THE ARM'S LENGTH PRINCIPLE IN THE 21ST CENTURY – A LITERATURE OVERVIEW

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Abstract

The international tax system faces substantial challenges with respect to taxing the profits of multinational enterprises. Policymakers have put the focus on the taxation of the digital economy. The aim of this article is to provide a comprehensive overview of the arm's length principle (ALP) and the allocation of taxing rights of business profits, the concept of value creation, the impact of digitization on the allocation of taxing rights, and the current discussions regarding this topic. Finally, I make a connection between the value creation concept and the challenges of digitization, and ask if the ALP is fit for purpose. The paper is intended to refocus attention on the proper application of the ALP in the 21st century, as the rethinking exercise is more demanding and requires more work than the research which has been published so far. By doing this, I also provide food for thought about matters which could be further explored in order to enhance the current international tax system.

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INTRODUCTION

At present, the international tax system faces substantial challenges with respect to taxing the profits of multinational enterprises (MNE groups)[2]. Policymakers have put the focus on the taxation of the digital economy, especially with its inclusion in the Organisation for Economic Co-operation and Development (OECD) and G20's project on base erosion and profit shifting (BEPS). In the academic community, the debate about taxing digitalized businesses is rooted in the belief that the existing tax system cannot meet the challenges imposed by the digital transformation of the economy in the 21st century (Devereux & Vella, 2017; Schön, 2018). The common intention of the current debate is to allocate more profits to market and source countries[3] in order to ensure that there is an "appropriate" level of taxation.

Since business profits within MNE groups are allocated by transfer prices under the existing international tax system, both policymakers and taxpayers consider the determination of intracompany transfer prices to be the most pressing issue. However, the determination of transfer prices and the ALP have been under pressure for years, as the ALP is difficult to administer, lacks a sound theoretical foundation, and offers possibilities for tax avoidance strategies. It seems that the discussions about taxing the digital economy could finally put an end to the ALP. Most digital goods and services can be provided via the Internet without the

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[2] Multinational enterprise represents a multinational enterprise group (MNE group) and not only a single entity (multinational entity – MNE).
[3] In the following, I distinguish between the market country as destination country, tapping the customers' side, and the role it plays as a source country when the taxpayer has established a presence there (see also Schön, 2018).

need for a business to have a physical presence in a specific country and the latter is commonly a precedent condition for taxing rights. An extension of the legal permanent establishment (PE) definition may address this problem. However, even in cases where a PE or a subsidiary exists in the source state, the ALP may allocate only small amounts of the overall profit to them. Therefore, there are strong feelings among both the general public and tax authorities that there could be a mismatch between where taxation of the profit takes place and where—speaking in the language of OECD—"value is created" for certain digital activities (see Greil et al., 2018, 2020, regarding fairness and the ALP). The main concern is that user value creation due to data gathering is located in a tax jurisdiction where the company carrying out a digital activity is not physically established and, thus, where its activities cannot be taxed.

The aim of this article is to provide a comprehensive overview over the ALP and the allocation of taxing rights of business profits, the concept of value creation, the impact of digitization on the allocation of taxing rights, and the current discussions regarding this topic. I am, at least to my knowledge, the first who combines management literature on value creation with the concept of value creation for the allocation of taxing rights. The key insights gained from this are particularly useful when it comes to the assessment of the impact of digitization on taxation. In this context, I finally make a connection between the value creation concept and the challenges of digitization, and ask whether the ALP is fit for purpose. In my opinion, and against the background of the value creation concept for allocating taxing rights, the ALP is fit for purpose. However, I do not ignore the idea that transfer pricing suffers from a conflict with the reality of the MNE groups and that it is challenged, particularly on the grounds of its complexity and the attendant costs of administration and compliance (Couzin, 2013). The answer to the question of whether the international tax regime has to be changed depends on the objective. I refocus on the proper application of the ALP in the 21st century against the background of the value creation concept and the digitization of the economy, as the rethinking exercise is more demanding and requires more work than the studies that have been published so far. In doing so, I provide policymakers and practitioners with valuable insights that may help to facilitate the ALP's future implementation.

The article is structured as follows. First, the ALP is described as part of the international tax system and its role in the allocation of taxing rights of business profits is discussed. The introduction of the value creation concept and its impact is presented comprehensively and concerns about the ALP are emphasized. Second, an overview of the impact of digitization, both in general and on transfer pricing in particular, is presented. I show that, while digitalization is not the root of the ALP's deficiencies, it may well exacerbate existing problems. In the third section, a summary of the current political discussions regarding this topic shows a different political view. This section is supplemented with suggestions from the literature. Finally, I show that the ALP is flexible enough to cope with current developments.

THE ARM'S LENGTH PRINCIPLE AND THE ALLOCATION OF TAXING RIGHTS

A Traditional Principle and the Allocation of Taxing Rights

A foreign enterprise's profit from business activities (business profits) are taxable by the country where the activities are performed only if the enterprise has a PE there (Article 5 and 7 of the "OECD-Model Tax Convention" [OECD-MTC]). This concept of a PE is also used for the same purpose in the tax laws of many countries. The profits that are attributable to the PE in each state are the profits that the enterprise might be expected to make, in particular, in its dealings with its other parts if they were separate and independent enterprises engaged in

the same or similar activities under the same or similar conditions, taking into account the functions performed, assets used, and risks assumed by the enterprise through the PE and through the other parts of the enterprise (Article 7(2) of the OECD-MTC[4]). Therefore, the ALP is—at least for OECD countries—the cornerstone of the attribution of profits to the PE and the enterprise. The ALP also applies if two associated enterprises have commercial or financial relations (Article 9(1) of the OECD-MTC). In both cases, the same purpose should be pursued.

The ALP is legally codified in the tax laws of many countries and in double taxation agreements (see Langbein & Fuss, 2018, for a comprehensive overview of the history of the ALP). The purpose of the ALP is to allocate taxable profits to different enterprises of an MNE group[5] in accordance with the outcomes of market transactions between independent third parties. The ALP should ensure that profits are taxed where the business activity takes place, that is, where its resources are located and directed (e.g., Langbein & Fuss, 2018; Vann, 2010). According to the ALP, transfer prices within an MNE group must be comparable to prices which two independent parties would have agreed on. The profits that are treated as arising in each country are those that would arise if the various entities of the MNE group were independent and dealing with each other in the market on ordinary market terms. From the viewpoint of the "OECD Transfer Pricing Guidelines for Multinational Enterprises and Tax Administrations" ([TPG]; OECD, 2017), the comparability analysis is at the heart of the application of the ALP (OECD, 2017, p.35, para. 1.6). In performing a comparability analysis, a comparison of a controlled transaction with an uncontrolled transaction or transactions has to be carried out. Comparability takes five factors into account: the characteristics of the property or services; contractual terms; the functions, assets, and risks performed by the parties; the economic conditions of the market; and any special circumstances, such as business strategies (see also Eden, 2015). Controlled and uncontrolled transactions are comparable if none of the differences between the transactions could materially affect the factor being examined in the methodology, or if reasonably accurate adjustments can be made to eliminate the material effects of any such differences. This requires a functional analysis. This functional analysis is necessary in delineating the controlled transaction, and determining comparability between controlled and uncontrolled transactions or entities. The functional analysis seeks to identify the economically significant activities and responsibilities undertaken, assets used or contributed, and risks assumed by the parties to the transactions (OECD, 2017, p. 51, para. 1.51). This process should be carried out in order to ascertain any relevant differences that will ultimately result in an adjustment.

Furthermore, when transfer pricing rules are incorporated in double taxation agreements, they provide a rule book for the principled resolution of cross-border disputes over the appropriate (inter-nation) allocation of income (see also Langbein & Fuss, 2018). Thus, tax authorities require transfer prices to be determined in order for them to allocate the taxable income

[4] The authorised OECD approach (AOA) stipulates that the profits to be attributed to a PE are the profits that the PE would have earned at arm's length, in particular, in its dealings with other parts of the enterprise, if it were a separate and independent enterprise engaged in the same or similar activities under the same or similar conditions, taking into account the functions performed, assets used, and risks assumed by the enterprise through the PE and through the other parts of the enterprise. Under the AOA, a two-step analysis is required. First, a functional and factual analysis must be performed in order to hypothesize the PE appropriately and the remainder of the enterprise (or a segment or segments thereof) *as if they were associated enterprises,* each undertaking functions, owning and/or using assets, assuming risks, and entering into dealings with each other and transactions with other related and unrelated enterprises. Second, the remuneration of any dealings between the hypothesized enterprises is determined by applying the Article 9 transfer pricing tools by reference to the functions performed, assets used, and risks assumed by the hypothesized enterprises (OECD, 2010).

[5] This expression shall also include the allocation of taxable profits to PEs.

between the different countries and ensure that appropriate taxation takes place. The determination of transfer prices within an MNE group is of significant concern to both taxpayers and tax administrations because the transfer pricing rules affect how profits and losses are allocated among associated enterprises in different jurisdictions (Mazur, 2016). That means that the ALP determines the arm's length amount of income from the foreign direct investment (FDI) in each country where FDI occurs (Vann, 2010). The ALP, therefore, plays a vital role in improving inter-nation equity (Navarro, 2018).

However, a number of well-known studies have criticized the ALP (e.g., Bauer & Langenmayr, 2013; Clausing, 2003; Devereux & Keuschnigg, 2008; Greil, 2017; Holmstrom & Tirole, 1991; Keuschnigg & Devereux 2013; Luckhaupt et al., 2012; Navarro, 2018; Samuelson, 1982; Vann, 2010), although they will not be discussed in detail here. Eden (2015) divides the criticisms of the ALP into two categories: First, those relating to abusive transfer pricing by MNE groups, and, second, those claiming that the current rules are difficult to implement in theory and in practice. Only one aspect, which seems to be especially important, will be emphasized: internalization theory. This is the dominant framework in the international business literature for explaining why MNE groups expand abroad in order to add value both for themselves and their host country locations (for instance, Buckley & Casson, 1976; Buckley & Casson, 2009). There are at least three benefits to the MNE group from internalization (Eden & Smith, 2011). First, internalization reduces transaction costs which hamper trade between unrelated enterprises. The main driver is the existence of transaction costs (Coase, 1937) caused by market imperfections in both goods and factor markets which force enterprises to create their own internal markets to escape the liability of foreignness (Jones et al., 2018). Second, MNE groups can transfer tacit resources, such as non-codifiable knowledge flows, more effectively within the MNE group than between unrelated enterprises. Third, we live in a world where there are still large differences between countries. Internalization provides MNE groups with the opportunity to benefit from integration and arbitrage in ways that domestic enterprises cannot. MNE groups can integrate, taking advantage of economies of scale and scope on a regional or global basis. The ALP disregards these benefits as it treats the members of an MNE group as operating as single entities rather than as inseparable parts of a unified business. Accordingly, Luckhaupt et al. (2012) state:

> The concept of comparability implies that another firm facing the same economic circumstances would use market coordination. However, given good economic reasons for internal coordination, all firms facing the same circumstances would reject market coordination. From a theoretical point of view, under these circumstances, market prices of comparable uncontrolled transactions do not exist. (p.100).

Navarro (2018), however, rightly points out that a reference of comparison is required in order to ascertain whether subjects in the same position are being treated equally, but only with elements that are suitable for comparison. Navarro (2018) ascertains the importance of the ALP within the ability-to-pay concept as a proxy by which to measure horizontal and vertical equity. Horizontal equity implies that those subjects displaying a similar ability to pay should face similar tax burdens. Vertical equity—i.e., subjects with higher incomes should pay more tax—may be considered as a direct consequence of it. These concepts have been largely accepted as benchmarks for tax justice. The importance of the ALP, therefore, is its role as a tool for leveling the ability to pay shown by an MNE group with that of independent parties that interact within the market in order to guarantee equality in tax treatment.

It is important to acknowledge that the OECD's approach does not require the two transactions to be identical, but does require that there are no differences between them that could materially affect the arm's length price or profit or, where such material differences exist, that reasonably accurate adjustments can be made to eliminate their effect. However, economies of scale and synergy effects resulting from the integration into a group are not considered in the allocation of the total profit (Avi-Yonah et al., 2009; Durst, 2012; Rectenwald, 2012). It can also be said that it is theoretically impossible to allocate synergy and network effects according to source.

On the other hand, the ALP is, notwithstanding its critics, a well-established principle which has been used in transfer pricing to allocate profits across different jurisdictions for years (Wittendorf, 2009). Countries all over the world agreed on this principle in their double tax treaties and it could be said that the ALP is a standard of profit allocation. As the ALP is subject to well-known criticisms, it is questionable why countries agree on this principle and what the benefits are for them besides the fact that transfer pricing is a strategic tax policy variable (see, *inter alia*, Bucovetsky & Haufler, 2008; de Mooij & Liu, 2018). However, the answer to this question must be left to further research.

The allocation of taxing rights of business profits is therefore based principally on two legal fictions[6]: the PE as a required business activity, and the ALP for the profit allocation between a PE and the enterprise as well as between associated enterprises. If the definition of a PE is changed, this does not necessarily mean that the ALP must also be changed. The ALP can still be applied as a fiction.[7] However, even when a PE exists in the source state, the ALP may allocate only small amounts of the overall profit to it. If the ALP is intended to contribute to the proper allocation of profits from investments, it could also determine the PE threshold. Since this is a quantitative threshold, the answer to the question of the PE threshold is primarily a political one. Therefore, I focus on the application of the ALP and not on the definition of a new PE.

Value Creation and the Arm's Length Principle

Taxing profits where economic activity takes place and value is created

Recently, policymakers at the supranational level emphasized the concept of value creation in relation to the allocation of profits within an MNE group. The Task Force on Digital Economy (TFDE) states that profits have to be taxed where economic activities take place and value is created (OECD, 2018a) and, therefore, transfer pricing outcomes should be aligned with value creation (OECD, 2015a). The TPG, which represent the international guidelines for the application of the ALP, state that it is important to understand how value is generated by the MNE group as a whole, the interdependencies of the functions performed by the associated enterprises with the rest of the group, and the contribution that the associated enterprises make to that value creation (OECD, 2017, p. 51, para. 1.51). Therefore, transfer pricing outcomes should be aligned with value creation and one must gain understanding about the value creation

[6] Article 12A UN Model Double Taxation Convention between Developed and Developing Countries (UN, 2017a) regarding fees for technical services, for example, is not taken into account. It permits limited taxation by the source state on the gross payments of fees for technical services paid to a non-resident services provider, without the requirement to meet any threshold in the source state and irrespective of where the services are provided or consumed (Malan, 2019)

[7] It should be borne in mind, however, that the current structure of the AOA for the allocation of profits to PEs is based, in particular, on the exercise of people functions. This means that no profit, or minimal profit, can be allocated to a PE that carries out any significant people functions (OECD, 2010).

process within a value system which is, for instance, composed of all primary and secondary activities necessary to transform raw materials into products for end users (Porter, 1985). As one consequence, the OECD highlights the importance of economic criteria over contractual agreements (substance over form).

However, the concept of value creation is not clearly defined in the TPG and has been the subject of controversial discussions (e.g., Hey, 2018; International Monetary Fund [IMF], 2019; Langbein & Fuss, 2018). Hey (2018) emphasizes that the locations of economic activity and of creation of value do not necessarily coincide. Value creation is, in her opinion, a source principle and can be a principle of origin as well as of destination. This depends on whether the market is conceived as a value adding factor with value being created by users and customers. Fuest (2020) emphasizes that taxation according to value creation is a political formula that broadens a scope for interpretation. It makes it possible to address the concerns of states with very different interests. The IMF (2019) emphasizes that if the place in which value is created can be changed, it leaves open the possibility of distortions arising from differences in tax treatment and of collectively damaging competition to attract the 'value-creating' activities. Richter (2019) even rejects the idea of value creation. He argues that the design and enforcement of international taxation require the legal cooperation of jurisdictions. There would be no international value creation of MNE groups if the countries in which the MNE groups are active did not cooperate on legal issues.

In the view of Langbein and Fuss (2018), the fundamental principle of the international system is that the right to tax income is allocated in the first instance to the state to which that income bears the greatest degree of economic allegiance. They see the value creation paradigm as effectuating and paralleling the economic allegiance idea. In this regard, Schön (2018) supplements that a person who is economically connected to a jurisdiction enjoys benefits arising in that jurisdiction. Therefore, the person is liable to tax. In a general sense, an individual taxpayer's residence is the country with which the taxpayer has the closest connection. The current international norm is that the residence country taxes the worldwide income of the taxpayer (Vann, 2010). Accordingly, Rixen (2018) focuses on the membership principle (*Mitgliedschaftsprinzip*). This principle serves to enforce the principle of equivalence. In the case of legal entities, a tax membership should be created in the places where they engage in real economic activity. Li et al. (2019) argue that the value creation principle is not a technical rule but a useful, if not profound, elaboration of the doctrine of economic allegiance. However, this concept does not tell us exactly how to share the tax base between jurisdictions (Skaar, 1991).

The ALP in the sense of the TPG is, as mentioned above, mainly based on the comparability analysis that requires a functional analysis. The triad of functions performed, assets used, and risks assumed can be seen as the basis of the value creation concept in the TPG (OECD, 2017). With regard to this, the TPG provide that an entity will be allocated risks and the underlying income associated therewith only to the extent that the entity controls the risks through its personnel and has the financial means, that is, the financial capacity, to assume those risks (OECD, 2017). This would typically be the case when an entity demonstrates that its personnel make key decisions with respect to the risks associated with that entity's activities and carry out its core income-generating functions, and the entity owns/leases the necessary office space and/or equipment to carry out its activities (Chand & Malek, 2019). With regard to this, Næss-Schmidt et al. (2019) emphasize that corporate income beyond what is allocated according to the cost-plus or return-on-asset basis is allocated to the entrepreneurial risk-taker(s) in the MNE

group which, in practice, is often the headquarters of the MNE group. This is mainly in line with the origin of the ALP:

> If we recognize the fact that the real centre of management, especially if it is situated at the principal productive establishment, is the most vital part of the enterprise, the most practical approach to the problem is to give it the residuum of profit or loss after allocating to each outlying secondary establishment compensation for the services it has rendered to the enterprise in accordance with what would be paid to an independent enterprise rendering such services (Carroll, 1933, p.192; see also Vann, 2010).

It has to be emphasized that the ALP was especially developed to remunerate PEs (legal entities were treated like PEs in the past) for their services and to leave the residual economic profit in the state of residence of the MNE group (Koomen, 2015).

However, this approach may reward the headquarters too generously and the other locations where the MNE group has FDI too little (Vann, 2010). This is particularly true in view of the fact that current transfer pricing practices, driven by the TPG, are primarily based on a comparability analysis. This approach is the Achilles' heel of the ALP (see also Kobetsky, 2019). Proper third-party comparisons are not possible and, accordingly, synergy gains are never allocated to all business units, but primarily to the so-called entrepreneurs. Additionally, Langbein & Fuss (2018) emphasize that the methods originating in the U.S., like the cost-plus method and the resale price method, that were first incorporated in the OECD Transfer Pricing Guidelines 1979, particularly created the basis for concentrating the residual profit in a single component of the enterprise at will. The consequence is that profits are not allocated on the basis of value creation and the value creation process of the MNE group. Consequently, this approach favors the concern that headquarters will be rewarded too generously.

Value creation in management literature

Value creation and the ability-to-pay principle

A look into management literature reveals a deeper understanding of value creation. On an organizational level, the literature makes a distinction between use value and exchange value (Bowman & Ambrosini, 2000; Lepak et al., 2007; Priem, 2007; Urbinati et al., 2019). Use value refers to the specific quality of a product or service as perceived by users in relation to their needs. Such judgments are subjective and a subjective valuation of consumption benefits is needed. Exchange value can be defined as either the monetary amount realized at a certain point in time when the exchange of the good, service, or product takes place, or the amount paid by the user to the seller for the use value of the product or service. Put simply, exchange value is the amount the customer pays (Lepak et al., 2007; Priem, 2007).

Therefore, value creation depends on the relative amount of value that is subjectively realized by a target user or buyer, and this subjective value realization must at least translate into the user's willingness to exchange a monetary amount for the value received (Lepak et al., 2007; Leavy & Moitra, 2006). However, Internet users, in particular, do not charge a fee for the use of their data, the provision of web content, or web interaction. They use a service offered on the Internet, such as Google or a daily newspaper, in exchange for their personal information. As soon as a user accesses such a website, a third-party provider commissioned by the operator of the website analyses the user's cookies for his surfing behavior. On this basis, suitable

advertisements are selected from an advertisement database within a fraction of a second and inserted. The payment is therefore made with data, which makes it difficult to determine the exchange value. At present, there is very limited information on how data is, or could be, valued (Aslam & Shah, 2020; for more on the subject of data transfer and the protection of privacy, see, for example, Acquisti et al., 2013; Buxmann, 2018; Elvy, 2017; Norberg et al., 2007).

However, sometimes Google, for instance, defines a price that the firm will pay for some resources obtained from Internet users itself. In particular, when videos uploaded onto the YouTube web platform attract a significant number of viewers, Google considers them to be valuable resources and pays for them. Another example in the B2B sector are providers of electronic cash register systems. If the customer agrees to the use of the cash register data, the cash register system is provided free of charge. If they do not, a rental fee must be paid.

Thus, value is created when two individuals/institutions with complementary resources are connected (Sheth & Uslay, 2007). The customers are the arbiters of value (Priem, 2007) and it is determined by customers' willingness to pay (Porter, 1985), which is influenced by various factors. Value creation encompasses the customer's needs, the resources and activities necessary to address those needs, and the ways to entice customers to pay for the entity's offerings.

Value capture is instead the appropriation and retention by the firm of payments made by customers (Priem, 2007). Put simply, value capture is defined as capturing exchange value (Bowman & Ambrosini, 2000); it is the business's ability to create profit from its transactions. Accordingly, value creation is a precondition for value capture and value capture seems to be a more appropriate measure for taxation due to the ability-to-pay principle, as it focuses on the outcome of the economic performance and not on the activity itself (Navarro, 2018).

Resource-based view vs. demand side

Some scholars advocate taking resource-focused approaches to management research (resource-based view; RBV). These approaches look inside the firm—which they consider as a bundle of resources—in attempting to value it (Barney, 1991). The RBV argues that valuable, rare, inimitable resources and organization (VRIO) lead to competitive advantage. The RBV argument is based on a two-firm, one-market model, where firms differ because of their resource heterogeneity but market demand is uniform and fixed (see Peteraf & Barney, 2003; Priem et al., 2012). As a result, value is most often considered from the firm's internal perspective rather than from the customer's perspective (Priem, 2007). Accordingly, Becker et al. (2018) state that it is the firm itself, not the customer, which creates value.

Some management scholars have begun to focus on the demand side of the value equation rather than on the resource side (Priem et al., 2012; Siqueira et al., 2015). This research looks downstream from the focal firm, toward product markets and customers, to explain and predict those managerial decisions that increase value. It is concerned with the economists' entrepreneurial profits instead of rents from resources. The basic assumption is market heterogeneity, which indicates that firms compete in a multidimensional marketplace (Adner, 2002; Priem, 2007; Priem et al., 2012). Priem (2007) emphasizes that one key role of the firm is to aid customers in maximizing the use value that is created and experienced during consumption, irrespective of the exchange value paid. Customers and firms can be viewed as partners in producing value during consumption.

Service-dominant logic (Vargo & Lusch, 2004) argues that value for both customers and suppliers can only be maximized when both parties interact as value co-creators in close long-term relationships. Customers participate in the value creation process by seeking and sharing relevant information about a product or service in personal interactions (Clauss et al., 2018; Clauss et al., 2019). In addition, by accepting cookies, Internet users consciously or unconsciously provide companies with insights into their private sphere and accept the associated possibility that this information will be used by the companies. These businesses may, for example, use the data provided to create detailed user profiles or to analyze web surfing behavior.

Customers also want to interact with the firms and thereby co-create value (Prahalad & Ramaswamy, 2004; see also Woiceshyn & Falkenberg, 2008). For instance, customers co-create value when they make online travel bookings, conduct banking tasks online, configure products (like notebooks, cars or machines), or buy self-assembly furniture from stores like IKEA. Co-created value both increases customer utility through greater convenience and reduces firms' costs. It also strengthens ties between the consumer and the firm, with this firm-customer integration resulting in the co-production of value-creating innovations (e.g., Franke & Shah, 2003; Gruber et al., 2008; Priem et al. 2012; Sheth & Uslay, 2007). Value co-creation can extend across the whole spectrum: co-conception, co-design, co-production, co-promotion, co-pricing, co-distribution, co-consumption, co-maintenance, co-disposal, and co-outsourcing (Sheth & Uslay, 2007). Bogers et al. (2010) and Priem et al. (2012) provide overviews of several studies which provide evidence that users innovate in the traditional economy, in sectors such as oil refining, the chemical industry, sports-related consumer goods, and other leisure time activities. They show how users play a dominant role in the invention process and how end users freely develop, share, and diffuse innovative ideas within their communities. Producers can profit from utilizing users as innovators by integrating them into the innovation process. Firms also seek to reduce uncertainty by interacting directly with customers to understand their needs and preferences. Accordingly, Baldwin & von Hippel (2011) conclude that innovation by individual users and open collaborative innovation increasingly compete with—and may displace—producer innovation in many parts of the economy. Priem et al. (2012) also show that successful innovations can be consumer-driven rather than resource or technology-driven, and consumer knowledge can play a key role in entrepreneurial idea discovery.

In a traditional value system model, enterprises like producers or manufacturers obtain inputs from suppliers in order to develop and produce goods or services. They then sell the produced goods or services to buyers. These buyers can be so-called intermediate users or customers, who use the products as inputs in their own production processes, or end-consumer users or consumers, who use the products to satisfy their personal needs (Bogers et al., 2010). These users can play an important role by providing producers with some inputs that they need to develop and market products that better meet customer's needs (Bogers et al., 2010; Rothwell, 1977). Users often tend to engage in collective creative activity within the social context provided by user communities and this results in the improvement of ideas (Shah & Tripsas, 2007). Meanwhile, users are recognized as potential sources of value and all value is created jointly (Sheth & Uslay, 2007). Therefore, the literature provides at least three perspectives on user participation as value creation for firms: first, due to user networking, updating, and content contribution; second, due to users contributing to development and innovation; and, third, because of value creation from the user's personal trail of information that can be sold to advertisers (Lepak et al., 2007).

Value creation logic

The subject of value creation is made complex by its subjective nature, multiple levels of analysis, and the theoretical discipline that scholars use to study it (Lepak et al., 2007). The issue of value creation also points to the importance of capturing value. At the organizational level of analysis, researchers have looked inside organizations to understand how value is captured (Barney, 1991; Lepak et al., 2007; Porter, 1985; Stabell & Fjeldstad, 1998). Once an organization is successful in creating amounts of value for its customers and realizes exchange value from this success, questions arise about the appropriate levels of value that should be allocated to each entity of an MNE group, especially from a taxation point of view. The value chain model is usually used to explain and analyze the value creation process of an organization (Porter, 1985). It is the best-known framework with which to analyze value creation. It describes value creation as a series of sequential steps that transform raw materials and components into products. Value shop and value network are additional models used to analyze the value creation process of an organization (Stabell & Fjeldstad 1998; see also Woiceshyn & Falkenberg, 2008). Stabell and Fjeldstad (1998) found that the value chain model was more suitable for the analysis of production and manufacturing firms than for service firms where the resulting chain does not fully capture the essence of the value creation mechanisms of the firm. Each of these models is based on a different value creation logic. The logic explains whether value is created by transforming input factors into products and services (value chain), by solving a customer problem (value shop), or by mediating people (value network).

Value creation and the allocation of taxing rights

Accordingly, value creation is not a rule that can be applied without discretion. Almost any location could be considered as having contributed to value creation (Becker et al., 2018; Hey, 2018). Furthermore, value creation is a precondition for value capture and value capture seems to be a more appropriate measure for taxation due to the ability-to-pay principle. However, the different value creation logics describe how organizations create value for their customers through the provision of goods or services. On the one hand, value creation logics can help MNE groups to understand and model their business processes in order to fully utilize their resources and achieve optimal performances. On the other hand, they can help tax administrations, in particular, to better understand where the economic activity of the MNE group takes place.

However, the OECD's value creation concept does not state exactly how to share the tax base between jurisdictions and leaves the tax assessment to a subjective assessment of the individual case. The allocation of taxing rights thus depends on the respective circumstances of the individual case, which does not only include the economic circumstances of the MNE group. It also includes, in particular, the entities involved, the administrative staff of the respective countries involved, and their expert knowledge, negotiating skills, and bargaining power. In this context, it must be emphasized that an MNE group's cross-border teams work together to create and capture value without having a clear location and they remain unstable (Schön, 2018). Value creation processes may change and move from country to country which, in turn, has an impact on exit taxation.

However, the concept of value creation, which according to Li et al. (2019) has always existed as a principle in the history of international taxation, also has three effects. First, it supports the substance over form approach used in transfer pricing. Written contractual agreements provide the starting point for delineating the real transaction. However, the actual conduct and the

economic activity (i.e., functions performed, risks borne, and assets used) are the most decisive for profit allocation purposes. A value chain analysis is needed to detect real economic activity instead of relying on contractual arrangements and legal ownership to facilitate the allocation of income in line with value creation. Therefore, taxing rights are largely allocated to the home state from which the business chooses to operate and where important management decisions are taken (Næss-Schmidt et al., 2019). This can be understood as contributing to the reduction of *virtual* profit shifting opportunities based on artificial activities which only need a stroke of a pen. It does not, however, reduce tax planning activities which are based on real activities that are tax-favored (e.g., investing in a low-tax country or low-taxed asset). Therefore, real tax competition will be intensified (for a differentiation between virtual and real tax competition, see Rixen, 2018; see also Chand & Malek, 2019).

Second, value creation is a shift away from the perspective of mere business activity or the triad of functions performed, assets used, and risks assumed from a supply-side perspective only. An appropriate weighting of demand-side value drivers which allows (more) profit allocation to market and source countries as all value is created jointly could be considered (Sheth & Uslay, 2007). Successful innovations can be consumer-driven rather than resource or technology-driven, and consumer knowledge can play a key role in entrepreneurial idea discovery. Therefore, the demand-side view is concerned with the economists' entrepreneurial profits instead of rents from resources. This, in turn, calls into question the original purpose of the ALP, as profits should be taxed in the country where resources are located and directed (e.g., Langbein & Fuss, 2018; Vann, 2010). It is also interesting to see how such a view can be reconciled with the function of corporate taxation to ensure that companies contribute to the costs of providing public services (for instance, Fuest, 2020). The argument could be based on the provision of the digital infrastructure, particularly for Internet-based or digital business models.

Third, as the process of value creation and its assessment is dependent on the respective MNE group, the concept of comparability as one guiding principle in the TPG steps into the background. This can help to overcome the disadvantages of the ALP mentioned above. Finally, the question of why the OECD continues to focus on comparability and still interprets Article 9(1) of the OECD-MTC as according to how third parties have acted remains. However, market prices are irrelevant in an MNE group. Rather, it is about how third parties would have acted in an economically reasonable way. The specifics of the MNE group and its value creation process must be considered (see also Navarro, 2018). However, such an approach leads to an increase of disputes as the assessment is of a subjective nature in each case. Such an approach does not necessarily leave scope for applying rules of thumb or simplifications, as they would be incompatible with the concept of value creation. This, in turn, leads to the fact that the application of the ALP is very complex, requires well-trained personnel and high compliance efforts, and results in high administrative burdens for states.

The Impact of Digitization on Allocation of Taxing Rights

In general

In recent years, the structures of many businesses and value creation processes have changed significantly due to technological developments. These developments have facilitated the adoption and integration of digital products and transactions that have collectively digitalized the value chains of traditional businesses already in existence and laid the foundation for new digital businesses (Brynjolfsson & McAfee, 2015). Haucap (2019) emphasizes two key developments that have changed value chains and competitive processes in many industries and markets: digital platforms and data. A research project at Ludwig Maximilian University of Munich (LMU) in Germany (Becker et al., 2018) identified 17 major digitalization trends which have significantly influenced business models across a broad range of industry sectors. These are: robotics, the Internet, digital platforms, simulations, digital identifiers, digital products, big data (analytics), cloud computing, augmented reality, mobile computing, blockchain, sensors, robotic process automation, additive manufacturing (3D printing), artificial intelligence, cyber-physical systems, and autonomous driving. These digital trends all use software and interchange data, but also require a physical connection.

Amit and Zott (2001) provide an overview of theoretical frameworks, like value chain analysis, Schumpeterian innovation, resource-based view of a firm, strategic network, and transaction cost economics, and make valuable suggestions for possible sources of value creation in e-business. They suggest that the value creation potential of e-businesses hinges on four interdependent dimensions, namely: efficiency, complementarities, lock-in, and novelty. Reinartz et al. (2019) developed a framework that identifies five new sources of value creation: automation, individualization, ambient embeddedness, interaction, and transparency and control. These firm-level sources of value creation foster customer-level perceived benefits of convenience, relevance, experience, empowerment, and monetary and ecological savings. Goldfarb & Tucker (2019) identified that digitization has reduced a number of specific costs relating to, for example, search, reproduction, transportation, tracking, and verification. Additionally, several contributions to the tax literature analyze digital business models and illustrate the activities that contribute to value creation (Kofler et al., 2018; OECD, 2018a; Olbert & Spengel, 2017; Schön, 2018).

New information technologies

Information technology (IT), defined as computers as well as related digital communication technology, has the broad power to reduce the costs of coordination, communications, and information processing (Brynjolfsson & Hitt, 2000). New information technologies provide direct and timely information exchange through e-mail, the Internet, and direct connections (e.g. electronic data interchange [EDI]) between parties. These technologies support the data and information exchanges between parties and thereby enhance the development of value networks and communication between parties (Herrala et al., 2011). According to papers such as Mukhopadhyay et al. (1995), they are estimated to create cost savings. The unprecedented level of connectivity enables new touchpoints and interactions, such as customer-firm interactions over Internet of Things (IoT) devices or through open networks in an ecosystem, creating customer value (Verhoef et al., 2017). Accordingly, digital interaction also gives rise to the ability to analyze the demands of prospects and current customers (the opportunity to "listen in" on customers), and to offer them highly personalized goods and services (Gensler et al., 2016; Petruzzi & Buriak, 2018). Digital technologies enable new forms of market

behaviors, interactions, or experiences (Lamberton & Stephen, 2016), and reshape customer relationships, internal processes, and value propositions, or the economic value creation process as a whole (Reddy & Reinartz, 2017). Nowadays, information technologies are integral parts of the value chain (Olbert & Spengel, 2019). A summary on the impact of information and communication technologies (ICTs) on firms is provided by Brynjolfsson and Hitt (2000). They report productivity impacts from ICT and emphasize the importance of considering complementary investments. They argue that a significant component of the value of IT is its ability to enable complementary organizational investments, such as business processes and work practices. These investments lead to productivity increases by reducing costs, and by enabling firms to increase output quality in the form of new products or by improving intangible aspects of their existing products, like convenience, timeliness, quality, and variety.

Application programming interfaces (APIs) are, for instance, of special interest. They are a newly popular type of ICT. An API is a set of subroutine definitions, communication protocols, and tools for building software. APIs make it easy for individuals to write programs that communicate with online services and shared databases, and are essential for making the power of systems such as Google Maps, eBay, Amazon, and Twitter available to independent developers. They mediate economic transactions (Benzell et al., 2017). As architecture, APIs provide infrastructure for building platforms: As regulators, APIs partition decision rights (architecture) and provide scalable mechanisms for governing behavior (governance) (Parker et al., 2016). Many web pioneers have used APIs as the cores of their businesses. The number of web APIs has increased from a few hundred in 2005 to more than ten thousand today (Benzell et al., 2017). Benzell et al. (2017) find that API adopters see large financial gains. Their results show that firms adopting APIs see increases in sales, net income, market capitalization, and intangibles. API use can also lead to decreases in operating costs in some specifications. APIs can perform the roles traditionally played by EDIs in a cost-effective manner. In addition, the effects of API use increase as more data passes through the API. Basing an ecosystem around an API makes it straightforward for a firm to scale and expand. Therefore, the potential for growth through complementary network effects is enormous.

Deployment of the Internet

The widespread deployment of the Internet as an open, cost-effective, and ubiquitous network is of particular interest (Afuha, 2003). It has enhanced the ability of firms to engage with customers in the product innovation process (Brynjolfsson & Hitt, 2000; Dahan & Hauser, 2002; Sawhney et al., 2005). The rise of the Internet and the emergence of new digital channels (e.g., mobile, social media, apps) required the historical channel view to be broadened (Verhoef et al., 2015). Internet-based virtual environments allow the firms to engage with a much larger number of customers without making significant compromises on the richness of the interactions. In particular, the rise of social media and virtual communities facilitated customer-to-firm communications and customer-to-customer interactions (Hagel III & Armstrong, 1997; Lamberton & Stephen, 2016), a development that affected traditional structures and relationships. These environments also enhance a firm's capacity to tap into the social dimension of customer knowledge. Consumer-generated content is also now used to collect data and research demonstrates that it provides managers with valuable information. Using consumer-generated content to elicit brand management is comparatively low in cost, so it could be applied on a regular basis, something that has been infeasible in the past when using traditional forms of market research that have significant costs attached (Gensler et al., 2016). In addition, the Internet increases the flexibility of customer interactions. Customers can vary their level of involvement over time and across sessions (Sawhney et al., 2005). For example,

they can become more actively engaged in value creation by promoting brands via social networks or by generating content (Leeflang et al., 2014). However, they can also contribute in a negative way: one customer complaint can have a snowball effect, causing numerous customers to complain as well (online firestorms; Pfeffer et al., 2014). For instance, Baccarella et al. (2018) illustrate the multidimensionality of the dark side of social media and describe the various related undesirable outcomes. Schulze Horn et al. (2015) point out that the major threat for businesses is to "ignore social media and allow conversations to happen without awareness or participation".

Sawhney et al. (2005) focus on how the Internet has impacted the process of collaborative innovation—a key process in value co-creation. They outline the distinctive capabilities of the Internet as a platform for customer engagement and suggest that firms can use these capabilities to engage customers in collaborative product innovation through a variety of Internet-based mechanisms. Interestingly, Lakhani and von Hippel (2003) emphasize that the general lessons for user-based innovation systems include the clear willingness of users to openly reveal their proprietary information. This is rational behavior if the information has low competitive value and/or if information providers think that other users know the same thing they do and would reveal the information if they did not.

Digital platforms

The development of the Internet has laid the groundwork for the emergence of one of the most important digital trends: digital platforms.

> A business platform […] is a nexus of rules and infrastructure that facilitate interactions among network users […] Platforms provide building blocks that serve as the foundation for complementary products and services. They also match buyers with suppliers, who transact directly with each other using system resources and are generally subject to network effects (Parker & Van Alstyne, 2014, p. 1).

Platform-based business models have become essential pillars of today's economy (Clauss et al., 2019). Digital platforms are built using cloud technology and serve as intermediaries that enable exchanges between other players. They facilitate multisided exchanges between multiple groups, such as customers and producers. Platforms exist to enable positive interactions between users. To achieve this, it is particularly important to develop efficient tools that attract users, enable interactions, bring vendors and customers together, and that can be used to build efficient curating strategies (Parker et al., 2016). Examples are search engines, social platforms, or sharing industry platforms (Becker et al., 2018; Goldfarb & Tucker, 2019). However, platform business models have existed for centuries (Bal, 2018; Haucap, 2019). Traditional platforms include bazaars and shopping malls that enable trade by bringing customers and producers together. Stabell and Fjeldstad (1998) identified network platforms as one of three elemental configurations through which firms generate value. IT has moved platforms to the online world, made platform operation cheaper, and enhanced a platform's ability to capture and analyze huge amounts of data that increase its value to all participants. Bal (2018) emphasizes that the rise of platforms has been driven by two transformative technologies: cloud and mobile. The cloud permits the creation of content and applications for a global audience. Mobile technology allows connection to this global infrastructure anytime and anywhere. The result is a globally accessible network of entrepreneurs, workers, and customers who are available to create business opportunities, contribute content, and purchase

goods and services (Bal, 2018). Accordingly, Haucap (2019) emphasizes that the "death of distance" and the decline of transaction costs have led to tremendous platform growth.

In addition, recent research suggests that multisided platforms have to provide users with much more than just price-based benefits. Those benefits can be broadly summarized to apply to the areas of quality and emotional value (Clauss et al., 2019). The emotional value that customers gain from participating on platforms is the strongest indicator of loyalty and customer loyalty has been identified as a metric that predicts business performance (Morgan & Rego, 2006). As they are deriving enjoyment and positive feelings from the platform, customers are stimulated by interacting with others and by positive experiences. Consequently, this means that customers who use these platforms are actively seeking the social aspects of these platforms that go beyond the typical business-to-consumer (B2C) offerings. Platforms provide a form of social interaction that has been missing from the online B2C relationship that eliminated most of the human interaction that shapes the offline shopping experience (Clauss et al., 2018; Clauss et al., 2019). Platforms take advantage of user participation. Therefore, the number of members that a platform has is only a limited indicator of success. The decisive indicator is the amount of activity taking place, i.e., the number of satisfactory interactions that a user experiences (Parker et al., 2016).

Accordingly, Haile and Altmann (2015) emphasize that two-sided platforms have been studied and one of the main issues brought up in literature is the impact of network effects (see also, for instance, Parker & Van Alstyne, 2005). The role played by network effects is described as an important value driver because the platform's overall value to sellers and buyers increases with a growing user base on either side (Haucap, 2019; Katz & Shapiro, 1985; Valente, 2018). According to Haile and Altmann (2015), for instance, the main value generator in a software service ecosystem is the number of application users. Direct network effects create value for customers generated from the number of existing users of a service, i.e., using a technology that many other customers also use. Indirect network effects enhance value built by the availability and interoperability of complementary products. Customers value a hardware technology for which there is a wide variety of software available, and more software firms associate with a hardware technology if more customers use it (Clements, 2004). Therefore, indirect network effects arise if the increase in the number of users on one side of the market attracts more users on the other market side (Haucap, 2019). These effects—also known as cross-side network effects—are of high importance for platform business models as the value of the service increases for one user group when a new user from a different user group joins the network (see, for instance, Voigt & Hinz, 2015).

A central problem facing platforms subject to network effects is how to drive user adoption enough to reach critical mass (Evans & Schmalensee, 2010). Parker and Van Alstyne (2014), for instance, provide an overview of the chicken-and-egg problem of launch and adoption, and discuss a number of strategies which can be used to overcome this issue (see also Parker et al., 2016). Accordingly, companies need to develop well-considered strategies and investments in order to enable value-adding interaction. To succeed, platforms must get both sides of the market on board (Rochet & Tirole, 2003). However, network effects can also be negative. To avoid this, smooth access must be accompanied by effective curating (Parker et al., 2016).

Grinberg (2018) uses the example of the fax machine network in order to discuss the difference between traditional platform businesses and social media platform businesses: As with the fax machine network, the value of a social media network to users comes from communicating with one another via machines. The key difference between the fax machine business and the

social media platform business is that sending faxes did not itself create additional profits for the fax machine maker. In contrast, a social media platform is able to analyze the data sent through its platform and create an additional source of value from that data by monetizing it via advertising (see also Valente, 2018). Moreover, Parker et al. (2016) provide an overview of different monetization methods and point out that the largest part of the added value of a platform is provided by the user community, which is why users, resources, and functionalities that are located outside the company are in the foreground for strategic planning or IT. Finally, Plekhanova (2020) analyzes the process of value creation within a platform firm. She emphasizes that, in platform firms, the production of products and the associated value creating process cannot be explained through the concept of the value chain. They generally reflect a value network model of value creation. The profitability of a platform firm is a result of an overall cycle of exchanges of resources and products that take place between the firm and its customers on all sides.

Collection and use of data

New technologies have been layered on top of the basic Transmission Control Protocol/Internet Protocol-based Internet, including browsers, search engines, social networks, mobile communications, and so on. These technologies have enabled increased collection and use of data (Goldfarb & Tucker, 2019; Olbert & Spengel, 2019; Spiekermann, 2019). Accordingly, digitization allows new as well as existing business models to gather, connect, and analyze data to create new information-based products or services. The collection, analysis, use, and monetization of data is the foundation for the creation of many intelligent business models and revenue streams based on artificial intelligence, machine learning, and deep learning. Companies usually have concrete goals when collecting data on the Internet. Different interests may be at the forefront depending on the business models used. Online services enable the collection of data and the tracking of Internet users within and outside their own services, and thus allow a comprehensive analysis of user behavior. Businesses can use this knowledge to constantly optimize and personalize their products and services. In addition, companies can identify potential trends from the data collected and use this information to develop new products and services with particular relevance to users. Typical examples besides platform economies include algorithm-driven business models and digitalized technologies that link technical machines (Industry 4.0).

In particular, user data is considered to be an important element necessary for value creation for digital business models that focus on B2C services (HM Treasury, 2018). Customers contribute to the value of these firms by providing them with information, and giving them permission to process this information and even to sell it (Petruzzi & Buriak, 2018). Data is considered as an asset and is a product itself (Aslam & Shah, 2020; Spiekermann, 2019; see also Schmalenbach-Gesellschaft, 2020). However, the mere raw data is not sufficient to gain a competitive advantage. It has to be transformed into information (valuable knowledge – Smart Data); the mere collection of data does not constitute something new or unique (Kofler et al., 2018) and "the products aren't about the data; they're about enabling their users to do whatever they want, which most often has little to do with data" (Loukides, 2011a, p.3). Data provided by the firm's customers often adds value only when used in conjunction with other resources (see also Plekhanova, 2020). Therefore, the receiver of the data may use data analytics and artificial intelligence to find and exploit valuable information in the sheer mass of collected data (Valente, 2018). This intelligent use in different business models makes data valuable (see also Christians & Magalhaes, 2019). However, it must be acknowledged that raw data has some inherent value (Aslam & Shah, 2020; see also Schmalenbach-Gesellschaft, 2020).

Accordingly, Parker et al. (2016) emphasize that data analysis can significantly enhance the capabilities of the platform company as well as the partners in the ecosystem. Digital platform services mostly use huge amounts of structured and unstructured data from different sources as input factors, which arise and are processed (almost) in real time (big data). Urbinati et al. (2019) highlight the peculiarities of big data and explore the question of how provider companies create and capture value from it. Big data refers to datasets that are large in volume, diverse in data sources and types, and quickly created, resulting in greater challenges in terms of harvesting, managing, and processing the data using traditional systems and capabilities. Companies need to find methods by which to gain advantage from possessing this amount of information and this enables the implementation of new key value activities (Brynjolfsson & McAfee, 2017; Urbinati et al., 2019). One method is data mining, which refers to the techniques, methods, and algorithms used to analyze large amounts of data with the goal of transforming that data into knowledge (Larose & Larose, 2014; Witten et al., 2017). Thus, data mining can be considered as the part of a business model that creates value out of data. Olbert and Spengel (2019) provide an overview of value creation through data mining and show that the value of data increases during the data mining process (see also Varian, 2018, who uses the concept of a data pyramid to depict the relationship between data, information, and knowledge).

Since big data technologies lead to the use of new data information practices, they create novel decision-making possibilities, which are widely believed to support firms' innovation processes. Applying German firm-level data within a knowledge production function framework, Niebel et al. (2017) find suggestive evidence that big data analytics is a relevant determinant for the likelihood of a firm becoming a product innovator as well as for the market success of product innovations. Accordingly, Petruzzi and Buriak (2018) emphasize that marketing strategies rely on big data. Esteves and Resende (2019) show that customers are expected to pay higher average prices under a personalized advertising/pricing strategy. They also show that using targeted advertising with price discrimination rather than mass advertising and uniform prices might boost firms' profits. Accordingly, it is not the mere quantity of (user) data obtained but, in particular, the way in which it is used to generate network effects that is crucial for value creation (Schrage, 2016). Thus, information is very important in the value chain, and value activities might include the collection, systematization, selection, composition, and distribution of information (Khosrow-Pour, 2015). Accordingly, data and several activities to transform data into information are value-driving. In addition, research and macroeconomic statistics confirm that data is an increasingly important value driver.

With increasing computing power and advanced memory technologies, intelligent algorithms are increasingly taking control, with the result that, in many occupations, decisions are already routinely being taken by software systems rather than by people. Possible development paths are that humans keep control over computer systems or that computer systems become independent. An example for the latter is the development of algo trading, where intelligent algorithms produce stock market reports which, in turn, are analyzed by other algorithms. Braun et al. (2016) describe how, in future, computers will be so powerful that they will probably be able to take over tasks from knowledge workers. They emphasize that one key driver of this development is that a large part of human knowledge will be stored digitally in the future and be accessible to computers via cloud computing. With the help of big data, cognitive computer systems can detect hidden patterns and have become capable of learning like humans. As a result, work processes can be made more efficient and therefore more profitable.

Finally, it has to be emphasized that data often has a complementary character and so more (heterogeneous) data tends to provide more useful information. Therefore, the learning curve of a data-based business model, supported by various algorithms, also shows a significantly stronger increase than that of conventional business models. In combination with an economically strong network and feedback effects, this can result in monopolization tendencies, as has been the case with a few large Internet companies (Hildebrandt, 2018; Hildebrandt & Arnold, 2016).

Cloud computing

Accordingly, the emergence of cloud computing—the provision of IT resources in a virtual environment—also represents a fundamental change in the way IT services are invented, developed, deployed, scaled, updated, maintained, and paid for. Cloud computing offers different advantages (Marston et al., 2011). It lowers the cost of entry for smaller firms trying to benefit from compute-intensive business analytics; it can provide almost immediate access to hardware resources with no upfront capital investments for users; and it can lower IT barriers to innovation and make it easier for enterprises to scale their services according to client demand. Cloud computing also makes new classes of applications possible and delivers services that could not be delivered before.

Impact on allocation of taxing rights

One can conclude that the digital transformation of the economy does not affect all companies alike. However, "ring-fencing" the digital economy for taxation purposes is not an option (de Wilde, 2015). First, Klein et al. (2019) show that expectations about ring-fencing digital tax measures negatively impact firm values. Second, the overall economy is increasingly becoming digital. Traditional business models are increasingly being transformed by the use of ICT (Kofler et al., 2018; OECD, 2018a; Olbert & Spengel, 2017). Thus, digitization and technological developments will influence value chains, leading to a shift in classic value chains. Value chains will be based, in particular, on IT network processes, network externalities will be of special interest, some transactions will be performed virtually, customers will be (more) included in the value chain process, individualized production will be improved, intangibles will become more and more important, the use of multisided business models will increase, and some oligopolistic and monopolistic structures will be formed (Langerak, 2015; Olbert & Spengel, 2017; Pellefigue, 2015; Petruzzi & Buriak, 2018).

In most so-called digital businesses' models, the collection, use, and exploitation of personal data is the core method used to generate revenues (Amit & Zott, 2001; Kofler et al., 2018; Loukides, 2011b; Petruzzi & Buriak, 2018). However, data has always been used by businesses to design products and to organize their value creation processes. The core change is that the costs of collecting, storing, processing, and analyzing data have decreased tremendously, so more and more data is being, and will be, used (Haucap, 2019). The "death of distance" and the decline of transaction costs have also led to tremendous digital platform growth (Haucap, 2019). Businesses can now build large global user bases, providing them with the opportunity to collect far more user data, without having a physical presence in these countries.

In addition, from a traditional point of view, value creation and innovation are seen as firm-centric activities. In a world of virtual environments, this view changes to customer-centric. Customers are partners in the innovation process (Sawhney et al., 2005) and, in platform companies, for example, added value is largely generated by the user communities (Parker et

al., 2016). Leading economists point out that it has become necessary to reconsider the interaction between learning machines and humans in the value creation process since the roles of user participation, user data, and their synergies with intangibles are not explicitly taken into consideration in the current framework of thinking about value creation (Brynjolfsson & McAfee, 2017).

At the same time, it seems to be becoming increasingly harder for the existing international tax system to allocate taxable profits in a manner that is coherent and agreed upon by multiple tax authorities across the globe. The issue has triggered controversial debates about the appropriate allocation mechanism, i.e., transfer pricing. The transfer pricing framework might be further challenged, especially by intelligent algorithms which will make more and more decisions and collect user information autonomously (Braun et al., 2016), such that the contribution of local personnel in the value creation process might decrease (Schön, 2018). These developments could mean that the current transfer pricing framework, which is mainly based on physical production factors and people functions (functions performed, assets used, and risks assumed), is sidelined. The current set of international tax rules that cover cross-border business activities originated from principles devised in the 1920s, a time when factors contributing to the value created by MNE groups were relatively immobile and required intensive use of labor and tangible assets. Whether the existing transfer pricing system complies with new value chain principles or even represents them in an appropriate manner is, therefore, questionable. Greil, Müller et al. (2019) provide some initial insights into transfer pricing challenges that practitioners face in the context of digitalized transactions. Their results indicate that existing transfer pricing rules approximate economic activity to a greater extent than a formulary apportionment of corporate profits would, despite the conceptual shortcomings of the ALP. However, the increased automation of business activities makes it harder to justify the allocation of profits based on physical allocation factors. With regard to the relevance of transfer pricing in the digitalized economy, they document that many firms already determine transfer prices for digital transactions on a regular basis.

However, if MNE groups become increasingly integrated and intangible-intensive, the inherent problems of the ALP become more urgent and apparent (see also Kobetsky, 2019). It is, for instance, a challenge to identify the part of the data mining process in which a legal entity is engaged and the value of the specific activities relative to the overall value created through data mining. As the ALP, in the sense of the TPG, relies on the comparability of controlled transactions with third-party transactions, it is almost impossible to find third market comparables, and this problem is obviously inherent to data-driven business models (see also Olbert & Spengel, 2019). Moreover, for many MNE groups, intangibles are becoming increasingly important. The existence of unique intangibles makes comparability a challenge in transfer pricing (see also Kobetsky, 2019).

The allocation of profits generated by an MNE group to the individual entity within the group is connected with arbitrariness, as it is, for instance, theoretically impossible to allocate synergy effects generated within an MNE group according to its source (Avi-Yonah et al., 2009; Durst, 2012; Luckhaupt et al., 2012). The same holds true for efficiency gains and cost savings within the MNE group due to technological developments. Efficiency gains, in particular, can be achieved through faster and more informed decision-making, the simplification of transactions, and the reduction of distribution, marketing, sales, transaction-processing, or communication costs (Steinhauser, 2019).

An allocation due to functions performed, risks assumed, and assets used, which is suggested by the OECD, will not lead to arbitrariness-free results (Luckhaupt et al., 2012), especially in a highly integrated value chain process, ensuring that the income made by an enterprise group's individual companies cannot be properly classified (Olbert & Spengel, 2017). The problem is intensified with platform companies in particular, due to the importance of network effects. The mere number of users that a platform has does not necessarily reflect its value. The enabled interactions must generate considerable added value that can be captured by the platform (Parker et al., 2016). The value of the network effects, however, can hardly be clearly assigned to specific companies of an MNE group or states. Thus, while digitalization is not the root of the ALP's deficiencies, it might well exacerbate existing problems.

So far, taxing rights are largely allocated to the home state from which the business chooses to operate and where its important management decisions are taken (Næss-Schmidt et al., 2019), and they increase as the multinational's business activities and footprint in that country become more extensive. This is especially the case for returns from intangibles. The challenge with intangibles has always been that they cannot be localized. Taxation of profits where resources are located and directed is correspondingly problematic and arbitrary. Accordingly, the OECD introduced the concept of "development, enhancement, maintenance, protection, exploitation" (DEMPE) functions to localize the functions performed in relation to intangibles that have to be remunerated. This reduces the importance of the intangible itself. These DEMPE functions related to intangibles but are mainly performed by significant people functions in the home state from which the business controls its worldwide operations. Therefore, the returns attributable to the intangibles are also allocated to that one state. By doing so, the fact that the contributions of data and user participations in the various users' jurisdictions without any physical presence also enhance and develop the intangibles, and thus are value co-creators, is ignored. One would have to rethink the international convention in order to assume that users are value co-creators. Such a step would affect all business models and not just those within the digital economy (Greil, Müller, et al., 2019). As shown above, the OECD's concept of value creation could be understood as a shift away from the perspective of mere business activity. Therefore, it is not unreasonable to include the demand-side in transfer pricing, which allows (more) profit allocation to market and source countries, as all value is created jointly. The cornerstone for rethinking has been laid.

At the same time, IT could increase centralization due to low-cost digital information flow (Goldfarb & Tucker, 2019). This, in turn, could also increase the profits in the home state from which the business chooses to operate. In addition, and according to the OECD (2018a), digital companies can provide services and sell goods in jurisdictions in which they are not physically present through the use of Internet. Moreover, the availability of digital products and services is not bound to the location of the underlying intangible, which facilitates the access to global markets for highly digitalized businesses ("scale without mass", OECD, 2018a). The investments in the market countries mostly relate to some basic hardware components and the establishment of local IT infrastructures. Additionally, local marketing and sales staff customize the digital services for the needs of local users or clients. The core activities of the MNE group (i.e., the development and maintenance of the software and algorithms by highly skilled staff and the key assets) are usually centralized at the parent company, as evidenced by several case studies (Olbert & Spengel, 2017). As a result, the location for the core activities and assets can be separated from the location for sales and the generation of user data. This separation is not unique to the digital economy but is supported by the diffusion of information and communications technology (Devereux & Vella, 2017).

Such developments can lead to a perceived unfairness about the allocation of taxing rights. Greil et al. (2020) used a survey to shed light on questions about whether tax experts, such as tax advisors and auditors, and non-experts differ in their sense of fairness about a more even distribution of profits across countries. Their findings indicate that tax experts do differ from non-experts in this respect. This may explain why politicians, who are usually non-experts, view technical issues differently from tax experts. Their sense of fairness and, therefore, recommendations for action, particularly seem to differ in the context of discussions regarding the taxation of the digital economy.

However, it is not obvious that the digitization of the economy and the use of new business models automatically calls for a revision of the international rules, especially in relation to how to allocate taxing rights (Andersson, 2018). In the same way, understanding the effects of digital technology does not require the development of fundamentally new economic theory (Goldfarb & Tucker, 2019). This is without prejudice to the question of whether a new nexus should be created for the allocation of taxing rights or whether the threshold for PEs should be lowered.

CURRENT POLITICAL DISCUSSION AND PROPOSALS IN LITERATURE – IS THE ALP FIT FOR PURPOSE?

Current Political Discussions and Developments in International Taxation

In general

At the same time, tax challenges arising from digitalization of the economy have been identified as one of the focus areas of the OECD/G20 BEPS project, leading to the BEPS Action 1 Final Report (OECD, 2015b). The BEPS initiative illustrated that the allocation of the tax base across jurisdictions is very difficult based on the current internationally accepted taxation principles, and is often perceived as unfair by both the local tax authorities and the public in general. However, the current discussion is fourfold. First, the current measures do not yet provide an adequate response to the risks that continue to arise from structures that shift profits to entities subject to no or very low taxation. Second, there is a strong feeling that the current allocation of taxing rights is inappropriate because there is assumed to be a mismatch between where the taxation of the profits takes place and where value is created for certain digital activities. The main concern is that the input "user value creation" is located in a tax jurisdiction where the company carrying out a digital activity is not physically established and, thus, where its activities cannot be taxed.[8] This concern is widespread in Europe as, in 2018, seven out of the ten most valuable firms worldwide made their money with digital business. They either resided in the U.S. or in China (Richter, 2019). Third, some countries are of the opinion that the allocation of taxing rights is unfairly distributed regardless of the discussion on the taxation of the digital economy and are taking advantage of the current opportunity to receive more taxing rights. This view harmonizes with the view that too much profit is allocated to enterprises' headquarters. Fourth, the ALP is too complex and burdensome for many countries to apply in practice. Emerging and developing countries, in particular, have practical enforcement problems. Their voices are heard in the OECD/G20 Inclusive Framework on

[8] In this context, one should not forget the rise of consumption taxes (Schön, 2018).

BEPS[9], as the OECD needs their support to enhance its importance and financial resources. This, in turn, calls the role being played by United Nations (UN) Tax Committee into question.

Current political discussions on European Union (EU), OECD, and UN level

EU proposal for a Council Directive

The OECD and the EU are elaborating possible ways forward. On 21 March 2018, the European Commission (EC) published a "Proposal for a Council Directive on the common system of a digital services tax ("DST") on revenues resulting from the provision of certain digital services" (EC, 2018b) and a "Proposal for a Council Directive laying down rules relating to the corporate taxation of a significant digital presence" (EC, 2018a). From a transfer pricing point of view, the latter one is of high relevance, as its introduction would have a tremendous impact on conventional profit allocation rules. First, the concept of a significant digital presence (SDP; or digital PE) intends to establish a taxable nexus in a jurisdiction and significantly expands the existing PE concept. The EC proposes rules based on revenues from supplying digital services, the number of users of digital services, or the number of contracts for a digital service. The proposed rules for allocating profits to an SDP leave the current framework applicable to PEs. The EC thus asserts that the AOA remains the underlying principle for attributing profits to an SDP. Under the AOA, significant people functions must be identified and allocated to the head office or the PE based on the functions performed, assets owned or used, and opportunities and risks assumed. Accordingly, the determination of the significant people functions performed by a PE and its head office would remain fundamental for the attribution of assets, liabilities, and capital (i.e., profits). An SDP, however, does not need people. Therefore, the AOA would have to rely on significant functions without people. Second, the EC claims that the profit split method (OECD, 2018b) would be considered the most appropriate method for attributing profits to the SDP. Therefore, the EU leaves the conventional hierarchy of selecting a transfer pricing method: The selection of a transfer pricing method always aims at finding the most appropriate method for the particular case (OECD, 2017, p. 97, para. 2.2).

OECD and the Inclusive Framework

On 16 March 2018, the "Tax challenges arising from digitalisation – Interim report 2018: Inclusive Framework on BEPS" (OECD 2018a) prepared by the TFDE was released. It surveys the increasing adoption of unilateral measures to tax digitalized businesses across countries. Furthermore, it sets out a theoretical framework for analyzing the value creation processes in digitalized business models in order to underpin the revision of international tax rules. However, there is currently no consensus among countries with respect to a revision of international tax rules. The Inclusive Framework on BEPS will seek to arrive at a new global consensus by 2020/2021.

In 2019, the OECD (2019b) was discussing three different approaches: The "user participation" approach suggested by the U.K. (HM Treasury, 2018), the "marketing intangible" approach suggested by the U.S. and a proposal made by 24 countries (G24) regarding a significant economic presence ("digital PE"). The discussion led to the "Programme of work to develop a

[9] Working together within OECD/G20 Inclusive Framework on BEPS, more than 130 countries and jurisdictions are collaborating to tackle tax avoidance, improve the coherence of international tax rules and ensure a more transparent tax environment (OECD, 2019a).

consensus solution to the tax challenges arising from the digitalisation of the economy" (OECD, 2019c). This report addresses the three approaches in order to present a way forward in terms of finding a common solution and agreeing on it (for a comprehensive case study, see Greil & Wargowske, 2019).

The first approach purports to give appropriate credit to user participation in value creation in the digital economy (see also Christians & Magalhaes, 2019; Kobetsky, 2019; van den Hurk, 2020). User participation is understood as the process by which users can create value for certain types of digital businesses through their engagement and active contribution. The U.K. also emphasizes that the users of certain digital platforms are distinguishable from customers. The channels by which user participation creates value for a business seem to be most relevant to online networks, such as social media platforms, search engines, file-sharing platforms, and online marketplaces. This idea originated from HM Treasury and was used by the EC in its Directive proposals. Both approaches assert that value creation is different in the digital economy, but it seems to be unclear how one would determine when, and to what degree, users contribute to value creation (Grinberg, 2018). As users are already recognized as potential sources of value in the traditional economy, it is not clear why there should be a limitation to explicitly named business models. Grinberg (2018) cites the pharmaceutical and biologics industries as examples. In these medical economies, value is often created from a combination of scientific research, patient data, sales functions, and knowledge. Most notably, patients contribute to value creation by sharing their medical data via clinical studies. Therefore, a decision is needed about when, and to what extent, users contribute to value creation in these industries if the OECD takes its statements that transfer pricing should be aligned with value creation, and that the digital economy cannot and should not be ring-fenced as the U.K. assumes, seriously. Schön (2018) emphasizes that the use of a separate tax framework would drive an inefficient wedge between the digital and non-digital sectors (see also Andersson, 2018). In addition, digitization is increasingly impacting all sectors of the economy. It could make sense to develop specific rules, but one has to identify factors which might make it necessary to establish new international rules. As stated above, user participation is not such a factor. The demand-side could be recognized in the ALP in general. The result of the U.K.'s approach is that some, but not all, of the excess profits should be allocated to the destination jurisdiction. It seems that this approach is particularly aimed at business models which do not usually have their MNE group's headquarters in the U.K and the EU.

The second approach on "marketing intangibles" constitutes a compromise between the current transfer pricing system and a destination-basis income tax (hybrid approach; Avi-Yonah & Benshalom, 2011; Christians & Magalhaes, 2019; Grinberg, 2018; Kobetsky, 2019; Oosterhuis & Parsons, 2018; van den Hurk, 2020). One advantage from the point of view of tax certainty is that this approach does not distinguish between the "old" and "digital" economies. This approach would broadly affect all industries that are focused internationally and have international customer bases (Næss-Schmidt et al., 2019), and particularly tries to tackle tax avoidance schemes using low-risk distributors.

The profits of an MNE group should be allocated in two steps. As a first step, the routine functions have to be remunerated. However, there is no clear definition of what constitutes a routine or "normal" return (Næss-Schmidt et al., 2019). As a second step, the residual profit has to be divided between marketing and technology IP. It could be said that the jurisdiction where the base of customers or a network exists is a natural source for goodwill and customer-based intangibles (Oosterhuis & Parsons, 2018). Accordingly, residual returns deemed attributable to customer-based or marketing intangibles would be allocated to the market—the

jurisdictions where the customers reside. Residual returns deemed to be attributable to other intangibles would be allocated based on the current transfer pricing rules. With regard to the link between marketing intangibles and the market jurisdiction, the approach would modify the current transfer pricing and treaty rules to require marketing intangibles and risks associated with such intangibles to be allocated to the market jurisdiction. This proposal also intends to create new nexus rules but does not describe how. Næss-Schmidt et al. (2019) note that this approach could have three drawbacks: First, it reduces national incentives to support innovation; second, the key parameters have no solid empirical foundation; and third, it involves high compliance costs and there is a requirement for unrealistic levels of international co-operation.

The G24 proposal is motivated by the view that the digitization of the economy has enabled business enterprises to be heavily involved in the economic life of a jurisdiction without having a significant physical presence there (see also Christians & Magalhaes, 2019; van den Hurk, 2020). A non-resident enterprise would have a taxable presence in a jurisdiction when it was deemed to have a significant economic presence on the basis of factors that evidence that it had a purposeful and sustained interaction with the jurisdiction via digital technology and other automated means. Accordingly, one or more factors could be considered. First, the existence of a user base and the associated data input. Second, the volume of digital content derived from the jurisdiction. Third, billing and collection in the local currency or with a local means of payment. Fourth, the maintenance of a website in a local language. Fifth, responsibility for the final delivery of goods to customers or the provision by the enterprise of other support services, such as after-sales service or repairs and maintenance. Sixth, sustained marketing and sales promotion activities, either online or otherwise, to attract customers. The allocation of profits to such a presence could be based on a fractional apportionment method. With regard to this, it is necessary to define the tax base which has to be divided, to determine the allocation keys to divide that tax base, and to weight these allocation keys. This approach also aims to identify more taxable income regardless of the underlying business model used.

All three concepts would involve changing, or at least amending, the current profit allocation rules, and would aim to achieve a global profit distribution for a "new taxing right"—which would exist alongside the current profit allocation mechanisms.

Apparently, the OECD's members could not find a compromise in the three previous mentioned alternatives (see also van den Hurk, 2020), as the discussion led to the so-called unified approach (UA) (Christians & Magalhaes, 2019; Förster et al., 2020; OECD, 2019d). The UA is intended to complement the existing system of corporate taxation. At the time of writing, the essence of the UA is to grant market countries the right to tax a portion of the profits of companies, regardless of whether those companies have physical presences in the market countries in the form of affiliated companies or PEs. To this end, the profits of enterprises are to be divided between their countries of residence and sales on the basis of the revenues generated. The UA consists of three "amounts":

- Amount A allocates a part of the taxation rights on the company's profits to market countries, regardless of whether the company has a physical presence in the market country. Amount A, however, merely defines taxation rights on so-called residual profits.
- Amount B is to intervene in the current system to allocate the profits of a group of companies to distribution companies with so-called baseline marketing and distribution activities. The regulation is thus aimed, in particular, at distribution

companies with low levels of functionality and risk. The UA provides that such companies are entitled to a minimum income or a safe harbor income for the exercise of this function.

- Amount C is also intended to provide effective procedures for the avoidance and resolution of disputes over the allocation of taxing rights, for the allocation of profits beyond Amount B on the basis of the arm's length principle, and for the application of Amount A.

The UA does not offer a conclusive overall concept, but rather a mélange of the different approaches currently under discussion in science and tax policy, leading to overcomplexity (Christians & Magalhaes, 2019; Förster et al., 2020; Plekhanova, 2020; Schön, 2020). However, on January 31, 2020, the OECD reported that it had made steps in advancing the UA. At its January 29th and 30th meetings, the OECD Inclusive Framework had endorsed the UA and approved a way forward for negotiating the final UA principles by the end of 2020 (OECD, 2020). Christians and Magalhaes (2019) predicted that, on its current trajectory, the program of work on digitalization is likely to produce a new global tax deal that looks much like the old global tax deal, with a relatively modest redistribution of taxing rights among a few key states, thus missing an opportunity for meaningful reform.

UN model tax treaty

In the meantime, and maybe also rather surprisingly, the UN Committee of Experts on International Cooperation in Tax Matters released a proposed optional UN model tax treaty article that would grant additional taxing rights to countries where an automated digital services provider's customers are located (UN, 2020). The draft proposal would add a new Article 12B to the UN Model Double Taxation Convention between Developed and Developing Countries (UN, 2017a), requiring an MNE group to pay taxes on payments for automated digital services.

Objective of the current political discussion

Currently, it is not really clear which problem should be solved and it seems that different objectives are mixed up. The political proposals are directed at counteracting a perceived unfairness in the taxation of digital business models, and are intended to allocate more taxing rights to the market and source states. However, the discussion is not limited to the digital economy or digital business models. Schön (2018) emphasizes that we are witnessing a political debate on the division of taxing right between production and market countries far beyond the digital world. It is a result of changing balances of political power in this world (Fuest, 2020). If the current allocation of taxing rights were to be perceived as unfair overall, the international tax system would either have to be called into question in its entirety or, via the existing mechanisms, have to ensure that more taxing rights are allocated to the market and source states. At the very least, principles like tax neutrality, efficiency, or inter-nation equity do not oppose such a re-allocation (Pinto, 2006; Vogel, 1988).

The current debate also shows that the ALP should continue to apply, so all relevant problems (of digitization) will continue to exist. The introduction of a new system of profit allocation will create further issues. Only countries that have sufficient personnel and knowledge will be able to manage these challenges. The challenges in international taxation will increase, particularly for emerging and developing countries. With regard to this, Ndajiwo (2020) suggests that the best way forward for African countries would be to build on the G24 proposal and press for simple formulaic methods which would allocate profits fairly between countries

based on the real activities taking place in them. Similarly, Rukundo (2020) argues that African countries should participate in the multilateral discussions on the reform of international taxation needed to deal with the challenges of the digital economy. However, they must also acknowledge that their challenges are different from those faced by developed countries and that their solutions will, therefore, have to be uniquely African.

Other developments

Finally, some countries are obviously unsatisfied with current system and have implemented innovative tax tools (special levies). For example, India introduced an equalization levy, the U.K. and Australia introduced diverted profits taxes (see, for instance, Burchner, 2019), the U.K., Austria, and France announced that they would introduce DSTs, and the U.S. introduced the base erosion and anti-abuse tax (BEAT). Cockfield (2020), Cui (2019a), and Hadzhieva (2019) provide good overviews of the various developments in this area. The common intention of the current debate is to allocate more profits (and taxes) to the market or source countries in order to ensure that an "appropriate" level of taxation is applied.

Accordingly, the UN Model Double Taxation Convention between Developed and Developing Countries (UN, 2017) included a new article 12A regarding fees for technical services. Malan (2019) describes how Article 12A of the UN Model takes a step away from the existing principles for the allocation of taxing rights of business profits from the provision of services (UN, 2020). Article 12A permits limited taxation by the source state on the gross payments of fees for technical services paid to a non-resident service provider, without the requirement to meet any threshold in the source state and irrespective of where the services are provided or consumed (UN, 2020). Malan (2019) emphasizes that the rise in global trade in services, coupled with the advancements in technology that have made it increasingly possible for services to be provided remotely, has resulted in service providers being more readily able to avoid the creation of a PE in the state in which their customers are based. Therefore, some of the underlying challenges arising from digitalization are the same as those that prompted the introduction of Article 12A.

In addition, China and India, for instance, expressed their different views on transfer pricing in the UN Manual on Transfer Pricing (2017b), and emphasized the importance of their markets, marketing intangibles, and location-specific advantages, all of which have to be considered when applying the ALP (see, for instance, Li & Ji, 2017; Wagh, 2015). Furthermore, tax administrations worldwide are now equipped with more information about the group structures and worldwide economic activities of MNE groups due to the existence of country-by-country reports, which could awaken desires to capture more profits. Tax audits worldwide intensify transfer pricing audits and exert pressure on MNE groups in order to grasp additional income, leading to international double taxation (Andersson, 2018).

These unilateral measures create an environment which is based on noncooperation amongst countries, which can increase double taxation, threaten cross-border trade, and have a negative impact on real investment by MNE groups (see Cockfield, 2020, who uses the term "tax wars"). Against this background, it's important to note that Mansori and Weichenrieder (2001) show that when two revenue-maximizing governments compete for an MNE group's tax base, the noncooperative equilibrium will be characterized by different required transfer prices for the same firm in each country, leading to double taxation and to a depressed level of intra-firm trade. Accordingly, in their model, Raimondos-Möller and Scharf (2002) show that strategic transfer pricing regulation leads to a race to the top in transfer pricing, with the MNE group

reducing output and intra-firm trade. In relation to this noncooperative transfer pricing rule game between governments, the arm's length standard of transfer pricing may not be within the set of Pareto-improving, harmonizing reforms. However, harmonization of transfer pricing rules can lead to Pareto-efficient gains. Keen and Konrad (2013) argue that coordination between countries would improve the citizens' overall welfare. Nonetheless, coordination between countries is not incentive-compatible and, therefore, has proved very difficult to achieve. Smaller jurisdictions have an incentive to undercut larger countries so as to attract investment and profits (Collier & Maffini, 2017). Therefore, it is not surprising that transfer pricing is considered to be a major source of tax risk for businesses (Ernst & Young Global Limited, 2016; Klassen et al., 2017). Against this background, it is obvious that the current system fragments, albeit the ALP is repeatedly emphasized as the worldwide standard of profit allocation (OECD, 2017, p.18).

However, the current political debate does not address any of these unilateral developments apart from the development of DSTs. In turn, even if there is an agreement on an international level, there is nothing that will prevent countries from introducing unilateral rules or unilateral interpretations of the ALP in order to allocate (more) taxing rights to their jurisdictions. In conclusion, the concept of value creation, unilateral developments, and a probable agreement on an international level are uncoordinated, and they allocate more and more taxing rights to source states. Whether this development will be recognized in public is doubtful. Therefore, the objective to reduce the perceived unfairness about the allocation of taxing rights will probably not be achieved. As a result, the challenge of the fourfold discussion of the taxation of the digital economy will not be solved.

Proposals in Literature

General proposals – A short overview

At first glance, the literature discusses proposals that help to reduce tax avoidance strategies. The underlying reason is that the current transfer pricing system can be used to structure the tax burden of an MNE group. It even provides the incentive to structure the tax burden, can have negative welfare effects, and is identified as primary channel for profit shifting (Aliber, 1993; Autrey & Bova, 2012; Avi-Yonah et al., 2009; Clausing, 2003; Devereux & Keuschnigg, 2008; Durst, 2012; Heckemeyer & Overesch, 2017; Heckemeyer et al., 2018; Liu et al., 2017; Luckhaupt et al., 2012; Morse, 2013; Rectenwald, 2012; Vann, 2010). In order to reduce profit shifting and to minimize tax-induced investment shifts, only one tax base is suitable—one which is immobile: the customer or the location of the customer of the MNE group. In this respect, external sales are exogenous and cannot be modified (Andersson, 2018; Avi-Yonah et al. 2009). If such an approach was taken, it would also reduce tax competition for investments between countries (Andersson, 2018) and emphasize other aspects of a country's infrastructure in order to attract investment. However, the taxpayer could be trapped in a race toward maximum tax rates if countries impose special (higher) tax rates on sales (see also Devereux et al., 2019), which could be equivalent to an additional customs and protectionist measure.

The current transfer pricing system is highly complex and requires countless highly skilled taxpayers, tax advisors, and tax auditors, but it neither leads to tax certainty nor avoids double taxation. Transfer pricing suffers from a conflict with the reality of the MNE group. In practical terms, it is challenged, in particular, on the grounds of complexity and the attendant costs of administration and compliance (Couzin, 2013). These problems could be minimized by taking a standardized formulaic transfer pricing approach and employing formulary apportionment.

The difficulty with taking such an approach is that it involves one round of negotiations amongst countries about the formula or the parameters for the application of a standardized transfer pricing approach. If a country "loses" this round, it is likely that its national policymakers will not support the formula or will want to renegotiate when recognizing the loss of their tax base. There is always a great temptation for countries to change the formula when that seems to be in their favor (unstable equilibrium). As transfer pricing is a strategic tax policy variable (Bucovetsky & Haufler, 2008; *inter alia*, de Mooij & Liu, 2018; Bucovetsky & Haufler, 2008), it is unlikely that a consensus about a clearly defined formula will be reached (Bird, 2018).

One example is the attempt of the EU to implement the Common Consolidated Corporate Tax Base (CCCTB). The CCCTB is a single set of rules for calculating companies' taxable profits in the EU. With the CCCTB, cross-border companies will only have to comply with a single EU system when computing their taxable income, rather than many different national rulebooks. The consolidated taxable profits will be shared between the member states in which the group is active, using an apportionment formula. Each member state will then tax its share of the profits at its own national tax rate. This would change the international tax landscape, moving away from a single entity approach, at least for the EU (for a critical assessment of formulary apportionment, see, *inter alia*, Altshuler & Grubert, 2010; Röder, 2012). However, it is worth emphasizing that the consolidation scope and, therefore, the entities of an MNE group which would be included in the CCCTB, is different to the definition of associated enterprises in Article 9 of the OECD-MTC. Even if the CCCTB were to be implemented, one could not abandon the ALP within the EU, as the definition of associated enterprises is very broad and has the potential to include more enterprises than the CCCTB would include. Furthermore, under formula apportionment, tax planning would be still possible, and could cause distortions and profit misallocations (Hundsdoerfer & Wagner, 2020; Riedel, 2010), albeit proponents emphasize that formula apportionment would greatly reduce the scope for profit shifting (IMF, 2019).

In addition, there are different proposals in literature which would move away from the ALP and focus on different objectives, like economic efficiency, fairness, robustness to avoidance, ease of implementation, and incentive compatibility. Some recommend destination-based taxation of MNE groups' cash flows (destination-based cash flow tax, [DBCFT]; Auerbach et al., 2017). Such a DBCFT moves the tax system away from income taxation toward consumption taxation. Under a pure destination-basis income tax, all excess profits associated with sales in a given jurisdiction would be allocated to that jurisdiction without taking into account the number of users that received services, whether data was provided, how users interacted with the platform, or whether any goods or services were provided free of charge. None of these factors would matter at all.

A recent alternative apportions residual profit by destination-based sales less the third-party costs (inclusive of the routine return) associated with them (Devereux et al., 2019; Grinberg, 2018). This so-called residual profit allocation by income (RPA-I) allocates the right to tax routine profit to the country where functions and activities take place by common transfer pricing techniques. It then allocates the right to tax residual profit to the market or destination country where sales are made to third parties. However, the apportionment of residual profit is based on the location of residual gross income (RGI), rather than sales. This is measured as the value of sales to third parties in that jurisdiction, less the costs of goods sold, including expenses incurred in that country plus the transfer value of goods and services purchased from other parts of the MNE group (Devereux et al., 2019). Devereux et al. (2019) argue that RPA-I has

attractive properties and matches the criteria by which they aim to evaluate proposals for tax reform (economic efficiency, fairness, robustness to avoidance, ease of implementation, and incentive compatibility) well. However, this approach needs worldwide tax administrative procedures to be harmonized.

Another type of residual profit allocation (RPA) proposal is the sales-based formulary apportionment of profits proposed by Avi-Yonah et al. (2009). Under this approach, one calculates routine profit by applying an agreed markup on costs and apportions residual profit to the market or destination country entirely by sales. The key difference between a destination-based RPA and sales-based formulary apportionment is that a destination-based RPA would modify transfer pricing methodologies so as to allocate only "excess" or "supranormal" profits to the jurisdiction of sale (Grinberg, 2018).

Furthermore, Schreiber (2018), and Schreiber and Fell (2017), propose a sales-based apportionment of profits. This proposal allocates the overall profit associated with the relevant transactions of an MNE group to both the origin and market countries. Specifically, it has three elements. First, all jurisdictions would levy an origin-type tax by application of conventional transfer pricing methods. Second, each market country would tax a certain share of the overall profit of the enterprise. Third, the market country would give a tax credit for the conventional origin taxes paid elsewhere. This arrangement effectively makes the tax in the market country a minimum tax. Greil (2017) introduces a formula-based transactional profit split which comprises four steps considering the profitability of the MNE group. The aim of this approach is to establish an international consistent application of profit allocation rules in order to minimize profit shifting, to enhance tax certainty for taxpayers, and to reduce tax compliance and administration costs. At the same time, this approach uses current developments, does not entirely leave established procedures behind, and does not lead to an immediate change in the existing system. Opponents to standardization or the usage of formulas emphasize that each formula is arbitrary and is not based on any accurate assessment of the relative contributions to profit for firms. However, the same holds true with regard to the ALP, as it is based on the concept of value creation.

Li (2002) even proposes a global profit split. The global profit split would allocate the global profit of an integrated business to each country in accordance with the economic contributions made by the components of the business located in that country (see also Li et al., 2019).

Richter (2019) emphasizes that the current system of international corporate taxation is not compatible with a Shapley allocation of tax bases. He argues that if profit taxation is to be aligned with value creation, the tax base should ideally be allocated according to standards commonly accepted as fair and equitable when distributing the surplus of cooperation. He emphasizes that the Shapley value has been designed with the aim of determining an equitable distribution of the surplus generated by cooperation. Accordingly, Pellefigue (2015) argues that the Shapley value could be used to determine the fair amount of profits attributable to each party. This method, according to Pellefigue (2015), would take into account the digital economy's value co-creation features by using a specific set of formulae, which would allow the allocation of a consistent portion of profits between the headquarters and its local entities involved in digital activities, such as data collection.

Finally, Rixen (2018) proposes a republican conception of fiscal self-determination, and develops two principles of international tax policy and their institutionalization in an International Tax Organization (ITO). All states should, as far as possible, be represented in

the ITO, which should act as a forum for the negotiation of concrete rules for international tax policy. The ITO should also have sufficient powers to enforce these rules. Rixen (2018) emphasizes that, in the area of corporate taxation, the membership principle means that profits have to be taxed where the real economic activity takes place. The introduction of a common consolidated tax base with formula allocation, which should be based, as far as possible, on real economic factors, could make this practicable.

Specific proposals in relation to digitization

Becker et al. (2019) propose a sustained user relationship (SURE) concept. A SURE may be a digital platform of users that is used to collect vast amounts of data and for advertising. A SURE may also be identified when data is constantly collected through interconnected devices' sensors, when the users of those devices have agreed to that form of sustained data collection. They propose the use of this concept for both the nexus and for the allocation of profits. They suggest that it could create a fourth factor to be considered along with functions performed, assets used, and risks assumed. However, both this concept and the political discussion mentioned above are too focused on customers and their value contribution. Digital technology adoption and usage enhances productivity, increases firm performance, and reduces a number of specific economic costs (Goldfarb & Tucker, 2019), as well as affecting all levels of value creation.

Aslam and Shah (2020) argue that a plausible conceptual case can be made for taxing the value generated by users under the corporate income tax. However, a number of issues need to be tackled in order for user-based tax measures to become a reality, which include obtaining an agreement among countries on whether user value justifies a reallocation of taxing rights, establishing the legal right to tax income derived from user value, and selecting an appropriate metric for valuing user-generated data if it is ever to be used as a tax base.

Olbert and Spengel (2017) propose a pragmatic way to develop specific guidance on transfer pricing for digital business models. Such guidance could be implemented not only as a revision of intangibles but in the form of a specific chapter on digital business models in the TPG. In particular, they argue that human capital, in its specific form of knowledge-based capital, is becoming a predominant value driver and that such capital should have substantial weight in the functional analysis for purposes of profit allocation. They also argue that a value chain analysis is needed to detect real economic activity, instead of relying on contractual arrangements and legal ownership to facilitate the allocation of income in line with value creation for digital businesses. As stated above, the OECD has already taken this path as it refers to the concept of value creation. Olbert and Spengel (2019) argue that transfer pricing solutions can be developed for data-driven businesses in a similar way as they can be for traditional business models. They propose that the common functional analysis techniques should be able to identify the significant people functions involved, as well as the investments made and risks assumed within the data mining process.

Petruzzi and Buriak (2018) proposed ways of using the existing transfer pricing rules to cope with the digitalization of the economy. They stress the role of value creation analysis, which sees data as a valuable asset, especially for the highly digitalized business. In such context, they argue that the functional analysis should consider various activities, including the transfer, the purchasing and selling, and the further processing or transformation of data, all of which have significant value for highly digitalized businesses. Accordingly, Postler (2019) works out that data-related value creation is the center of the current developments. The main stages

within this value creation process are data collection, data analytics, and data exploitation. Postler refers to RBV and VRIO to analyze this process and to allocate profits within the MNE group.

Schön (2018) reminds us that the corporate income tax is a tax on return on capital and not a tax on the proceeds from sales and services to customers, like a turnover tax (see also Andersson, 2018). Therefore, one should ask for the location of tangible and intangible investments. If one starts from the assumption that profit allocation within an MNE group should reflect the use of assets, performance of functions, and assumptions of risk, this largely refers to the size and character of an MNE group's investment. It does not refer to the existence of a market, the accessibility or visibility of an MNE group in that market, or the contributions made by customers. Therefore, sufficient digital investment is needed. It should then be possible to apply the methodologies developed by the OECD (Schön, 2018). The PE definition is critical in this respect, because it sets the boundary of the firm in the sense that it determines to what extent the MNE group has FDI in a country when an entity which is (part of) the MNE group is not resident there (Vann, 2010). As mentioned at the beginning of this article, the ALP could also determine the PE threshold. This also seems to be the more sensible approach, as to determine a PE in order to be able to assign no profit to it on the basis of the ALP only causes unnecessary compliance and bureaucracy costs. The discussions revealed the same with regard to the so-called dependent agent PE (see, for instance, Drobnik, 2018). When it is then assumed that mere data collection via the Internet is not a particular value driver, but can rather be regarded as a routine function, the question of a taxable nexus is not of primary importance. For instance, Lakhani and von Hippel (2003) emphasize that the general lessons for user-based innovation systems include the clear willingness of users to openly reveal their proprietary information. This is rational behavior if the information has low competitive value and/or information providers think that other users know the same thing they do and would reveal the information if they did not. By contrast, many firms with digital business models invest in (digital) assets and employ people in locations where they have a significant market (see also Olbert & Spengel, 2019).

The inclusion of customers (or users) could be achieved through different ways. For instance, one could take into account the number of active users which serve as a function of attributable profits, or one could use the investments in the respective markets or in the (virtual) environments in which the users engage (see also Schön, 2018). Accordingly, Olbert and Spengel (2017) propose that the ALP should acknowledge that digital business models are becoming more customer-centric and should determine how this characteristic influences the analysis of assets, functions, and risks. Activities performed by local staff, such as customer support or the technical adaption of digital products and services to suit the particularities of local markets (e.g., language features, legal requirements, customer characteristics etc.), might not be best interpreted as routine tasks from a tax perspective.

However, if the Internet remains a global network and marketplace, the taxation of profits could reflect the virtual nature of economic activities conducted within the Internet's infrastructure. Accordingly, there could be a nexus for taxation wherever companies offer their services on the Internet. For example, in September 2017, the U.S. state of Massachusetts adopted a cookie nexus law, under which out-of-state sellers are deemed to have a physical presence in the state simply by placing a cookie on the computer or device of an in-state purchaser (Aslam & Shah, 2020). However, in order to cover only significant and sustainable activities, rather than every cross-border activity, a combination with a quantitative threshold would seem to be appropriate. In this sense, Cockfield (2020) proposes a PE fiction within model tax treaties

called a quantitative economic presence permanent establishment (QEPPE) that would permit source countries to tax significant cross-border economic activity. A quantitative threshold, such as gross sales of U.S. $10 million, would ensure that source countries can subject non-resident companies to their tax jurisdictions only if those non-resident companies conduct significant business activities within their borders. Nevertheless, the challenge of allocating a profit remains; The ALP can be used to price the activities for this market. Cockfield (2020) also proposes, in this context, to modify an existing transfer pricing rule—the residual profit split method—to apportion taxable profits to a source country (for example, using a formula based on destination-based sales).

With regard to the attribution of the value created by network effects, Roques (2018) argues that this issue cannot be solved by functional analyses as typically performed in transfer pricing analysis. The value is created by users, outside the scope of activity of the platform and, therefore, the entity. It is proposed that value created by network effects should be located where these effects are created, and this could be achieved by treating network effects in a similar manner to group synergies. However, it is theoretically impossible to allocate synergy effects generated within an MNE group according to its source (Avi-Yonah et al., 2009; Durst, 2012; Luckhaupt et al., 2012). In the context of cloud computing, Mazur (2016) proposes the use of profit split methods. They would minimize an MNE group's ability to engage in tax planning. Fjord Kjærsgaard (2019) analyses the options available to user jurisdictions for taxing the value generated by cloud computing service providers. She recommends that policymakers wait to see the full effects of the implementation of the BEPS package before adopting measures that might jeopardize the potential of the digitalization of the economy.

Grinberg (2019) examines the capital expenditure method and the operating margin method against the background of the political discussion. The capital expenditure method separates excess returns from routine returns. It provides a normal rate of return to productive economic functions and uses arm's length methods to determine this return. In order to allocate the remaining excess returns, the method, in effect, deems the country in which customer sales take place to be an entrepreneurial affiliate with respect to local market sales. The operating margins method would specify a minimum taxable income due from an MNE group in a given jurisdiction. The main variable that determines this minimum market jurisdiction taxable amount globally is a measure of global operating margin. A fixed return on sales would then be allocated to market jurisdictions in general. Chadwick (2019) presents a proposal for the implementation of the "marketing intangible approach", based on five steps, and Greil and Wargowske (2019) illustrate its possible implementation by means of a case study.

Báez Moreno and Brauner (2019) argue that a conservative approach could not work and that fundamental reform is inevitable. They propose a withholding tax solution. In principle, levying a stand-alone gross-basis final withholding tax on services of highly digitalized businesses makes economic sense because these businesses often have low marginal costs, which makes gross income a reliable proxy for net income in many circumstances (Plekhanova, 2020).

Finally, Cui and Hashimzade (2019) offer a rationalization of the DST as a tax on location-specific rent (LSR). They provide stylized illustrations of how platform rent can be assigned to specific locations, even when users from multiple jurisdictions participate. Such a proposal seems convincing, as it links taxation in the market states to the achievement of rents and quasi-rents from local monopolies and to their advantages (see Cui, 2019a; Cui, 2019b; Cui and Hashimzade, 2019; Schön, 2019; Shaviro, 2019). Such taxation seems efficient because it does

not change economic behavior as long as the taxpayer aims to achieve more from his investment than the minimum return achievable worldwide (see also Schön, 2020). However, when markets tend toward natural monopoly, taxation is not typically the optimal policy response; regulation is typically the best option (Aslam and Shah, 2020).

Proper application of the ALP – A rethinking exercise

One could refocus on the proper application of the ALP. Navarro (2018) rightly points out that if one matches the outcome of controlled and uncontrolled transactions, the outcome would be against the principle of equality, as the equalization of incomparable scenarios is against this principle. Therefore, he proposes that differences in the outcome derived from the achievement of greater efficiency on the side of MNE groups should also be reflected. He distinguishes between two approaches, the "full ALS fiction" and the "limited ALS fiction". The first requires adjustments to be made, to the maximum extent possible, of the features of the comparable transaction to reflect those present in the controlled transaction. The latter requires a fiction bound to only adjusting the conditions of the transaction according to what independent entities would have agreed on, but under given circumstances. Conditions could be understood as those elements that are subject to agreement between parties and circumstance as those elements that parties are not able to control. This limited fiction does not completely level related and unrelated transactions. Instead, it only levels those elements that should be considered as suitable for comparison, i.e., conditions not circumstances. This interpretation fits within the wording of Article 9(1) of the OECD-MTC, as the article refers to "conditions".

Assume that there is an MNE group consisting of two entities (A and B) in countries A and B. Entity A is the group's headquarters, in which nearly all functions are performed, assets used, and risks assumed. Entity B is a low-risk distributor and, therefore, only distributes the products (for instance, technical equipment produced by a well-known and customer-friendly brand) in country B. The gross margin of the MNE group shall be 38%. In order to determine the arm's length profit for the functions performed, assets used, and risks assumed by entity B, a comparability analysis and a benchmark study are performed. To search for external comparables, it is typical to search computerized databases of firms in order to determine whether there are comparable open-market transactions between unrelated parties (see also Eden, 2015). In this case, the benchmark study identifies that entities C and D are independent distributors in country B. They have similar functional and risk profiles to entity B. They earn gross margins of 2% and 7% respectively. Therefore, one would suggest that B should earn a gross margin of between 2% and 7%.

Article 9(1) of the OECD-MTC states that a transfer pricing adjustment may be carried out when "conditions are made or imposed between the two enterprises in their commercial or financial relations which differ from those which would be made between independent enterprises". A benchmark study or a comparability analysis, especially in the sense of a "full ALS fiction", is not necessary, as Article 9(1) of the OECD-MTC does not use the phrase "relations which have been made" between independent enterprises. The use of a standard for profits earned on market transactions to allocate value seems to contradict the theory of the firm, which is generally premised on the use of the firm to earn more profits than are available from market transactions. Accordingly, the OECD emphasizes that it is important to understand how value is generated by the MNE group as a whole. Therefore, one would have to shift away from the so-called one-sided methods (see also Eden, 2015) that are based on examining data from only one component of the MNE group. As such, the MNE group, as such, and its value chain process would have to be considered and analyzed (value chain analysis) in every case.

Therefore, one should use accepted economic theories and managerial thinking to determine what third parties would have done. The outcome should reflect the conditions that independent parties would have agreed on, but under the same circumstances in which controlled entities operate. For example, the German legislator introduced the hypothetical arm's length method[10] and the Federal Fiscal Court in Germany repeatedly focuses on economic reflection.

In this simplistic example, the MNE group seems to have a competitive advantage, for instance, due to the existence of a well-known and customer-friendly brand. There will be in-house knowledge coordination activities so that entity B's personnel will act in the spirit of the MNE group in order to ensure a consistent market image. For instance, Google would not be as successful at problem solving if it merely recruited people and left them to their own devices (Woiceshyn & Falkenberg, 2008). The corporate value of knowledge sharing, active nurturing of network resources, and supportive managerial and technical systems that the company has established should not be neglected. Being an entity of an MNE group, rather than a domestic firm, has a variety of advantages. These benefits derive partly from internalization (Buckley & Casson, 1976, 2009; Eden, 2015). As Eden (2015) rightly points out, the real problem with the ALP is the lack of comparables. It suffers both from a theoretical perspective and a practical perspective. Market prices of comparable uncontrolled transactions do not exist. The more that intangibles are involved or unique functions are performed, the more complicated the practical task to find ostensibly comparable transactions is and, for many types of intra-firm transactions and locations, it is simply impossible. This calls the OECD's concept of comparability analysis into question. At the beginning of the 19th century, Schmalenbach (1909) was already dedicated to the field of transfer pricing. One of his insights seems to be of particular importance. He pointed out that the market price as a transfer price can be perfect in every respect. However, he notes that it is important to take into account that "sales expenses" (*Verkaufs-Unkosten*; transaction costs) should be taken into account in order to reduce transfer prices, because these expenses do not arise in one's own company as they do in the market. He also stresses that the use of the market price can even be counterproductive. This is always the case where a sub-company, because it belongs to a larger whole, is compelled to adopt a way of working that it would not use if it were independent ("wo ein Unterbetrieb durch seine Zugehörigkeit zu einem größeren Ganzen zu einer bestimmten Arbeitsweise genötigt wird, die er, wenn er selbständig wäre, nicht benutzen würde", Schmalenbach, 1909, p. 176). The use of market prices may therefore be inappropriate for MNE groups. In this context, and against the background of the MNE group, as such, having a gross margin of 38%, the remuneration of entity B could be higher than 7% without violating the ALP, as it could be economically reasonable in the specific context of this MNE group.

However, the use of such an approach requires a deep knowledge of economic and management theory, and a profound knowledge about the MNE group as a whole. As value creation is not a rule that can be applied without judgment, such an approach cannot be applied without discretion. There is no single solution in theory nor in practice. Carrying out a benchmark study is much easier and leads to a race to the mean, as the specific context of the MNE group is, in practice, often neglected. The benchmark study takes over the function of a mental anchor, as human beings use such mental anchors (Chapman & Johnson, 2002; Kahneman, 2003; Tversky & Kahneman, 1974) in their decision-making processes.

[10] External Tax Relations Act, Section 1 para. 3 sentence 9. https://www.bundesfinanzministerium.de/Content/EN/Standardartikel/Topics/Taxation/Articles/External-Tax-Relations-Act.pdf?__blob=publicationFile&v=1

Petruzzi and Buriak (2018) emphasize that value chain analysis can be a useful tool and will become increasingly relevant. In my opinion, it is the main tool if the OECD is referring to value creation as a concept. If the concept of value creation is taken seriously, the facts and circumstances of each case have to be analyzed and profit attribution must be carried out independently of entities, as they will never have comparable value creation processes. Otherwise, one would violate economic principles and create tax avoidance possibilities within the ALP (Bauer & Langenmayr, 2013; Coase, 1937).

With that in mind, the use of the ALP may still be justified. However, its application or the international consensus on how to apply it would have to be further developed and adjusted to the evolving business models. In my opinion, the further development of the profit split method could be one way forward. The profit split method (see Kobetsky, 2019) may be applied by considering the relative contributions of each party (contribution analysis). Under a contribution analysis, the relevant profits, which are the total profits from the controlled transactions under examination, are divided between the associated enterprises in order to arrive at a reasonable approximation of the division that independent enterprises would have achieved from engaging in comparable transactions. It can be based on the relative value of the contributions by each of the associated enterprises participating in the controlled transactions, determined using information internal to the MNE group, as a proxy for the division (OECD, 2017, p. 144, paras 2.149 and 2.150).

To perform a contribution analysis, one requires an in-depth understanding of the business and the business model. Therefore, one needs to understand value, value creation, value capture, and the model that encapsulates these concepts. Businesses create value along their entire value chain and information technologies are integral parts of the value chain (Amit & Zott, 2011; Porter, 1985). Big data and data mining are becoming increasingly relevant and must be considered in a proper transfer pricing analysis. Data needs to be transformed into information (valuable knowledge) by businesses and entities invest in data mining with the purpose of increasing their returns on investment (Boire, 2014; see also Varian, 2018, who emphasizes the concept of a data pyramid in order to depict the relationship between data, information, and knowledge), which are then taxable in the countries of their FDIs. Therefore, one must identify the specific investments that have been made, the part of the data mining process in which an entity of an MNE group is engaged, and the value of the specific activities relative to the value created through data mining (Olbert & Spengel, 2019). In addition, according to Schön (2018), one could use the investments in the respective markets or in the (virtual) environments in which the users engage in order to incorporate the customer-centric view. Therefore, one should ask for the location of tangible and intangible investments, such as investments to avoid online firestorms or negative network effects, to empower positive experiences of customers, in Internet-based virtual environments, in information technologies, in APIs, in digital platforms, in strategies designed to attract users in order to reach and hold critical mass, in strategies designed to establish how data is used to generate network effects, and in complementary organizational investments, such as business processes and work practices. For this purpose, one has also to consider the significant functions which are responsible for the investments. As, for example, the location of intangibles is nothing more than a stroke of a pen, one has to determine the investments and functions performed with respect to intangibles which are entitled to remuneration within the ALP.

In addition, as shown above, the OECD's concept of value creation could be seen as a shift away from the perspective of mere business activity. Therefore, it seems reasonable to include the demand-side in the contribution analysis, which allows (more) profit allocation to market

and source countries as all value is created jointly. In the case of platform business models in particular, user participations in the various users' jurisdictions (without any physical presence) also enhance and develop the intangibles and thus are value co-creators. One would have to rethink the international convention in order to assume that users are value co-creators, as the original purpose of the ALP was to tax profits in the country where resources are located and directed. The cornerstone for rethinking has been laid due to the value creation concept, although one could agree with the view of Plekhanova (2020) that the current international corporate tax system has no specific rules addressing issues of value creation within a multinational platform firm.

The contribution analysis is highly complex, as it is solely based on a thorough economic analysis in every single case and may not lead to corresponding views of different tax administrations and taxpayers. The application of the profit split method, in particular, will increase the complexity of the ALP and could lead to heterogeneous results, which may result in double taxation and double non-taxation. However, the ALP is currently the worldwide standard for profit allocation in double tax treaties for all business models even if impacted by digitization and, if it is applied properly, there is no need for the international tax system to be changed. Digitization only exacerbates the ALP's existing problems.

In order to avoid the increasing number of double taxation issues, consideration could be given to taking a more objective and standardized approach. There are numerous possibilities here (see above; Förster et al., 2020; Greil, 2017). At the same time, it should be recognized that any standardization requires an international agreement and that standardization is a departure from the case-by-case approach to value creation. Instead, (value-added) factors would be used to reflect value creation in general. This, in turn, would result in the simplification of the whole profit allocation system rather than its abandonment.

CONCLUSION

At present, the international tax system faces substantial challenges with respect to taxing profits of MNE groups. Policymakers have put the focus on the taxation of the digital economy. The debate about taxing digitalized businesses is rooted in the belief that the existing tax system does not suit the challenges imposed by the digital transformation of the economy in the 21st century. The complex transfer pricing guidelines and rules, in particular, would often not provide a satisfactory solution for tax authorities. There is currently a strong feeling among the general public and tax authorities that there could be a mismatch between where taxation of the profit takes place and where value is created for certain digital activities.

The aim of this article is to provide a comprehensive literature overview of the ALP and the allocation of taxing rights of business profits, the concept of value creation, the impact of digitization on the allocation of taxing rights, and the current discussions regarding this topic. Finally, I make a connection between the value creation concept and the challenges of digitization, and ask whether the ALP is fit for purpose. In my opinion, and against the background of the value creation concept for allocating taxing rights, the ALP is fit for purpose when it is applied in a "rethought" way. I emphasize the application of the transactional profit split method, especially the contribution analysis, as an approach to the application of the transactional profit split. This approach is highly complex, as it is based on a thorough economic analysis in every case and may not lead to corresponding views of different tax administrations and taxpayers.

The proposed approach does not meet the objectives of simplification or the reduction of tax avoidance possibilities. However, the ALP at least fits when we consider that one of the principles that should shape the rules for taxing electronic commerce, according to the OECD's 1998 Ottawa Taxation Framework (OECD, 1998), is flexibility. Therefore, countries should continue to try to assess and agree on where, and to what extent, value is created and should not change the overall international tax structure (Andersson, 2018; Förster et al., 2020).

However, at the present, it is obvious that the current international tax system fragments and a new kind of tax competition and protectionism arises. Unilateral measures result in an environment which is based on non-cooperation amongst countries, which can increase double taxation, threaten cross-border trade, and have a negative impact on real investment by MNE groups. Before finding a solution in 2020/2021 at OECD-level, one should frankly ask what policymakers want to achieve and which issue should be resolved. As shown above, digitization seems to be a rather superficial issue as, *inter alia*, revealed by the international policy discussions. Only if the aim for an international tax reform is clear could options for reform be discussed on a solid foundation. At the same time, the questions of why a multilateral solution with a multilateral system must be found, or whether it would not be more advantageous and purposeful to agree on bilateral solutions that are multilaterally coordinated that could incorporate the specific economic circumstances between the contracting states, must be answered. Any solution should, at least, be based on broad and strongly accepted principles. The OECD's 1998 Ottawa Taxation Framework identified neutrality, efficiency, certainty and simplicity, effectiveness and fairness, and flexibility as the broad principles that should shape the rules for taxing electronic commerce (OECD, 1998). Those principles are still good ones, even if achieving them all simultaneously might not be possible (Förster et al., 2020; OECD, 1998; Sapirie, 2018).

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