limits the possibilities for reducing tax through profit shifting, meaning that multinational digital service providers would have to pay more tax globally across the group. But this only works if the minimum rate is high enough to be effective. Current data on effective profit taxation from the OECD itself certainly suggests that a proposed minimum tax rate of 15% would satisfy this requirement, although 18 of the 77 countries covered had an effective corporate tax rate of less than 15% in 2020, including Ireland which is an important location for digital companies in the EU.[131] Pillar Two could thus in principle contribute to eliminating tax-induced inefficiencies in investment behaviour in a similar way to Pillar One (see section 5.2.1).

The company-size threshold envisaged for participation in Pillar Two is significantly lower than the Pillar One requirements, which means that the provisions of Pillar Two are likely to become relevant for a significantly larger number of companies. In particular, the major digital service providers are all likely to be affected by the regulation in all periods.

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127 Art. 9.3.

128 Council Directive (EU) 2022/2523 of 14 December 2022 on ensuring a global minimum level of taxation for multinational enterprise groups and large-scale domestic groups in the Union, ELI: http://data.europa.eu/eli/dir/2022/2523/oj.

129 Council Directive (EU) 2016/1164 of 12 July 2016 laying down rules against tax avoidance practices that directly affect the functioning of the internal market, ELI: http://data.europa.eu/eli/dir/2016/1164/oj.

130 Recital 1.

131 OECD (2022), Tax database. Corporate tax statistics – effective tax rates. https://stats.oecd.org/index.aspx?DataSetCode=Table_II1# (5 August 2022).

There is also a significant difference in terms of income distribution. Unlike Pillar One, the implementation of Pillar Two does not entail a transition to the principle of market jurisdiction taxation. On the income side, Pillar Two can basically only benefit countries that are used as locations by the companies concerned. In fact, it may be that only those countries that are the locations of the group parent companies or intermediate parent companies can expect direct additional income from the planned distribution of the top-up tax. In the area of digital companies, this would primarily affect the USA. Indirectly, however, tax revenues in locations in the EU are also likely to increase. This is because, in order to prevent the revenue from the top-up tax from flowing to the parent locations, EU countries with effective taxation below 15% would have a natural incentive to increase their corporate tax rate to a level equal to the minimum rate.

At the same time, this increases the tax competitiveness of the other EU countries. However, unlike in the case of Pillar One, countries that are not currently locations of multinational digital service providers can only generate additional tax revenues if this effect leads to a relocation to these countries. This is unlikely for large digital companies, as the minimum taxation itself will not make Ireland less attractive than other EU countries in terms of tax policy; at best, there would be an alignment.

Viewed in isolation, the **accuracy** of Pillar Two of the OECD proposal is **high** because it affects all large companies that currently engage in aggressive tax planning. Companies that do not engage in aggressive tax planning are also affected but are generally not subject to any additional burden. The possibilities for avoidance are low, as in the case of Pillar One.

The contribution to **tax fairness** would be **weakly positive**. Minimum tax can only indirectly increase tax payments by multinational digital service providers in EU Member States where they do not currently contribute to the funding of public spending. It will not therefore compensate all Member States for the provision of public assets used by digital service providers.

However, minimum taxation reduces the tax advantages of multinational digital service providers compared to their domestic competitors. The unequal treatment vis à vis digital service providers that operate on a purely national basis would thus be reduced. For this reason, the medium-term impact on Europe's **digital sovereignty** would also be **positive**. The greater financial burden on multinational digital service providers will improve the competitive position of EU providers.

Table 2: OECD Pillar Two – Implementation and impact assessment

Instrument	Implementation		Impact assessment			
	Challenges of practical implementation	Legal hurdles	Accuracy	Impact on tax fairness	Impact on digital sovereignty	Impact on network utilisation
Effective minimum tax rate of 15% (OECD Pillar Two)	– Global implementation required as far as possible		**High**	**Weakly positive:** – Only indirect contribution to increased funding of public assets; not all Member States benefit	**Positive:** – Competitive advantages due to aggressive tax planning are reduced	**No direct impact**

Source: Authors' illustration.

5.3 Unilateral instruments of the EU

Implementation of the OECD's two-pillar solution is problematic despite the fact that Pillar Two has now been implemented by the EU. Most notably, a potential blockade by the USA, India and Brazil would pose a major problem for implementation of the two-pillar solution (see Box 6).

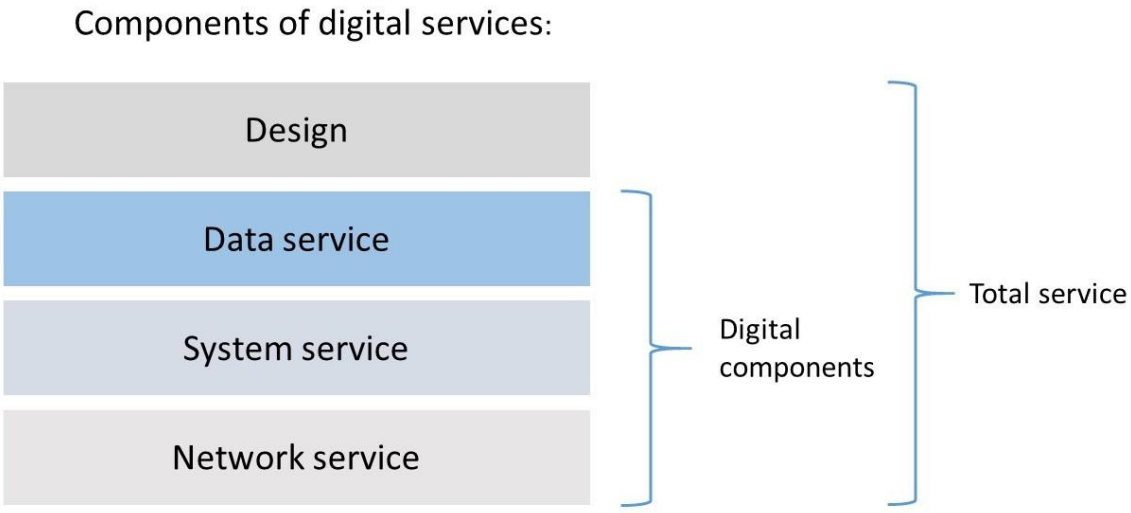
Due to the expected problems with implementation of the two-pillar solution, this section looks at three instruments that the EU could bring in unilaterally. There will be specific consideration given to the extent to which the instruments are capable of reducing the negative consequences outlined in section 4.2. This will not include the EU Commission's proposal to introduce the concept of a significant digital presence because the Member States' double taxation agreements with third countries must be adapted before the concept of a significant digital presence can be generally applied (see Box 7).

5.3.1 Conceptual considerations

With a seamless international tax treaty, there is by definition no BEPS because, basically, tax liability and tax payable is the same everywhere. However, the enforcement of agreements such as e.g. the OECD proposal is unlikely to be rapid. Parallel consideration must therefore be given to unilateral instruments that are not aimed at protectionism but - like the GDPR for example - want to set standards in order to ensure a level playing field for tax and competition, and, in principle, the taxing right. Unilateral instruments are imperfect, second-best solutions but, given the complex circumstances, represent the best approach, as well as being the most pragmatic in terms of implementation.

Starting points for taxation are obtained by breaking down digital services (cf. Figure 13). It is argued that a hybrid service consists of one analogue and several digital components: i) the direct service to the user who initiates it through their consumption ("prosumer"), ii) the system service consisting of the platform and software, licences, algorithms, servers, etc., and iii) the network service comprising of the use of digital networks.

Figure 13: Break-down of services



Source: Authors' illustration.

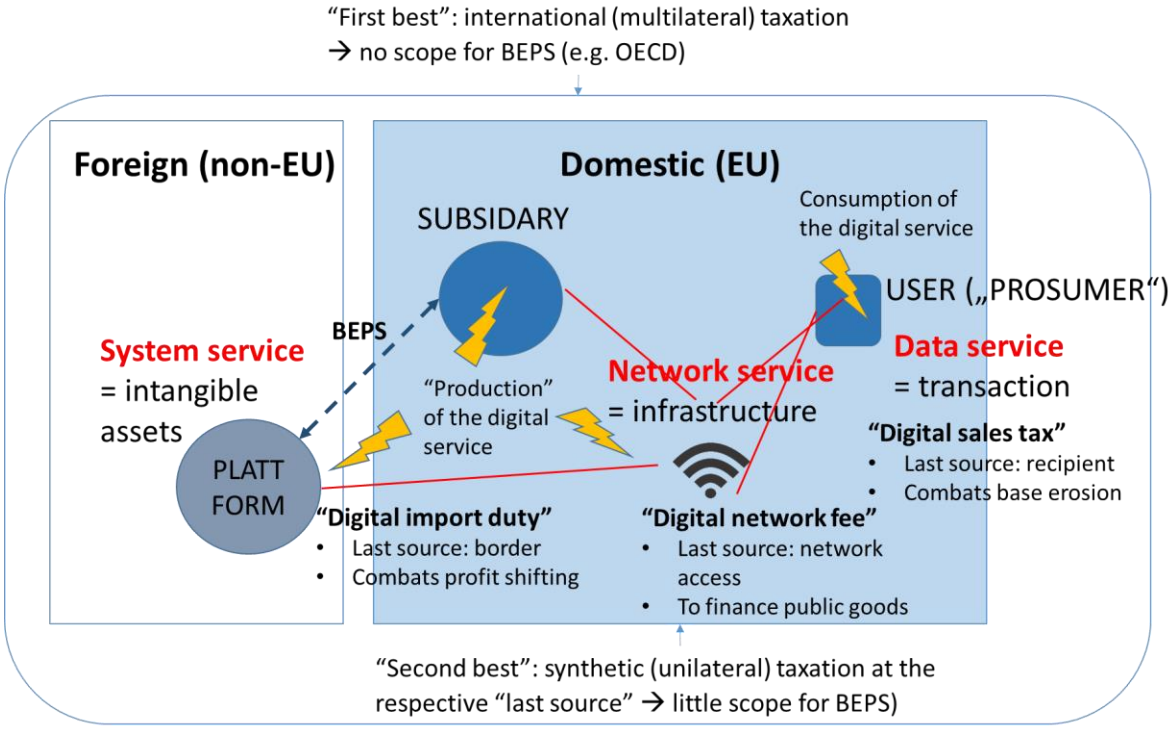
The individual components of the digital service can be established or consumed domestically or abroad or in various combinations. This is based on the concept of a "significant digital presence", which cannot be captured as a whole, but be constructed in a synthetic fashion. Accordingly, there are three possible approaches to taxation:

1. A "digital sales tax" on the service actually provided to a domestic user,
2. A "digital duty" on the system service imported from abroad,
3. A "digital network fee" for a network service used domestically.

An alternative approach to taxation results from the enterprise value, which - at least theoretically - corresponds to the discounted value of all future profits. Thus, if the value of digital services (as a flow variable) cannot be measured or attributed directly, the known value of market capitalisation (as a stock variable) can be used as a proxy.[132]

[132] See Saez, E. / Zucman, G. (2022), A wealth tax on corporations' stock, Economic Policy, Vol. 27, pp. 213-227.

Figure 14: Starting points for the taxation of digital services



Source: Authors' illustration.

The following specific instruments will be discussed: a duty on the import of software and software licences from third countries, a tax on the revenues generated by certain forms of digital services in the EU area and a fee for the use of European telecommunications networks by digital service providers from third countries. Table 3 compares the characteristics of the individual instruments. As regards their material and geographical starting points, they are basically complementary. Their respective designs also focus in different ways on achieving the three objectives pursued (see Section 5.1), although they do overlap to some extent.

Table 3: European instruments - design

Designation	Digital import duty	Digital sales tax	Digital network fee
Type of instrument	Duty	Tax	Fee
Material starting point	Import of software/software licences	Sale of data and online advertising, intermediation in online marketplaces	Access to European telecommunications networks
Geographical starting point	Border crossing from third countries into EU	Sale in the EU area	Interface to European networks
Basis of assessment	Import value amount	Sales revenue amount	1. Market access or 2. Capacity quotas
Determination of amount	By regulator (exogenous)	By regulator (exogenous)	Via auction (endogenous)
Affected party	Importers	Large digital service providers from third countries (thresholds)	Digital service providers from third countries

Source: Authors' illustration.

5.3.2 Introduction of import duties on software and software licences ("digital import duty")

Concept

One way for the EU to make corrections to the current system unilaterally, without the need for a global agreement, is provided by trade policy. Unlike corporate tax, the focus here is not on the company but on the individual product. Charging a duty on cross-border transactions involving imports into the EU area can be used to try to extract some of the rents generated by foreign digital service providers.

For this purpose, the product groups on which such a duty is to be levied must first be defined. It could be levied directly on the digital services provided to the end customer. However, the economic characteristics of these products make practical implementation difficult. In the case of digital platforms, for example, a significant proportion of the services provided to platform users are free of charge. Thus, there is no basis of assessment for levying a duty. But the economic characteristics also cause problems where digital services are not free of charge, e.g. where platforms provide advertising space to external advertisers. Since these services cannot be clearly located, digital service providers could circumvent an import duty by arranging for invoicing to take place via branches based inside the EU.

Instead, therefore, it is worth considering the option of targeting the cross-border trade in those goods which form an essential basis for the tax avoidance practices of multinational digital service providers: the transfer of software or software licences. Some of this trade is intra-group in nature with multinational digital service providers transferring ownership and usage rights to self-programmed software between their subsidiaries. This is at least partly motivated by the desire for tax optimisation (see Section 4). Multinational digital service providers can reduce their overall global tax burden by, among other things, selling rights to use software from subsidiaries in low-tax locations to those in high-tax locations in order to shift book profits towards low-tax locations.[133]

These trade flows also extensively affect the EU countries as import partners. Imposing a duty on the import of such goods into the EU will not allow BEPS practices to be avoided completely but at least some of the rents which they generate can be extracted for the benefit of the general public in Europe. The basis of assessment for the duty is the acquisition value posted by the receiving subsidiaries, in the case of the acquisition of property rights, and the posted licence fees in the case of the acquisition of user licences. The appropriate amount of duty is much more difficult to determine. The rate of duty should be set high enough to extract as much of the tax savings from BEPS practices as possible. At the same time, it should not be set so high that cross-border trade in software and software licences becomes prohibitively expensive, especially since not all forms of this trade primarily serve tax avoidance.

The collection of this "digital duty" would have to be structured in a fundamentally different way to that applicable to the movement of goods, since no physical border is crossed. Since, in this case, the

[133] In 2015, to address this issue, the OECD/G20 BEPs project also issued new guidelines on the application of the arm's length principle in corporate taxation as part of its action plan. According to transfer price experts, however, these recommendations are still too vague to ensure international harmonisation. See: Bickel, D. / Kircher, M. (2022), Neue Verrechnungspreisrichtlinien konsolidieren diverse BEPS-Veröffentlichungen, https://www.haufe.de/controlling/rechnungslegung/veroeffentlichung-neuer-oecd-verrechnungspreisrichtlinien_110_570174.html (7 March 2023).

occurrence of trade only becomes visible when the services are accounted for by the companies, collection would have to take place ex-post, after the transmission of tax-relevant data to the tax offices. That is also where responsibility for collection should lie.

Legal evaluation

EU law

Customs duties on transactions between Member States are not legally possible because the EU is a customs union. Art. 28 and Art. 30 TFEU explicitly prohibit such duties. Customs duties that become due when importing into the EU are therefore the only possibility.

Although new duties are not introduced by way of the ordinary legislative procedure, unanimity is not required. Under Art. 31 TFEU, Common Customs Tariff duties are determined by the Council, acting on a proposal from the Commission. This also includes the power to amend the customs nomenclature, i.e. to introduce customs duties on new goods.[134] Although Article 31 TFEU is located under Title II of the TFEU, which is entitled "Free Movement of Goods", there is good reason to believe that Art. 31 TFEU also permits the introduction of duty on services. Art. 28 and Art. 31 TFEU not only prohibit Member States from levying customs duties between Member States, as stated, but also require a Common Customs Tariff in relation to third countries. Member States are not therefore allowed to set their own duties on services vis-à-vis third countries. If one were to conclude, from its positioning in the layout of the TFEU, that Art. 31 TFEU only relates to customs duties on goods, this would mean that neither the EU nor its Member States would have the competence to impose customs duties on services.

Unless otherwise specified, the Council decides on the Common Customs Tariff by qualified majority (Art. 16 (3) TEU). Insofar as the imposition of a duty is part of trade policy, as in the case of anti-dumping duties[135], Art. 207 TFEU is the appropriate legal basis.[136] According to Art. 207 (2) TFEU, legislation takes place in the ordinary legislative procedure, i.e. by the Council (with a qualified majority) and the Parliament.

A secondary issue is the use of the funds accruing from customs duties. Under Art. 2 (1) (a) of the Own Resources Decision[137], revenues from customs duties are own resources of the EU (25% are retained by the Member States by way of collection costs according to Art. 9 (2)). With the exception of the collection costs, they therefore flow into the EU budget and not into the national budgets. An amendment to the Own Resources Decision requires unanimity in the Council pursuant to Art. 311 TFEU and the consent of the Member States in accordance with their respective constitutional requirements. However, the establishment of the multiannual financial framework also requires unanimity in the Council pursuant to Art. 312 (2) TFEU and, in addition, the consent of the majority of the members of the European Parliament.

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134 Waldhoff, C. in: Calliess/Ruffert, (publ.), EUV/AEUV Kommentar, 6th Edn. 2022, Art. 31 TFEU, para. 3.

135 See Hahn, M. in: Calliess/Ruffert, (publ.), EUV/AEUV Kommentar, 6th Edn. 2022, Art. 207 TFEU, para. 136 et seq.

136 Waldhoff, C. in: Calliess/Ruffert, (publ.), EUV/AEUV Kommentar, 6th Edn. 2022, Art. 31 TFEU, para. 4.

137 Decision (EU, Euratom) 2020/2053 on the system of own resources of the European Union and repealing Decision 2014/335/EU, Euratom, ELI: http://data.europa.eu/eli/dec/2020/2053/oj.

WTO law

The question is whether import duties on digital services are permissible under WTO law. The first point to consider here is the customs moratorium, according to which WTO members will continue their current practice of not imposing customs duties on electronic transmissions. This moratorium was adopted at the WTO Ministerial Conference in 1998 with effect until the next WTO Ministerial Conference and has since been extended from one Ministerial Conference to the next, most recently in March 2024. Specifically, the moratorium applies until the next ministerial conference or until March 31, 2026, whichever is earlier.[138]

The scope of the moratorium is disputed.[139] The dispute centres on whether it is only the transmission service that cannot be subject to customs duties or also the transferred content. This is what Indonesia said in the run-up to the 2017 Ministerial Conference: "The […] moratorium shall not apply to electronically transmitted goods and services. In other words, the extension of the moratorium applies only to the electronic transmissions and not to products or contents which are submitted electronically."[140] At the Ministerial Conference itself, Indonesia requested the addition of a footnote stating that the moratorium does not apply to electronically transmitted goods,[141] but was unsuccessful in this despite the support of South Africa and India[142]. Nevertheless, Indonesia introduced a duty on electronically transmitted films, e-books and software,[143] albeit with a nil rate[144]. The EU, on the other hand, takes the opposite position arguing that digitally transmitted content is also covered by the customs moratorium.[145]

Regardless of this dispute, however, the moratorium on customs duties is not an insurmountable obstacle to the introduction of duties. Since it is a temporary moratorium and an extension requires consensus, the EU can simply refuse a new extension thereby allowing the moratorium to expire. In

138 WTO (2024), WT/MIN(24)/38, https://docs.wto.org/dol2fe/Pages/FE_Search/FE_S_S006.aspx?DataSource=Cat&query=@Symbol=%22WT/MIN(24)/38%22%20OR%20@Symbol=%22WT/MIN(24)/38/*%22&Language=English&Context=ScriptedSearches&languageUIChanged=true# (11.04.2024).

139 Software is generally considered to be covered; see International Chamber of Commerce (2019), The WTO Moratorium on Customs Duties on Electronic Transmissions, https://iccwbo.org/content/uploads/sites/3/2019/11/2019-icc-wto-moratorium-custom-duties.pdf (16 August 2022).

140 WTO (2017), WT/MIN(17)/68, https://docs.wto.org/dol2fe/Pages/SS/directdoc.aspx?filename=q:/WT/MIN17/68.pdf&Open=True (5 August 2022).

141 WTO (2017), WT/MIN(17)/68, https://docs.wto.org/dol2fe/Pages/SS/directdoc.aspx?filename=q:/WT/MIN17/68.pdf&Open=True (5 August 2022).

142 Kyvik Nordås, H. (2021), The Moratorium on Tariffs on E-commerce Should Stay, https://www.cepweb.org/the-moratorium-on-tariffs-on-e-commerce-should-stay/ (19 July 2022).

143 UNCTAD (2021), What is at stake for developing countries in trade negotiations on e-commerce? https://www.un-ilibrary.org/content/books/9789210056366/read (5 August 2022), p. 39.

144 UNCTAD (2021), What is at stake for developing countries in trade negotiations on e-commerce? https://www.un-ilibrary.org/content/books/9789210056366/read (5 August 2022), p. 39; Kyvik Nordås, H. (2021), The Moratorium on Tariffs on E-commerce Should Stay, https://www.cepweb.org/the-moratorium-on-tariffs-on-e-commerce-should-stay/ (19 July 2022).

145 See WTO (2019), INF/ECOM/22, https://docs.wto.org/dol2fe/Pages/FE_Search/FE_S_S009-DP.aspx?language=E&CatalogueIdList=253794,253801,253802,253751,253696,253697,253698,253699,253560,252791&CurrentCatalogueIdIndex=6&FullTextHash=&HasEnglishRecord=True&HasFrenchRecord=True&HasSpanishRecord=True https://trade.ec.europa.eu/doclib/docs/2019/may/tradoc_157880.pdf (15 March 2024).

addition, the moratorium is a purely political agreement and not legally binding.[146] A violation of the moratorium would probably anger the other parties, but would not entail any legal consequences.

If the customs duty moratorium is not an insurmountable obstacle, we need to examine what barriers are contained in the WTO agreements which consist of the GATT (General Agreement on Tariffs and Trade), GATS (General Agreement on Trade in Services) and TRIPS (Agreement on Trade-Related Aspects of Intellectual Property Rights). The first step is to determine whether it is the GATT or the GATS that is applicable; a question on which WTO members have taken opposing positions.[147] With regard to films, the WTO Appellate Body took a position in the *China - Audiovisuals* case on whether films are subject to the GATT or the GATS. It concluded that the GATT applies when the content of the film is transported on a physical data carrier.[148] Since the distribution of e.g. software on a CD-ROM or films on DVDs is certainly not the usual method used for the cross-border transmission of digital content, the following analysis will therefore focus on the GATS rules regarding the customs duty issue.

Certainly, states do not usually impose customs duties on services.[149] The WTO Council for Trade in Services could only give a single example from a 1998 document.[150] But as it also stated: "There is no reason in principle why customs duties should not be applied to services, whether supplied electronically or in any other way"[151] Thus, the GATS does not per se prevent WTO members from imposing customs duties or customs-equivalent duties on services. The reason for this lies in the basic concept of the GATS, which does not impose a comprehensive obligation on WTO members to open up the services market, but instead focuses on the so-called specific commitments of the members.[152] Members can control the extent to which they want to commit through their specific commitments. They can decide whether they want to make any commitments at all with regard to a sector, or they can restrict market access or limit it to certain modes of delivery.[153] Art. XVII of the GATS now contains the principle of national treatment, which obliges members to "accord to the services and service suppliers of any other member, in respect of all measures affecting the supply of services, treatment no less favourable than that it accords to its own like services and service suppliers". A tax that is only levied on foreign services runs counter to this provision.[154] However, under Art. XVII para. 1, this obligation only applies to those sectors for which the respective member has assumed specific

146 What is at stake for developing countries in trade negotiations on e-commerce? https://www.un-ilibrary.org/content/books/9789210056366/read (5 August 2022), p. 39; Sucker, F. (2009), Audiovisuelle Medien innerhalb der WTO: Waren, Dienstleistungen und/oder geistiges Eigentum? Zeitschrift für Urheber- und Medienrecht, vol. 13, p. 30- 39(36).

147 See Sucker, F. (2009), Audiovisuelle Medien innerhalb der WTO: Waren, Dienstleistungen und/oder geistiges Eigentum? Zeitschrift für Urheber- und Medienrecht, vol. 13, pp. 30-39 (34); Leier, K.-P. (2002), Elektronischer Handel in der Welthandelsorganisation (WTO), Multimedia und Recht, vol. 5, p. 781- 787(783).

148 WTO Appellate Body, AB-2009-3, paras. 188, 196.

149 See Sucker, F. (2009), Audiovisuelle Medien innerhalb der WTO: Waren, Dienstleistungen und/oder geistiges Eigentum? Zeitschrift für Urheber- und Medienrecht, vol. 13, pp. 30-39 (36); Leier, K.-P. (2002), Elektronischer Handel in der Welthandelsorganisation (WTO), Multimedia und Recht, vol. 5, p. 781- 787(782).

150 WTO Council for Trade in Services (1998), WT/S/C/W/68, https://docs.wto.org/dol2fe/Pages/SS/directdoc.aspx?filename=Q:/S/C/w68.pdf&Open=True (5 August 2022), para. 34.

151 WTO Council for Trade in Services (1998), WT/S/C/W/68, https://docs.wto.org/dol2fe/Pages/SS/directdoc.aspx?filename=Q:/S/C/w68.pdf&Open=True (5 August 2022), para. 34.

152 Michaelis, M. (2010), Dienstleistungshandel (GATS), in: Hilf, M. / Oeter, S. (publ.), WTO-Recht, 2. Edn., Art. 20 para. 44.

153 Michaelis, M. (2010), Dienstleistungshandel (GATS), in: Hilf, M. / Oeter, S. (publ.), WTO-Recht, 2. Edn., Art. 20 para. 47.

154 WTO Council for Trade in Services (1998), WT/S/C/W/68, https://docs.wto.org/dol2fe/Pages/SS/directdoc.aspx?filename=Q:/S/C/w68.pdf&Open=True (5 August 2022), para. 35.

commitments. If a Member has not assumed specific commitments for a sector, the imposition of customs or customs-equivalent duties on such services cannot violate the GATS.[155]

The EU has assumed commitments for most of the service sectors on the WTO list, in particular telecommunications services and computer services.[156] However, it has not assumed any commitments for the audiovisual services sector, which includes, for example, films[157].[158] As regards audiovisual services, therefore, it would already be possible to introduce customs or customs-equivalent duties. With regard to services that are currently covered, the EU would first have to withdraw its commitments under Art. XXI GATS, with three-months' notice. If another WTO member, whose trade benefits may be affected by such withdrawal ("affected Member"), so requests, the EU must enter into negotiations with that Member with a view to reaching agreement on any necessary compensatory adjustment. If no agreement is reached, the affected member may submit the matter to arbitration. If this happens, the EU cannot withdraw its commitments until it has made compensatory adjustments in accordance with the findings of the arbitration. If the EU fails to comply, an affected member that has participated in the arbitration may in turn withdraw equivalent benefits with respect to the EU in accordance with the findings of the arbitration. The procedure under Art. XXI can be protracted, but ultimately it is not an insurmountable obstacle to the introduction of a customs duty.

TRIPS too does not stand in the way of imposing customs duty. Although Art. 3 also contains a national treatment clause, it relates to the protection of intellectual property (which also includes software[159]). This provision thus obliges members to treat nationals of other members no less favourably than their own nationals in the protection of intellectual property, which includes, inter alia, the acquisition, scope and enforcement of intellectual property rights. However, a prohibition of customs duties cannot be inferred from this provision or from any other TRIPS provision.

OECD Two-Pillar Solution

Another possible obstacle is the OECD's two-pillar solution. One element of Pillar 1 is, as stated, the obligation not to introduce any new taxes on digital services or similar measures ("other relevant similar measures"). It may be argued that a duty on certain digital services constitutes such a similar measure, since from the point of view of the financial burden it is irrelevant whether a measure is called a customs duty or a tax, and participating states might be tempted to circumvent the prohibition of taxes on digital services by imposing customs duties on digital services. Ultimately, however, only the multilateral convention under international law can provide clarity on this.

In addition, the ban on introducing new taxes on digital services applied pre-emptively, but only until 31 December 2023.

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155 Likewise Sucker, F. (2009), Audiovisuelle Medien innerhalb der WTO: Waren, Dienstleistungen und/oder geistiges Eigentum? Zeitschrift für Urheber- und Medienrecht, vol. 13, p. 30-39 (35 f); Leier, K.-P. (2002), Elektronischer Handel in der Welthandelsorganisation (WTO), Multimedia und Recht, vol. 5, pp. 781-787 (784 f); WT/S/C/W/68, 16.11.1998, para. 35.

156 See the list of commitments; OJ C 2019/278, 1.

157 Michaelis, M. (2010), Ausgewählte Dienstleistungssektoren, in: Hilf, M. / Oeter, S. (publ.), WTO-Recht, 2. Edn., Art. 21 para. 35.

158 See Leier, K.-P. (2002), Elektronischer Handel in der Welthandelsorganisation (WTO), Multimedia und Recht, vol. 5 , pp. 781- 787.

159 Götting, H.-P. / Lauber-Rönsberg, A. Internationaler Schutz des geistigen Eigentums, in: Tietje, C. / Nowrot, K. (publ.), Internationales Wirtschaftsrecht, 3rd Edn. 2021, Art. 14, para. 109.

Economic impact assessment

The practical suitability of import duties depends first of all on the relevance of cross-border transactions in the markets for digital goods and how to record these transactions. Measuring trade in digital services is methodologically much more challenging than measuring international trade in merchandise (see Box 8). Since international trade in services, unlike cross-border trade in merchandise, is not directly recorded by customs authorities at national borders, no high-resolution goods statistics are available for the classification of traded services. Instead, the starting point is the balance of payments statistics measuring economic transactions between residents and non-residents, specifically the services balance segment. These imports and exports are broken down into individual service categories using the Extended Balance of Payments (EBOPS) classification, which is an internationally agreed system for the breakdown of service types.[160] Current approaches to measuring trade in digital services involve combining individual categories of the EBOPS system to form a separate main category. These approaches vary as regards the categories that are selected. Table 4 provides an overview of the categories selected by the various institutions.

[160] UN (2010) Manual on Statistics of International Trade in Services 2010, Annex I, https://unstats.un.org/unsd/classifications/Family/Detail/101 (5 August 2022), pp. 145-148.

Table 4: Selection of product categories in the EBOPS classification

EBOPS Category				
de	Designation	ICT services (BEA definition)	ICT services (OECD definition)	Potentially ICT-enabled services (BEA definition)
6	Insurance and Pension Services			X
7	Financial Services			X
8.1	Franchises and trademarks licensing fees			X
8.2	Licenses for the use of outcomes of research and development			X
8.3	Licenses to reproduce and/or distribute computer software	X		X
8.4	Licenses to reproduce and/or distribute audiovisual and other products			X
9.1	Telecommunication Services	X	X	X
9.2	Computer Services	X	X	X
9.3	Information Services		X	X
10.1	Research and Development Services			X
10.2	Professional and management consulting service			X
10.3.1	Architectural, engineering, scientific, and other technical services			X
10.3.4	Trade-related Services			X
11.1	Audiovisual and related Services			X
11.2	Other personal, cultural, and recreational services			X

Source: BEA (2024); OECD (2024). x: included in the definition.

Basically, in all the approaches, "ICT services" form the core of the definition. This main category of the EBOPS classification combines telecommunications, computer and information services which already gives rise to the problem that not all of the services covered are provided in a fully digital manner. The telecommunications sector includes the provision of all types of communication networks, in addition to the internet and mobile phone network, for example, as well as telephone, radio and television transmission. "Computer Services" covers all services related to hardware and software, as well as data processing in general, which includes the provision of software, IT consulting and repair as well as the hosting of data. Finally, the Information Services segment includes the activities of news agencies as well as revenues from the online provision of information via web portals. At the same time, it also contains a range of information services provided in analogue form, such as those offered by libraries and archives. The OECD follows this EBOPS definition for its selection of "ICT Services".[161] The US Bureau of Economic Analysis (BEA) takes a slightly different approach by excluding "Information Services" from the set of "ICT Services". Instead, it includes fees from the use of intellectual property in connection with the distribution and reproduction of software.[162]

At the same time, "ICT services" does not include all forms of services that are at least partially provided digitally or enabled by digital data exchange. Thus, the US Bureau of Economic Analysis has developed a broader category of "Potentially ICT-Enabled Services". It complements the core ICT services with those that are traditionally assigned to the analogue world but have been made possible

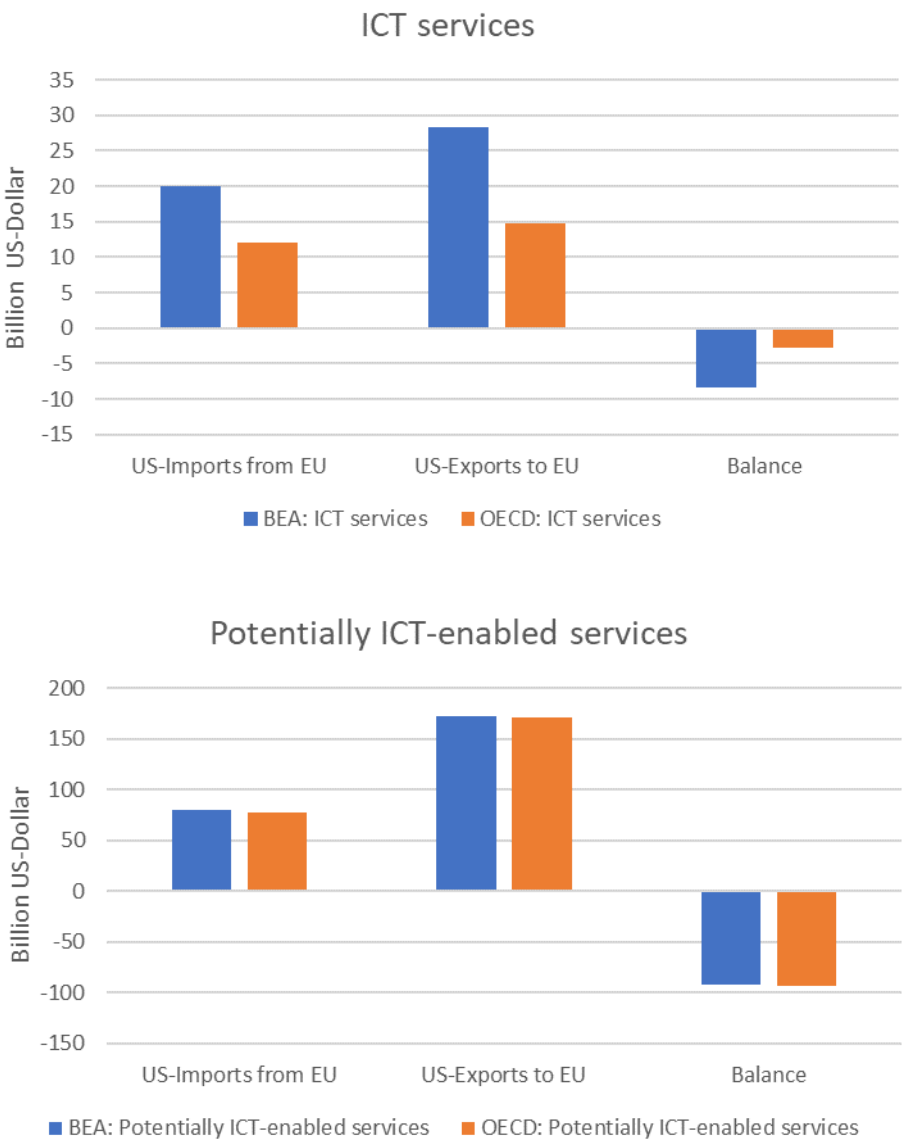
[161] OECD (2024), Trade in services by partner economy. OECD data - trade in goods and services, https://stats.oecd.org/Index.aspx?DataSetCode=TISP_EBOPS2010 (15 March 2024).

[162] BEA (2024), ICT trade. US Bureau of Economic Analysis, https://apps.bea.gov/iTable/iTable.cfm?reqid=62&step=9&isuri=1&6210=4#reqid=62&step=9&isuri=1&6210=4 (15 March 2024).

or provided partly through the use of ICT services. However, the extent to which this occurs is unknown and an approximate estimation is not possible due to the limited level of disaggregation in the EBOPS classification. These are therefore purely potential indicators. Analyses carried out over time may therefore be particularly liable to distortion as they are unable to depict any increase in the degree of digitalisation in individual services. It is therefore likely that, overall, the existing indicators will deviate from the true extent of the digital services trade but it is unclear whether they will overestimate it or underestimate it.

Figure 15 compares the results for bilateral trade in 2021 between the EU and the US broken down into exports and imports. The first striking thing about ICT services is the major difference between the results according to the BEA definition and those under the OECD definition, especially regarding the level of EU imports from the USA. The area of software licensing, which is only included in the BEA definition, obviously plays a major role for the assessment of trade flows. Also noteworthy is the difference in the size of trade flows depending on whether the narrower or broader definition is used. The value of trade in services that are potentially enabled by digital means exceeds trade in ICT services many times over. From an EU perspective, the balance is also far more negative than when confined to purely ICT services. A more detailed breakdown of the subcategories shows that the trade in rights to use intellectual property plays an important role here (see Figure 16). This includes licence fees for franchisees, for the use of research results and for the reproduction and distribution of software, audiovisual services and other products and correlates with the practice of tax avoidance by digital service providers through the intra-group trading of such usage rights, as explained in section 4.1.2.

Figure 15: Exports and imports in ICT trade EU-USA in 2021



Source: BEA (2022); OECD (2022).

Box 8: Measuring trade in digital services

Trade in services differs fundamentally in several aspects from trade in merchandise. The export of merchandise requires at least two separate process steps: manufacture of the goods and their delivery to the recipients. In the case of services, on the other hand, manufacture and delivery of the goods coincide because the good here consists of the provision of the service to the recipients. As a result, international trade cannot be defined based on deliveries crossing the border as is the case with trade in merchandise. Alternative indicators in this case would be the mobility of service providers and recipients, as well as provision across national borders. The General Agreement on Trade in Services (GATS), made between the WTO countries, distinguishes between four modes of supply with regard to trade in services. Specifically, an export of services from country A to country B occurs in the following cases:

Mode 1: Cross-border - A company in country A provides cross-border services to recipients in country B

Mode 2: Consumption abroad - nationals from country B travel to country A to consume services from local companies there

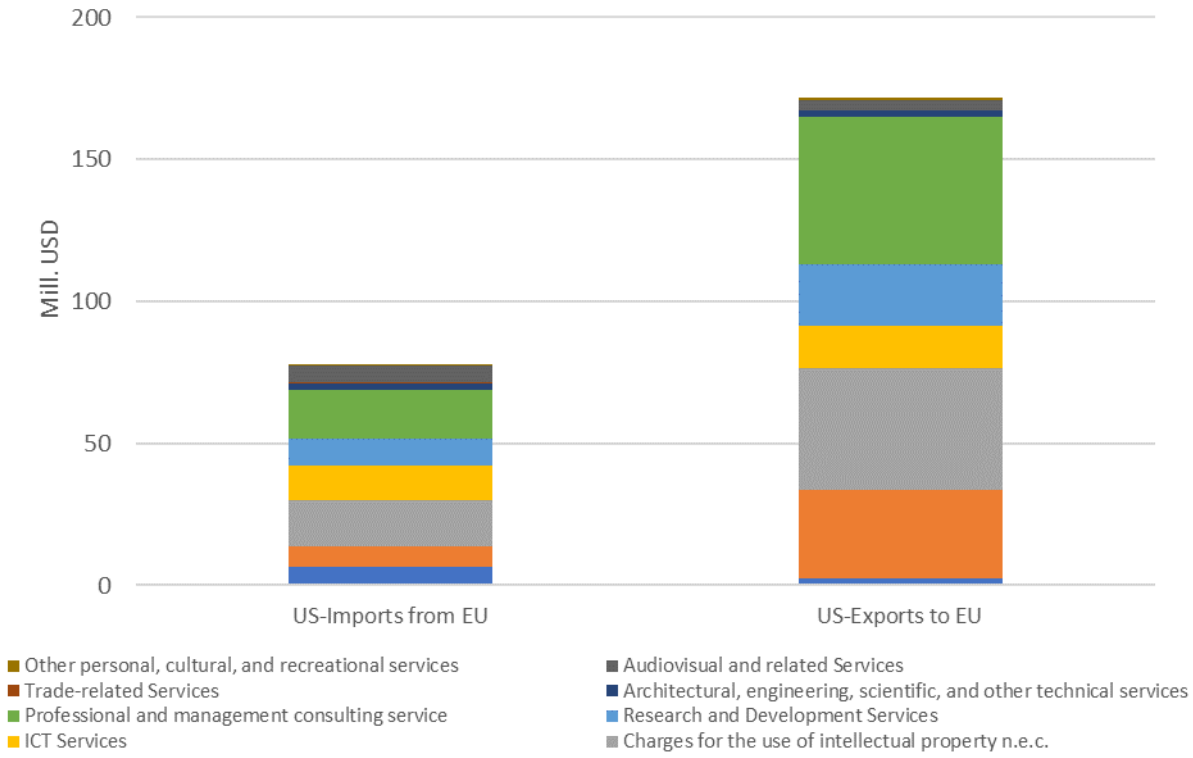
Mode 3: Commercial presence - A company in country A provides services to recipients in country B through a subsidiary in country B

Mode 4: Movement of natural persons - nationals of country A travel to country B to provide services to local recipients there

In the case of digital services, there is the added consideration that the service provision takes place in the digital space and thus cannot usually be geographically located. Thus, in many cases, it is not possible to classify the provision of a digital service as clearly cross-border or local. Instead of using the place of provision to determine international trade, the places of business and/or residence of suppliers and recipients can serve as alternative criteria. Thus, using the online services of foreign digital companies can be considered an import, regardless of the location of the associated data transfer. If these online services are provided by domestic subsidiaries of international corporations, they can also be referred to as imports under Mode 3.

There is a **narrow** and a **broad** definition of goods as applied to trade in digital services. The narrow definition only covers those services that are of necessity dependent on digital data exchange, i.e. have only been developed as part of the emergence of an internet economy. These include social media platforms, web portals and web hosting applications. Since they are tied to the transfer of data, it is obvious that the provision of services will always be digital. In addition to this "digital core", a second definition includes service categories that are not tied to digital data exchange but whose provision is now also (partly) digital. These include online offers of financial and insurance services, as well as the important area of online trade in merchandise (e-commerce). A practical problem with the inclusion of such originally purely analogue services is that their actual degree of digitalisation is not apparent from the trade statistics.

Figure 16: Composition of trade in "Potentially ICT-enabled services" in 2021



Source: OECD (2024)

A duty on the import of software and software licences should thus in principle have a broad revenue base. However, a key factor in the economic impact of customs duties is also their accuracy. By its very nature, a customs duty is triggered by the occurrence of a cross-border transaction. It does not discriminate between companies nor does it make any distinction between the reasons that led to this transaction. It would also affect smaller digital businesses whose potential for profit shifting is limited or, in general, companies whose software licensing practices are not based on tax optimisation.

This is where the limitations of such an instrument become apparent. The very actors which the instrument is targeting, i.e. large multinational digital service providers, are precisely those who have the best avoidance options. Avoidance here can take both geographical and material form. Thus, digital service providers may try to minimise the customs burden by restructuring their intra-group licensing practices. They could, for example, limit trade in licences as far as possible to intra-European transactions between EU subsidiaries, by transferring software rights to European subsidiaries to an even greater extent than they do already.

With that in mind, it is also important not to limit the levying of customs duties solely to the trade in licences to use software but also to include the cross-border transfer of the ownership of software patents. In addition, avoidance options can also take material form. Insofar as the transactions that are subject to duty are motivated by the goal of tax optimisation, companies could replace them with other BEPS practices such as debt shifting or treaty shopping.[163] **Accuracy** is therefore **low**.

[163] Goerdt, G. (2021), Regulierung der Gewinnbesteuerung multinationaler Unternehmen-Quo vadis? (Doctoral dissertation, University of Freiburg, 2021), On the discussion relating to transfer pricing guidelines, see also Footnote 133.

For these reasons, a digital duty will make only a minor contribution to increasing **tax fairness** which is therefore only **weakly positive**. There are too many ways in which large digital service providers can avoid it, and at the same time a large number of other companies would be affected unintentionally. Imposing a duty will therefore contribute very little to achieving greater digital sovereignty for Europe. The implications for **digital sovereignty** are therefore **weakly positive**. Due to the variety of ways in which large digital service providers can avoid paying customs duty, they will feel very little pressure to effectively relocate capital to Europe.

Table 5: Digital import duty - implementation and impact assessment

Instrument	Implementation		Impact assessment			
	Challenges of practical implementation	Legal hurdles	Accuracy	Impact on tax fairness	Impact on digital sovereignty	Impact on network utilisation
Customs duties on trade in software and software licences **("digital import duty")**	Risk of the USA imposing retaliatory tariffs Level of the duty is difficult to determine objectively	**WTO law:** – Moratorium – Specific commitments under GATS **EU law:** – Introduction of customs duties: Qualified majority in the Council – Redistribution of revenues: Unanimity in Council required	**Low**: – Other possibilities for BEPS practices remain (geographical and material); companies not operating BEPS also affected	**Weakly positive:** – Benefits of BEPS practices slightly reduced	**Weakly positive:** – Market-dominating multinational suppliers only slightly weakened financially (as there are avoidance options)	**No direct impact**

Source: Authors' illustration.

5.3.3 Introduction of a sales tax on digital services ("digital sales tax")

Concept

Another instrument to get multinational digital companies to contribute to public expenditure in market jurisdictions is a tax on the revenues generated from digital services. The EU Commission proposed such a tax on 21 March 2018[164], basing it on the special economic features involved in the provision of digital services, i.e. the low need for a physical presence in the market jurisdiction, the importance of user participation and the major importance of intangible assets.[165] According to the Commission, these three special features lead to a disconnect between where profits are taxed and where value is created. In addition, the Commission complains that, due to aggressive tax planning, digital service providers do not necessarily pay taxes even if they have a permanent establishment in the market jurisdiction.

The Commission Proposal does not cover all digital services but only the revenues generated from the sale of user data and online advertising, and from intermediation in online marketplaces. The EU Commission justifies the selection of these three transaction types by stating that user participation "is central"[166]. According to the Commission, the contribution of users to value creation should be taxed in the country of the user, so that the place of taxation and the place of value creation coincide.

The tax rate is set at 3% without any grounds being given for this specific level, although the Commission does state that the tax rate should be low given that it is to be paid on turnover.[167]

The tax will only apply to companies that generated a worldwide revenue of over € 750 million in the last complete business year. In addition, they must have generated a revenue of over € 50 million from the three aforesaid activities, within the EU. The Commission justifies the first threshold by saying that larger and therefore more powerful companies benefit more from network effects and the user data generated. For these business models to be viable, companies need to be of a certain size. In addition, the Commission points out that larger companies have more opportunities for aggressive tax planning. The second threshold is justified by the fact that the companies concerned create a "significant digital footprint"[168] in the EU.

The tax will accrue to the state in which the user is located, and irrespective of whether the user has contributed monetarily to the company's revenue. In the case of online advertising, the users are those to whom the advertisement is displayed; in the case of intermediation in online marketplaces, the

[164] See EU Commission (2018), Proposal COM(2018) 148 of 21 March 2018 for a Council Directive on the common system of a digital services tax on revenues resulting from the provision of certain digital services.
[165] See EU Commission (2018), Proposal COM(2018) 148 of 21 March 2018 for a Council Directive on the common system of a digital services tax on revenues resulting from the provision of certain digital services, p 2.
[166] See EU Commission (2018), Proposal COM(2018) 148 of 21 March 2018 for a Council Directive on the common system of a digital services tax on revenues resulting from the provision of certain digital services, p. 6.
[167] See EU Commission (2018), Commission Staff Working Document SWD(2018) 81 final/2 of 21 March 2021, Proposal for a Council Directive laying down rules relating to the corporate taxation of a significant digital presence and Proposal for a Council Directive on the common system of a digital services tax on revenues resulting from the provision of certain digital services, p. 58.
[168] See EU Commission (2018), Proposal COM(2018) 148 of 21 March 2018 for a Council Directive on the common system of a digital services tax on revenues resulting from the provision of certain digital services, p. 10.

users are those who have been connected via the marketplace. Thus, a user can also be a business. In the case of data selling, users are those whose data is collected.

In order to minimise red tape, a company can pay the tax and submit the tax return in one Member State. This Member State will distribute the revenue between the Member States in accordance with the tax return.[169]

Legal evaluation

Part of the two-pillar solution, referred to under Pillar One, is the commitment not to introduce new taxes on digital services. Upon entry into force of the multilateral convention containing Pillar One, therefore, the introduction of a tax on digital services would be contrary to international law. Furthermore, as already stated, the commitment not to introduce new taxes on digital services also applies in advance. However, as stated above, this "advance effect" only applied until 31 December 2023.

The legal basis envisaged by the Commission is Article 113 TFEU. Article 113 TFEU requires unanimity in the Council and the European Parliament only has to be consulted.

Art. 113 TFEU allows for the harmonisation of legislation on turnover taxes, excise duties and other indirect taxes to the extent that such harmonisation is necessary to ensure the establishment and the functioning of the internal market and to avoid distortion of competition. The first requirement, therefore, is that these taxes already exist in the Member States.[170] This requirement is met. France[171], for example, has introduced a tax on revenues generated in France from targeted advertising services based on data collected from internet users, in particular via search engines and social networks, and on revenues from services for establishing contacts between internet users, particularly via marketplaces. Spain[172] has introduced a tax similar to the French model, and Italy,[173] Austria[174] and the Czech Republic[175] have introduced taxes on revenue from online advertising. The different tax rates -

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169 On the discussion regarding a realignment of EU competences regarding sales tax for better prevention of tax fraud, see e.g. Gerken, L. / Schick, G. (2004), Weniger Steuerbetrug durch sachgerechte EU-Kompetenzen bei der Umsatzbesteuerung, Argumente zu Marktwirtschaft und Politik, No. 81, Stiftung Marktwirtschaft.

170 Wernsmann, R. / Zirkl, C. (2014), Die Regelungskompetenz der EU für eine Finanztransaktionssteuer, Europäische Zeitschrift für Wirtschaftsrecht, vol. 17, p. 167- 172 (168).

171 See in this respect Handelskammer Hamburg (oJ), Frankreich führt eigene Digitalsteuer ein, https://w w w .hk24.de/produktmarken/beratung-service/recht-und-steuern/taxrecht/allgemeine-informationen/frankreich-fuehrt-eigene-digitalsteuer-ein-5019834; Leroy, P. (2020), Taxe numérique: la France l'appliquera en 2020, https://www.silicon.fr/taxe-numerique-la-france-lappliquera-en-2020-339803.html (all 22 July 2022).

172 See in this respect e.g. Yanes, G. (2020), Die steuerlichen Auswirkungen der Digitalsteuer in Spanien, https://lex.ahk.es/de/aktuelles-recht/die-steuerlichen-auswirkungen-der-digitalsteuer-spanien; Tagesspiegel (2020), Auch Spanien bittet jetzt Google, Facebook und Co. zur Kasse, https://www.tagesspiegel.de/wirtschaft/digitalsteuer-auch-spanien-bittet-jetzt-google-facebook-und-co-zur-kasse/25562750.html (both 8 August 2022).

173 See in this respect e.g. Schwalger, P. (2019), Tschechien und Italien führen Digitalsteuer ein, https://www.onlinehaendler-news.de/e-commerce-trends/internationales/132051-tschechien-italien-digitalsteuer; IWW-Institut (2019), Italien und Tschechien planen die Einführung einer eigenen Digitalsteuer,https://www.iww.de/pistb/steuerrecht-aktuell/digitalsteuer-italien-und-tschechien-planen-die-einfuehrung-einer-eigenen-digitalsteuer-n125605 (both 8 August 2022).

174 See in this respect e.g. Bundesministerium für Finanzen (2022), Digitalsteuergesetz 2020, https://www.bmf.gv.at/themen/steuern/steuern-von-a-bis-z/digitalsteuergesetz-2020.html%5e; Bundesministerium für Finanzen (2022), Digitalsteuergesetz, https://www.usp.gv.at/steuern-finanzen/weitere-steuern-und-abgaben/digitalsteuergesetz.html (both 8 Augsut 2022).

175 See in this respect e.g. Janzer, T. / Beránková, T. (2020), Digitalsteuer? USA drohen Tschechien, https://deutsch.radio.cz/digitalsteuer-usa-drohen-tschechien-8110029; Schwalger, P. (2019), Tschechien und Italien

3% in Italy, 5% in Austria, 7% in the Czech Republic - and the differences in scope - either only advertising revenues or also other revenues - indicate that harmonisation is necessary to avoid distortions of competition and for the functioning of the internal market.

However, using Art. 113 TFEU as a legal basis has also been called into question. The Advisory Board to the Federal Ministry of Finance[176] argues that the proposed digital sales tax is not an indirect tax within the meaning of Art. 113 TFEU because, under the Commission's plans, the costs of the tax are not meant to be passed on to consumers but borne by the digital corporations, who are supposed to make their fair contribution. Instead it constitutes a new variety of income taxation. Looked at in this light, the Advisory Board believes it is questionable whether Germany could agree to the introduction of this tax in the Council. In its decision on the nuclear fuel tax, the Federal Constitutional Court stated that the Federation and the Federal States (*Bundesländer*) did not have a free right to determine taxes but were only allowed to introduce new taxes in accordance with the division of powers laid down by the financial system. The digital sales tax is a hybrid tax which combines the features of both an income tax and a sales tax. The Advisory Board therefore considered it questionable whether Germany could agree in the Council to a directive requiring the introduction of a tax that was not compatible with German constitutional law.

This argument could be countered by the fact that, for example, after the introduction of the tax on online advertising in Austria, Google did indeed pass on the costs to its customers[177] and similar effects were also observed in the United Kingdom and Turkey when a digital tax was introduced there[178], which supports its classification as an indirect tax. Nevertheless, a certain doubt remains regarding the legal basis.

It should also be noted that the EU Commission only regards the digital tax as an "interim tax"[179] rather than a long-term solution. However, once a tax has been introduced on the basis of Art. 113 TFEU, its abolition will again require unanimity in the Council.

führen Digitalsteuer ein, https://www.onlinehaendler-news.de/e-commerce-trends/internationales/132051-tschechien-italien-digitalsteuer; IWW-Institut (2019), Italien und Tschechien planen die Einführung einer eigenen Digitalsteuer, https://www.iww.de/pistb/steuerrecht-aktuell/digitalsteuer-italien-und-tschechien-planen-die-einfuehrung-einer-eigenen-digitalsteuer-n125605 (all 8 August 2022).

176 Advisory Board to the Federal Ministry of Finance (2018), Stellungnahme zu den EU-Vorschlägen für eine Besteuerung der digitalen Wirtschaft, https://www.bundesfinanzministerium.de/Content/DE/Standardartikel/Ministerium/Geschaeftsbereich/Wissenschaftlicher_Beirat/Gutachten_und_Stellungnahmen/Ausgewaehlte_Texte/2018-09-27-digitale-Wirtschaft-anl.pdf?__blob=publicationFile&v=3 (5 August 2022).

177 Falter (2020), Digitalsteuer: Google lässt Österreich zahlen, https://www.falter.at/zeitung/20200909/digitalsteuer--google-laesst-oesterreich-zahlen/_750025132f (5 August 2022).

178 Bielawa, H. (2020), Apple, Google und Amazon geben Digitalsteuer an Kunden weiter, https://t3n.de/news/apple-google-amazon-geben-kunden-1318924/ (12 August 2022).

179 See EU Commission (2018), Fair Taxation of the Digital Economy, https://taxation-customs.ec.europa.eu/fair-taxation-digital-economy_en (5 August 2022).

In terms of content, Art. 113 TFEU allows both full harmonisation and partial harmonisation such as in the form of a minimum tax.[180] The Commission chose the latter option, for example, with its Proposal[181] for a Financial Transaction Tax.[182]

Economic impact assessment

If the digital tax described above were introduced in the EU, the revenue would amount to around 4[183] to 5[184] billion euros which is equivalent to 0.1% of total EU tax revenue. If digital tax is deductible, i.e. it reduces the basis for calculating corporate tax, the increase in total EU tax revenue of the Member States will be less. About half of the tax revenue would have to be paid by US digital service providers[185], for whom the digital tax acts as a de facto customs duty. The biggest obstacle to implementation is therefore a political one, namely the introduction of a retaliatory tariff by the USA.

The **accuracy of** the digital tax in terms of ensuring adequate contribution to public expenditure in the market jurisdictions **is moderate**. This is because restricting the digital tax to revenue from the sale of data and online advertising, as well as from intermediation in online marketplaces, means that it excludes a large number of digital service providers who currently do not make an adequate contribution to the financing of public expenditure in their market jurisdictions. In addition, the EU Commission's idea that the place of value creation should coincide with the place of taxation is unlikely to be sustainable in the long run because, as already stated, it is difficult to identify the place of performance of a digital service. The same applies to the individual contributions to value creation. The Commission also seems to be aware of these problems because it only regards the digital tax as an "interim tax"[186]. In the long term, it aims to introduce the concept of a significant digital presence.[187]

The Commission Proposal does not specify whether the digital tax is deductible, i.e. whether it reduces the basis of assessment for corporate tax. Deductibility would significantly improve accuracy because digital service providers who already participate appropriately in the financing of public expenditure would then only be subject to the digital tax in exceptional cases, for example where they do not generate any profits.

The high threshold only slightly reduces the accuracy, as it tends to be large multinational digital service providers that escape taxation in the destination country.

High thresholds do, however, offer avoidance options for service providers who are subject to digital tax. For example, they may deliberately try to stay below the threshold, such as by foregoing turnover or by splitting companies up. Such action is not unlikely because tax becomes due on all transactions

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180 See Bahns, J. / Brinkmann, J. / Gläser, L. / Sedlaczek, M., in: von der Groeben, H. / Schwarze, J. / Hatje, A. (Publ.), Europäisches Unionsrecht, 7th Edn. 2015, Art. 113, para. 2; Kamann, H.-G., in: Streinz, R. (Publ.), EUV/AEUV, 3rd Edn. 2018, Art. 113, para. 6.

181 European Commission (2011), Proposal COM(2011) 594 of 28 September 2011 for a Directive on the common system of financial transaction tax and amending Directive 2008/7/EC.

182 Kamann, H.-G., in: Streinz, R. (Publ.), EUV/AEUV, 3rd Edn. 2018, Art. 113, para. 27.

183 See ifo Institut (2018), Die Besteuerung der Digitalwirtschaft, p. 23.

184 See EU Commission (2018), Fair Taxation of the Digital Economy, https://taxation-customs.ec.europa.eu/fair-taxation-digital-economy_en (5 August 2022).

185 See ifo Institut (2018), Die Besteuerung der Digitalwirtschaft, p. 30.

186 See EU Commission (2018), Fair Taxation of the Digital Economy, https://taxation-customs.ec.europa.eu/fair-taxation-digital-economy_en (5 August 2022).

187 See EU Commission (2018), Commission Recommendation C(2018) 1650 of 21 March 2018 relating to the corporate taxation of a significant digital presence.

once the threshold is exceeded.[188] There are no other possibilities for avoiding the digital tax. All in all, therefore, the **avoidance options** for service providers subject to the digital tax **are small**.

The digital tax would mean that liable service providers who have not so far contributed to the financing of public expenditure in their market jurisdictions, or have done so only to a small extent, would have to contribute more. By contrast, liable service providers who already contribute adequately to the financing of public expenditure in their market jurisdictions would not face an additional burden, as long as the digital tax were deductible. The **impact on tax fairness is** therefore **positive**.

As the tax would largely affect US digital service providers, it would reduce the competitive advantages which these companies acquire by not adequately contributing to the financing of public expenditure in EU market jurisdictions. The relative competitive position of European digital service providers would thus improve. The **impact on EU digital sovereignty is positive.**

[188] See ifo Institut (2018), Die Besteuerung der Digitalwirtschaft, p. 17.

Table 6: Digital sales tax - Implementation and impact assessment

Instrument	Implementation			Impact assessment		
	Challenges of practical implementation	Legal hurdles	Accuracy	Impact on tax fairness	Impact on digital sovereignty	Impact on network utilisation
Digital sales tax	Risk of the USA imposing retaliatory tariffs Rate of tax is objectively difficult to determine	**EU law:** – Unanimity in the Council – Art. 113 TFEU is questionable as a legal basis **Two-Pillar Solution:** – No new digital taxes	**Moderate:** – does not cover all digital service providers who do not currently contribute adequately to the financing of public expenditure in their market jurisdictions; – only limited avoidance possibilities for companies subject to digital tax; – with deductibility of the digital tax, hardly any burden on service providers who already participate adequately in the financing of public expenditure in their market jurisdictions.	**Positive:** – all taxable digital service providers would make an appropriate contribution to the financing of public expenditure in their market jurisdictions.	**Positive:** – partial reduction in competitive advantages acquired by US digital companies through aggressive tax planning.	**No direct impact:** – No incentives to reduce data traffic.

Source: Authors' illustration.

5.3.4 Introduction of an infrastructure fee ("digital network fee")

Concept

Another regulatory instrument for addressing the societal problems arising from the activities of multinational digital service providers could be the introduction of a network fee. In this case, the idea is to make digital service providers from third countries pay for the right to route data through the European fixed and mobile network. This sort of special fee for foreign service providers may be

justified, on the one hand, as a form of compensation for the fact that, unlike European companies, they contribute less to the financing of public expenditure, as discussed above. On the other hand, it may also be a targeted response to the problem of congestion externalities partly caused by large multinational digital service providers (see section 4.1.3). Collecting the charge by way of an auction is appropriate to ensure that rents can be extracted as effectively as possible and to optimise the steering effect of the instrument. Given the novelty of this instrument, a gradual approach is recommended.

Initially, in the introductory phase, the network fee should only apply to especially large digital service providers with headquarters outside the EU. The auctioned asset could initially consist of the basic right to route data through the European fixed and mobile network for a limited period of time (e.g. one year), i.e. a form of flat fee. A solution like this may help to extract rents but is not sufficiently targeted in terms of its impact on network utilisation. In the medium term, the model should therefore be converted into an auction of network capacities. At that stage, all digital service providers with headquarters outside the EU should also be required to participate in the auction process.

For the auction process to be effective, it must be designed to indicate what the auction participants are actually willing to pay for network access. For this purpose we recommend a uniform price auction whereby bidders whose bids are above the threshold of acceptance all pay a price equal to the threshold. This method should neutralise, as far as possible, any possible information advantages which large suppliers may otherwise be able to exploit in pay-as-bid auctions.[189]

In order to avoid the risk of the auction unintentionally excluding suppliers from the European market, the conditions for a secondary market should also be created, whereby the right of use acquired via the auction should be made into a tradable certificate. The EU system for trading emission allowances (EU ETS) could serve as a model in this regard. In addition, sanctions should not aim to physically exclude digital service providers that do not have certificates. Instead, a monitoring system should be introduced to check ex-post at the end of each accounting period whether the companies have a sufficient number of certificates. If the quantity of certificates is insufficient, the sanction could be a purely monetary one involving the payment of a penalty rather than market exclusion. This could also defuse the legal problem connected to the requirement of net neutrality (see legal assessment). In this respect, too, the EU ETS can demonstrate the basic viability of such a system.[190]

Finally, an auction model also offers the opportunity to address further regulatory weaknesses related to digital services. For example, the right to participate in an auction or in the secondary market could be linked to compliance with specific conditions on the part of the digital service providers. This could include, for example, reducing technical barriers to market entry by introducing stricter requirements, e.g. for the interoperability of the systems used by digital service providers (creation of interfaces) and the portability of user data. Auctions could relate to specific services or to sub-markets, such as search engines. The network fee should also be designed as a tax-deductible cost so as to limit the burden on companies that pay tax on their earnings in the EU.

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189 Kahn, A. E. et al. (2001), Uniform pricing or pay-as-bid pricing: a dilemma for California and beyond. The electricity journal, Vol. 14(6), pp. 70-79.

190 Borghesi, S. / Montini, M. / Barreca, A. (2016), The EU ETS: The Pioneer—Main Purpose, Structure and Features, in: Borghesi, S. / Montini, M. / Barreca, A. (Publ.), The European Emission Trading System and Its Followers, p. 1-28).

Our concept thus ties in with the European policy debate on applying the "sender pays" principle to the regulation of charges for European telecommunications networks. This debate was sparked in May 2022 by an interview with EU Internal Market Commissioner Thierry Breton, in the French newspaper *Les Echos*, in which he announced an EU legislative initiative to "reorganise the fair remuneration of the networks".[191] The debate was fuelled by studies conducted by Frontier Economics (2022)[192] and Axon Partners Group (2022)[193], which highlighted the network costs to the general public caused by so-called "over-the-top" (OTT) service providers. Then in September 2022, Commissioner Breton announced a consultation process on the initiative and a legislative proposal from the Commission in 2023.[194] Two external expert reports were commissioned in preparation for this. The first report was prepared by the Body of European Regulators for Electronic Communications (BEREC) and assessed the need for such a measure. The second report focuses on the implications for innovation and competition and is due to be completed in the near future.[195] After several postponements, the Commission launched the promised consultation on 23 February 2023, which ran until 19 May.[196] In contrast to the concept presented in this Study, the Commission is considering direct payments from online actors, such as online content providers or electronic communication network providers, to internet access service providers for the purpose of financing network deployment.[197] On February 21, 2024, the EU Commission published a White Paper in which it sets out the costs of expanding the digital infrastructure in the EU. It also points out that it is not possible for the telecommunications providers that have been financing the expansion to date to finance the required expansion on their own.[198] The Commission is asking for comments on the White Paper as part of a public consultation until June 30, 2024.

Legal evaluation

EU law

Apart from Art. 352 TFEU, no other suitable legal basis is apparent. Art. 114 TFEU is not relevant because no comparable infrastructure charges exist or are planned in the Member States that could be harmonised at EU level. Art. 113 TFEU is ruled out for the same reason, irrespective of whether or

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191 Les Echos (2022), Bruxelles veut faire payer les réseaux télécoms aux Gafam, https://www.lesechos.fr/tech-medias/hightech/bruxelles-veut-taxer-les-gafam-pour-financer-les-reseaux-telecoms-1404614.

192 Frontier Economics (2022), Estimating OTT-traffic related costs on European telecommunications networks. A report for Deutsche Telekom, Orange, Telefonica and Vodafone, 07 April 2022.

193 See Axon Partners Group (2022).

194 Reuters (2022), EU to consult on making Big Tech contribute to telco network costs. https://www.reuters.com/technology/eu-consult-big-tech-contribution-telco-networks-by-end-q1-2023-2022-09-09/. https://www.euractiv.com/section/digital/news/eu-regulators-give-negative-view-on-proposal-to-make-platforms-pay-for-telecom-infrastructure/?_ga=2.178397728.502591085.1681415675-65251343.1676977535.

195 EURACTIV (2022), Telecoms regulation: EU regulators give negative view on proposal to make platforms pay for telecom infrastructure https://www.euractiv.com/section/digital/news/eu-regulators-give-negative-view-on-proposal-to-make-platforms-pay-for-telecom-infrastructure/?_ga=2.178397728.502591085.1681415675-65251343.1676977535.

196 EU Commission (2023), The future of the electronic communications sector and its infrastructure, https://digital-strategy.ec.europa.eu/en/consultations/future-electronic-communications-sector-and-its-infrastructure.

197 EU Commission (2023), Exploratory Consultation. The future of the electronic communications sector and its infrastructure https://taxation-customs.ec.europa.eu/fair-taxation-digital-economy_en.

198 EU Commission (2024), How to master Europe's digital infrastructure needs?, https://ec.europa.eu/newsroom/dae/redirection/document/102533 (12.04.2024).

not Art. 113 TFEU is considered to allow the harmonisation of fees and contributions[199]. Art. 352 TFEU requires unanimity in the Council and the consent of the European Parliament.

One argument often made against a network fee is that it violates the principle of network neutrality.[200] In essence, this states that all data packets on the internet are treated equally, regardless of content, service, sender, recipient or other factors.[201]. In EU law, it is contained in Art. 3 of the Single Telecoms Market Regulation[202]. Paragraph 3 states that providers of internet access services must treat all traffic equally when providing internet access services. In particular, they must not block, slow down, alter, restrict, interfere with, degrade or discriminate between specific content applications or services, except as necessary to comply with EU law, among other things[203]. Thus, if EU law provides for such measures, there is no breach of net neutrality under the Single Telecoms Market Regulation. Net neutrality has secondary rather than primary law status so it can therefore be modified by secondary legislation. Furthermore, the model presented here does not envisage actually excluding individual digital service providers from transmitting their content. They would only have to pay a penalty fee retrospectively if they fail to acquire enough certificates.

However, depending on the design of the instrument, conflicts with the EU Charter of Fundamental Rights may arise. Art. 11 CFR includes the right "to receive and impart information and ideas without interference by public authority and regardless of frontiers". If the introduction of a network fee means that information and ideas cannot be conveyed because, for example, the email provider has lost out in the auction, this would amount to an encroachment on the rights set out in Art. 11 CFR. In addition, Art. 7 CFR, which guarantees that every person has, among other things, the right to respect for their communications, could also be affected. This would be the case if a person were no longer able to send emails, but also if checks were made as to which IP address their device is communicating with. These problems can, however, be counteracted by ensuring that digital service providers without certificates are not physically excluded, as proposed here.

WTO law

Under WTO law, the situation is similar to that already discussed with regard to import duties. If a fee on access to European infrastructure is only payable by foreign companies, this means they are being treated less favourably than European companies. It therefore contradicts the principle of national treatment according to Art. XVII GATS. The EU can, however, free itself from this obligation if it

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199 Affirmed by Bahns, J. / Brinkmann, J. / Gläser, L. / Sedlaczek, M., in: von der Groeben, H. / Schwarze, J. / Hatje, A. (Publ.), Europäisches Unionsrecht, 7th Edn. 2015, Art. 113, para. 16; rejected by Seiler, C. in: Grabitz, E. / Hilf, M. / Nettesheim, M. (Publ.), Das Recht der Europäischen Union, 59th Update 2016, Art. 113, para. 20.

200 See e.g. the letter of 12 July 2022 from numerous MEPs to Commissioners Vestager and Breton, available at https://www.patrick-breyer.de/wp-content/uploads/2022/07/20220712_COM_Access-Fees-MEP-Letter_final3.pdf (22 July 2022).

201 See Baran, A.-K. / Eckhardt, P. / Kiesow, A. / van Roosebeke, B. (2013), Netzneutralität als Regulierungsziel: Eine ordnungspolitische und juristische Analyse, https://www.cep.eu/fileadmin/user_upload/cep.eu/Studien/Netzneutralitaet/cepStudie_Netzneutralitaet.pdf, July 2013, p. 1.

202 Regulation (EU) 2015/2120 of 25 November 2015 laying down measures concerning open internet access and amending Directive 2002/22/EC on universal service and users' rights relating to electronic communications networks and services and Regulation (EU) No 531/2012 on roaming on public mobile communications networks within the Union, ELI: http://data.europa.eu/eli/reg/2015/2120/oj.

203 Preserving the integrity and security of the network; preventing or mitigating the effects of network congestion.

withdraws its specific commitments, in which case, of course, as described in section 5.3.2, it must anticipate retaliatory measures by other WTO states.

Economic impact assessment

A high extraction potential is afforded by the fact that a network fee is targeted directly at the source of the rents generated by digital service providers in the European market, namely access to European telecommunications networks. If the obligation to pay a fee is imposed specifically upon the head office of the respective group, there is also no possibility of escaping it via European subsidiaries. This is an essential difference to the digital duty. However, as with the digital import duty and the digital sales tax, there is a risk of retaliatory measures by third countries. This is especially true if the network fee is not passed on to customers but reduces the profits of digital service providers.

The **accuracy** of the network fee will depend on the threshold above which digital service providers have to pay a flat fee or a fee based on network use. If this threshold is set appropriately, accuracy will be **high**. The implications for **fair taxation** vary depending on whether the fee is a flat fee or capacity-based. In the case of a flat fee, it is weakly positive. In the case of the capacity-based fee, it is positive. This is because, in the latter case, large digital service providers will make a greater contribution to the financing of public assets than small ones. Finally, **digital sovereignty** would in principle be increased under both models as the infrastructure charge would only be payable by companies outside the EU. If capacity quotas were auctioned, however, the effect would be even more positive as large US suppliers would be subject to particularly hefty cost burdens.

At the same time, a quota system would facilitate better management of the risk of temporary network bottlenecks and the resulting congestion externalities. For this purpose, the data quotas to be auctioned would first have to be defined. A key advantage of the auction model that we are proposing would be that the price for the utilisation of these capacity quotas would not have to be defined by the regulators but would be determined by the companies themselves via their bids. Any ramifications for the network fee, caused by changing technical and economic conditions, would thus be taken into account. The prerequisite for this is that the auction mechanism allocates capacity quotas based on what the bidders are actually willing to pay. At the same time, the existence of sufficiently liquid secondary markets must be ensured on which the quotas acquired in the auctions can be freely traded. Both prerequisites aim to ensure that the distribution of access rights is influenced as little as possible by existing market power or random factors. This will counter fears that, under such a system, large service providers will exploit their market power to keep smaller providers out of the market. It is also important that network use without sufficient access rights is subject to purely monetary sanctions. By comparison with a physical exclusion from the network or the reduction of transmission speed or data volume, this limits regulatory control over the capacities actually used, but represents less of a challenge to the established principle of network neutrality (see legal evaluation).

One challenge for regulators is determining the capacity quotas that are to be auctioned. Ideally, since the capacity and utilisation situation varies regionally, geographically differentiated auctions should be held based on regional network areas. The volume of certificates auctioned must be continuously adjusted to changes in the data volume and the expansion of network capacities. Government revenues from auctions should be used in the most appropriate way possible. Ideally, they should flow into an EU fund for state co-financing of broadband expansion in structurally weak and sparsely populated regions.

A network fee designed in this way may help to solve two incentive problems at once: the incentive for platform operators to increase data efficiency and the incentive for network operators to expand the network.

Table 7: Digital network fee – implementation and impact assessment

Instrument	Implementation		Impact assessment			
	Challenges of practical implementation	Legal hurdles	Accuracy	Impact on tax fairness	Impact on digital sovereignty	Impact on network utilisation
Fee levied on digital companies from third countries for the right to use the network ("**digital network fee**")	Risk of retaliation by third countries Basis of assessment: – Who logs the company-related data streams? – Definition of network areas?	**EU law:** - Conflict with EU Charter of Fundamental Rights? - Unanimity in the Council **WTO law:** - Specific commitments under GATS	**High**	**With flat fee: Weakly positive** - Large digital service providers do not pay more than small ones **When aligned with capacity utilisation: Positive** - Large digital companies must make higher contributions	**With flat fee: Weakly positive** - As domestic companies are exempt from fee **When aligned with capacity utilisation: Positive** - As domestic companies are exempt from the fee and large multinational companies have particularly hefty burden	**With flat fee: No direct impact** **When aligned with capacity utilisation: Positive**

Source: Authors' illustration.

6 Comparative evaluation and conclusion

Digitalisation is having multiple effects on society. It is changing consumer behaviour and the products on offer. Many of these products have a digital component. This is true for both goods and services. For example, work meetings and doctor's appointments increasingly take place digitally, and trips and taxi rides are booked via online platforms. Meta's announcement about building a "metaverse" indicates that even more services will be digitalised in the future - in fact, a completely virtual world is going to emerge.

Increasing digitalisation also poses major challenges for the tax system, and particularly with regard to digital services. These challenges arise most notably from the fact that digital services can be provided in states where the service provider has no physical presence because, unlike numerous other services, the provision and consumption of a digital service do not have to occur in the same place. This is due in particular to the fact that the provision of digital services is essentially automated, with little transport time or cost. As proximity to the customer becomes less important for the choice of location, other factors gain relevance, such as energy costs, tax rates[204] and the regulatory framework.

The geographical separation between the provision and consumption of a digital service is stretching the concept of the permanent establishment as a basis for taxation to its limits. Service providers with users in a specific country are economically active in that country even if they don't have a physical presence there. They collect data in the user's country but this economic activity is not taxed because the user does not receive any payment for it. Instead, the user is allowed to use the service partially or even entirely free of charge. In addition, digital service providers benefit from public services in the user's country. These include, for example, a clear and consistent legal framework and administration of justice as well as (digital) literacy provided through public education. They can also use infrastructure services in Europe, in some cases free of charge, in both the digital (telecommunications network) and the analogue (road network) sphere, depending on the business area. If digital service providers do not have a physical presence in a country, they will not contribute to financing the fundamental support structure of their business, even though they may have a high digital presence and their business model may depend significantly on the conditions in the market jurisdiction**.**

The taxation of digital service providers is further complicated by the fact that they are able to avoid taxation even if they do have a permanent establishment in a state. Aggressive tax planning, whereby profits are shifted to low-tax countries, is possible because intangible assets, such as software, play a major role in the provision of a digital service. Determining an objective market value for intangible assets is difficult which means there is a lot of leeway when it comes to their valuation. In addition, internal licensing models can be deployed to relocate the income from these assets and shift profits to low-tax countries. This is achieved by transferring the ownership of software patents or other intangible assets to subsidiaries in these countries who then grant licences for the use of the assets to subsidiaries in countries with higher tax rates. Digital service providers are often very large multinational companies which also favours aggressive tax planning. Many of the major digital service providers are based in the US.

Due to economic features such as network effects and economies of scope and scale, many digital service markets, especially platform markets, are dominated by a few large US providers. From a

[204] ZEW (2017), Steuerliche Standortattraktivität digitaler Geschäftsmodelle. Steuerlicher Digitalisierungsindex 2017.

European perspective, this represents a significant restriction of its own digital sovereignty because it is these large providers who are currently dictating the direction and speed of innovation in digital services in the EU area. The EU itself can merely seek to exert a corrective effect through regulation.

The considerable dominance of American digital service providers is also evident in the use of telecommunications networks with much of the global data traffic from digital services being generated by a small group of US companies. Alphabet, Apple, Amazon, Meta, Microsoft and Netflix, for example, generate more than half of all global data traffic. The dominant market position of these service providers is also reflected in their extensive use of the digital infrastructure. This results in social problems, specifically as a consequence of free-rider behaviour. However, the telecommunications networks themselves are not public assets, either legally or economically. They are owned by private network operator companies. Nevertheless, the design of market regulation creates an incentive problem similar to that relating to public assets. Network operators are remunerated for granting network access to third parties via regulated charges that are funded by users. But consumers of digital services have limited control over the traffic they generate, due for example to high resolution presets by providers of videos. At the same time, providers have little incentive to increase the data efficiency of their services because they do not have to pay the societal costs resulting from unnecessary data traffic, such as the need to expand networks. Since private-sector incentives for network expansion are limited, especially in sparsely populated regions, expansion is supported from public funds provided by the general public. In Germany, for example, the federal and state governments are promoting broadband rollout, in areas where there is no private-sector expansion, through its "grey spot" funding programme. The general public thus bears part of the additional costs resulting from a lack of data efficiency in the provision of digital services.

The aforementioned economic and social consequences of increasing digitalisation will become greater in the future as the trend towards both digitalisation and the service society continues unabated. Against this backdrop, it is important to develop instruments which

- ensure that digital service providers contribute adequately to public spending in their market jurisdictions,
- enhance the digital sovereignty of the EU and
- promote the competitive use of data and the network.

Table 8 below contains an overview and description of the instruments available for this purpose. The redistribution of taxing rights and the global minimum tax contained in the OECD proposal cannot be introduced unilaterally by the EU. This can be done, however, using other instruments, i.e. the digital duty, the digital tax and the infrastructure charge. Some of the instruments have already been fleshed out in some detail, such as the proposal to introduce a digital sales tax. Others are more abstract, such as the digital import duty.

Table 8: Overview of the instruments

Level	Multilateral		Unilateral (EU)		
Designation	**Redistribution of taxing rights (OECD Pillar One)**	**Effective minimum tax rate of 15 % (OECD Pillar Two)**	**Customs duties on trade in software and software licences ("digital import duty")**	**Digital sales tax**	**Charge levied on digital companies from third countries for the right to use the network ("digital network fee")**
Type of instrument	Redistribution of basis of assessment	Minimum tax	Duty	Tax	Fee
Material starting point	Profits (basis), Turnover (distribution key)	Profits	Import of software/software licences	Sale of data and online advertising, intermediation in online marketplaces	Access to European telecommunications networks
Geographical starting point	Target markets	Subsidiaries	Border crossing from third countries into EU	Sale in the EU area	Interface to European networks
Basis of assessment	Amount of profits	Amount of profits	Import value amount	Sales revenue amount	1. Market access or 2. Capacity quotas
Determination of amount	Multi-level distribution mechanism	15%	By regulator (exogenous)	By regulator (exogenous)	Via auction (endogenous)
Affected party	Large companies (thresholds)	Large companies (thresholds)	Importers	Large digital service providers from third countries (thresholds)	Digital service providers from third countries

Source: Authors' illustration.

The following Table 9 shows the extent to which the instruments mentioned are suitable for mitigating the three economic and social consequences of increasing digitalisation. The practical and legal challenges to implementation of the instruments are indicated first. This is followed by the economic consequences with an assessment of the accuracy of the instruments and their impact on fair taxation, EU digital sovereignty and network utilisation. An instrument is accurate if it

- affects all digital service providers that currently do not adequately participate in public spending in their market jurisdictions, and ensures that these service providers have no means of avoiding the instrument, and
- does not impose an additional burden on digital service providers that already participate adequately in the financing of public spending in their market jurisdictions.

An instrument has a positive impact on tax fairness if it ensures that digital service providers that have not previously contributed adequately to public spending in their market jurisdictions then do so as a result of the instrument.

An instrument has a positive impact on EU sovereignty if it improves the competitive position of European digital service providers relative to US multinational digital service providers. This would be the case, for example, where an instrument reduces existing distortions of competition between those digital service providers that can shift their profits to low-tax countries and those that do not have this option.

Finally, an instrument has a positive impact on network utilisation if it provides incentives for digital companies that generate a lot of data traffic to reduce data.

Table 9: Comparative evaluation of the instruments

Level		Multilateral			Unilateral (EU)	
Instrument		Redistribution of taxing rights (OECD Pillar One)	Effective minimum tax rate of 15 % (OECD Pillar Two)	Customs duties on trade in software and software licences ("digital import duty")	Digital sales tax	Charge levied on digital companies from third countries for the right to use the network ("digital network fee")
Implementation	**Challenges of practical implementation**	Multilateral convention required	Global implementation required as far as possible	Risk of the USA imposing retaliatory tariffs Level of the duty is objectively difficult to determine;	Risk of the USA imposing retaliatory tariffs Rate of tax is difficult to determine objectively;	Risk of retaliation by third countries Basis of assessment: Who logs the company-related data streams? Definition of network areas?
	Legal hurdles	**EU law:** Unanimity in the Council or conclusion of an agreement by Member States		**EU law:** Introduction of tariffs with qualified majority in the Council Redistribution of revenue requires unanimity in the Council **WTO law:** Moratorium Specific commitments under GATS **2-pillar agreement:** No new digital taxes or similar measures	**EU law:** Unanimity in the Council Art. 113 TFEU is questionable as legal basis **2-pillar agreement:** No new digital taxes	**EU law:** Unanimity in the Council Conflict with EU Charter of Fundamental Rights? **WTO law:** Specific commitments under GATS
Impact assessment	**Accuracy**	**Relatively high**	**High**	**Low**	**Moderate**	**High**
	Impact on tax fairness	**Positive**	**Weakly positive**	**Weakly positive**	**Positive**	With flat fee: **Weakly positive** When aligned with capacity utilisation: **Positive**
	Impact on digital sovereignty	**Positive**	**Positive**	**Weakly positive**	**Positive**	With flat fee: **Weakly positive** When aligned with capacity utilisation: **Positive**
	Impact on network utilisation	**No direct impact**	**No direct impact**	**No direct impact**	**No direct impact**	With flat fee: **No direct consequences** When aligned with capacity utilisation: **Positive**

Source: Authors' illustration.

With regard to the practical challenges, the hurdles for implementing the OECD Pillars One and Two are particularly high, as this requires a multilateral convention, which is not yet in sight. On that basis, the probability of implementation is low (see Box 6). But even the instruments that the EU can introduce on its own face major hurdles. For example, the introduction of both a digital sales tax and a digital network fee requires unanimity in the Council. The introduction of a digital import duty is

possible with a qualified majority but it would violate the WTO moratorium not to impose customs duties on digital services as well as the provision in Pillar One not to introduce any new digital taxes or similar measures. In addition, all three measures under discussion run the risk of giving rise to retaliatory tariffs.

Looking at the consequences of the individual instruments, it becomes apparent that the accuracy of Pillar One of the OECD solution is relatively high because this instrument would indeed affect most very large digital service providers. The fact that not all very large service providers are affected is due to the high thresholds. However, Pillar Two of the two-pillar solution and the network fee have the highest accuracy, whilst the import duty has the lowest accuracy as it would also affect many companies that do not meet the description of very large digital service providers. In addition, the possibilities for avoidance are great.

The instruments also vary with regard to their impact on tax fairness. The OECD's Pillar One, the digital sales tax and a digital network fee linked to capacity use could have the effect of making very large digital service providers contribute to the financing of public expenditure in market jurisdictions. To a lesser extent, so could Pillar Two and the digital import duty. The digital import duty only covers the import of software and software licences and the avoidance options are significant.

The impact on digital sovereignty is positive in the case of Pillars One and Two of the two-pillar solution, the digital sales tax as well as the capacity-based network fee. This is because all these cases reduce the competitive disadvantages incurred by smaller digital service providers due to the fact that they pay regular taxes whilst very large digital service providers are able to minimise their tax burden through aggressive tax planning. The impact of the digital import duty and the digital network fee in the form of a flat fee would be weakly positive as the relative competitive position of European digital providers improves only slightly. Only a capacity-dependent infrastructure charge has direct consequences for network utilisation because it provides an incentive for digital service providers to increase data efficiency.

Beyond the approaches discussed here, it is important to solve the conceptual problems that exist in the determination of tax liability, the calculation of tax liability and effective enforcement - not least because the next major development, the Metaverse, is in the starting blocks. This includes, for example, concepts such as "significant digital presence". When it comes to cross-border digital services, which are soon to be purely virtual, there is ultimately a need for further development of the tax system - indeed, a completely new approach - for the digital age.

Annex

List of companies as a basis for estimating digital foreign sales (see Box 2)

Company	Head office	Field of operations	Platform Services Segment
Adobe	USA	Software	No
ADP	USA	Software	No
Airbnb	USA	Sharing Platform	Yes
Akamai Technologies	USA	Cybersecurity	No
Alphabet	USA	Web Portal	Yes
Amadeus	EU (Spain)	Software	No
Amazon	USA	Ecommerce	Yes
ANGI Homeservices Inc,	USA	Ecommerce, Social Media	Yes
Apple	USA	Hardware, Software, Streaming, Cloud Services	No
Atos	EU (France)	Financial Services, IT Consulting	No
Bloomberg L,P,	USA	Financial Services	No
Booking	USA	Travel Services	No
Carvana	USA	Ecommerce	Yes
Chewy	USA	Ecommerce	Yes
Cisco	USA	Telecommunications	No
Compass (company)	USA	Real Estate Services	No
Copart	USA	Ecommerce	Yes
Craigslist	USA	Social Media	Yes
DocuSign	USA	Software	No
DoorDash	USA	Logistics Services	No
Dropbox	USA	Cloud Services	No
eBay	USA	Ecommerce	Yes
Endurance Int. Group	USA	Web Hosting	No
EPAM Systems	USA	Software, IT Consulting	No
Epic Games	USA	Software	No
Expedia	USA	Travel Services	No
Facebook	USA	Social Media	Yes
Fanatics	USA	Ecommerce	Yes
GoDaddy	USA	Web Hosting	No
Groupon	USA	Ecommerce	Yes
Grubhub	USA	Logistics Services	No
IBM	USA	Hardware, Software	No
Instacart	USA	Logistics Services	No
Intuit	USA	Software	No
J2 Global	USA	Software, Cloud Services	No
LogMeIn	USA	Software	No
Lyft	USA	Sharing Platform	Yes
Match Group	USA	Social Media	Yes
Microsoft	USA	Software	No
NetApp	USA	Hardware, Software	No
Netflix	USA	Streaming	No
Newegg	USA	Ecommerce	Yes
Opendoor	USA	Real Estate Services	No

Oracle	USA	Hardware, Software	No
Overstock	USA	Ecommerce	Yes
PayPal	USA	Financial Services	No
Pinterest	USA	Social Media	Yes
Rackspace	USA	Web Hosting, Cloud Services	No
Sabre Corporation	USA	Travel Services	No
Salesforce	USA	Software, Cloud Services	No
SAP	EU (Germany)	Software	No
ServiceNow	USA	Software	No
Snap	USA	Social Media	Yes
Spotify	EU (Sweden)	Streaming	No
Square	USA	Financial Services	No
SS&C Technologies	USA	Software	No
Stitch Fix	USA	Ecommerce	Yes
Stripe	USA	Financial Services	No
Twilio	USA	Cloud Services	No
Twitter	USA	Social Media	Yes
Uber	USA	Sharing Platform	Yes
Ultimate Software	USA	Software	No
Verisign	USA	Web Hosting, Software	No
VMware	USA	Software	No
Vroom,com	USA	Ecommerce	Yes
Wish	USA	Ecommerce	Yes
Workday	USA	Software	No
Zillow	USA	Real Estate Services	No
Zoom Video	USA	Software	No
Zynga	USA	Software	No

Source: Burda (2021); cep (2022)

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