

Digital Service Tax: An Empirical Legal Analysis

Klemens Katterbauer

Introduction

Digital services have played a critical role in almost any economy in the world, and amount to a significant share of the economy. The traditional service economy typically implied that the location of where the service is provided represents the place of taxation. This is due to the fact that both the provider and receiver typically were at the same physical location during the time the service was provided. This allowed the tax authorities to easily trace the transaction and hence impose the corresponding taxes. With digital services companies providing extensive services to consumers across the world, governments face the challenge that these companies may either not levy taxes on the provided services at all or allocate the service revenues to a corporation in a preferential tax region. Famous examples are companies such as Google and Facebook that allocate their revenues from advertisement within the European Union to their Irish subsidiary and then use their preferential tax arrangements to significantly reduce their tax obligations.¹ These revenues are generated in different countries from various users and many countries feel that due to the source principle in taxation, they are entitled to tax these revenues. The perceived mismatch between where the revenues are generated, and the taxed profits is a major driving factor for these governments to implement new legal frameworks in order to close this gap. The mismatch arises due to various factors. First, services can be supplied in a country even if they are not physically established there or have a physical presence. The internet allows businesses to provide services from anywhere using either a website, communication tools such as Skype or email for providing these services. This allows the companies to reduce the number of jurisdictions where the governments have taxing rights. The second, posits is that new business models providing digital services heavily rely on intangible property and can be more mobile. This allows businesses to easily provide services in various countries within a very short period of time with almost no capital expenditure. Intangible property in the case of digital service providers relates to user data, user bases and other software related properties. The third posit is that the value created by the user's participation in digital activities is higher than the existing measures value it.² The last posit is of crucial interest given that some of the largest companies in the world primarily derive their revenues from the significant amount of user data they possess and utilize for value generation, even though the value they assign to merely the data is rather minimal.

There have been several proposals by the OECD in order to counter profit shifting and base erosion. The challenges of these proposals are that they necessitate a uniform approach amongst states as discrepancies may lead to the same profit shifting approaches as with the existing regulations. Furthermore, an objective should be to achieve the widest adoption of the framework and reduce variations in terms of the implementation of the guidelines. This implies that the framework should be sufficiently complex in order to be applicable to a variety of circumstances, while easily understandable enough for widespread adoption. Additionally, all these proposals are solely focused on establishing some concepts regarding the taxation of business profits while disregarding the more consumption-based form of taxation that may be relevant given provisioning of services to individuals that may not pay any taxes. Legal theory states that a tax system shall be simple, transparent, neutral and stable in order to be most efficient.³ Even though there is consensus that the digital economy requires an adapted approach to taxation, there are opinion differences whether the taxation shall be focused on profits only, or whether a sales or usage tax may be the fairer and more stable approach. Given the significant amount of the revenues generated by digital services and the user data, the attractiveness for

¹ Sanger, Chris, and Rob Thomas. *New digital tax policies: What, when, where, how and by whom?* EY's Global Tax Policy and Controversy Briefing, London: EYGM Limited, 2018, 2.

² Sanger (2018), 3.

³ Bhandari, Monica. *Philosophical Foundations of Tax Law*. London: Oxford Scholarship, 2017, 5-8.

governments to tax and collect revenues is significant.⁴ Hence, governments have recently started, given the perceived lack of progress as well as limited scope of the proposals, to develop their own regulations in order to address this taxation issue. In particular, countries like France have introduced unilateral measures in order to institute consumption-based taxes for taxing digital services. In developing these new regulations, these governments need to take into account that these initiatives have a significant effect on existing tax treaties, which may contain provisions that focus on conventional and traditional businesses. As digital services can be relatively easily provided across the globe, the impact on these treaties may be substantial.

Background and Research Questions

Taxation of digital services has attracted significant interest due to political backlash caused by the revelations of technology companies, such as Google, paying almost no tax in the countries they are operating in, while generating substantial revenues from users.

Digital Services Tax

The European Commission has put forward a proposal for the taxation of digital activities, in particular services. The measures involve a first interim solution of a 3 % digital services tax (DST) and then the introduction of the taxation based on a digital presence. In addition, member states are recommended to incorporate into their tax treaties with third countries the establishment of a significant digital presence. The digital services tax shall incorporate revenues from the advertisement on digital interfaces, the making available of a digital interface where users find and interact with each other and the transmission of user data that was generated from a user activity on the digital interface.⁵ The transmission of data and how it relates to the taxation is outlined in Article 3 of the proposal.⁶ The mentioned services consist of revenues obtained from the transmission of the user data where the user data were generated from activities on the digital interfaces. It is essential to note that the data must be generated from the activities in the digital interface.⁷ Finally, the revenues are deemed to be obtained by the entity providing the digital service, irrespective of whether the entity has really received the revenue.

The initial minimal threshold for taxable revenues under consideration is 50 million euros where the whole group of companies, which belongs together, should have more than 750 million euros in global annual revenues.⁸ The essence is that primarily large corporations are targeted. These large corporations typically derive significant revenues from their digital services.⁹ From a legal perspective, the DST is exclusively a sales tax and independent of the overall financial status of the enterprise. This has raised concerns from enterprises that fear conflicting taxation claims and international double taxation¹⁰. This concern is based on the potential prospect of diverging taxation rules of the OECD and the European Union, as well as other countries.¹¹ In determining the place of taxation, the commission aims at specifying the place where the user is located and is independent of any financial contributions to the revenues by the users.¹²

⁴ AICPA. *Taxation of the digitalized economy: A policy paper designed to educate, enlighten and stimulate discussion*. Monthly bulletin, Association of International Certified Professional Accountants, 2018, 1-2.

⁵ EC. *Proposal for a COUNCIL DIRECTIVE on the common system of a digital services tax on revenues resulting from the provision of certain digital services*. COM(2018) 148 final, Brussels: European Commission, 2018, 2-5.

⁶ EC (2018), Article 3.

⁷ PWC. *European Commission Digital Tax Package: Potential impacts on financial services*. New York: Price Waterhouse Coopers, 2018, p 1.

⁸ PWC (2018), 1-2.

⁹ EC (2018), Article 4.

¹⁰ PWC (2018), 2-3.

¹¹ NSD. *Opinion on the COM (2018) 148 final Council Directive*. Report, Stockholm: Confederation of Swedish Enterprise, 2018, 1-3.

¹² EC (2018), Article 5.

The provisions specify certain exemptions from the taxation, which incorporate trading venues, systematic internalizers, payment services and crowdfunding providers.¹³ Systematic internalizers are investment firms that deal on their own account during the execution of client orders.¹⁴ Trading venues fall within a different category of business and have other regulation dealing with them. Payment services, as well as crowdfunding services are also exempt from the DST, provided that the sole purpose is making payment services available via the digital interface. On the other hand, non-regulated crowdfunding, reward-based and donations fall within the scope of the DST. In addition, services falling under the category relevant for the digital services tax are not considered if the services are provided between one entity and another in the same group.¹⁵ As outlined in Article 5 (4)¹⁶, the place of taxation should not take into account the place where the payment was conducted, or where the supply of the goods or services occurred. This paragraph is rather essential as it ensures that the sole criteria for determining the place of taxation is the place where the access takes place, and not where the goods are shipped to or where the payment is conducted. This also differentiates the tax from the conventional sales taxes that are applicable on where the physical transaction takes place.¹⁷ Essential in this regard is that the whole registration process for tax purposes is conducted electronically, and no national tax number is necessitated for registration. An identification number is then allocated to the entity that is taxable, which is separate from any national tax number. The main purpose keeping the national tax ID and the digital service tax identification number separate is to avoid having service providers required to set up a subsidiary in the country where they provide the service, and to provide a fast and efficient way for these entities to pay these taxes.¹⁸ In particular, there may be many more businesses being subject to the DST as compared to normal sales taxes, hence allowing these businesses to have a fast-tracked process and reduce the cost. The process is similar to what other countries, such as South Africa, have implemented in order to allow foreign companies to easily pay their taxes without having to adhere to the requirements set forth in the tax code.

The European Commission aims at better identifying and valuing intangible assets and regards the current approach by the OECD as rather outdated.¹⁹ The current approach focuses primarily on the principle of a permanent establishment which may not correspond at all to the location where the company engages in economically significant activity due to its digital presence. The digital service tax aims to establish the place of taxation as the location of where the user is located, which represents the logic that the user's involvement creates the value in the digital activity. This is outlined in Article 5 of the proposal²⁰, and Articles 9-11 outlines a One-Stop-Shop mechanism for the collection of the tax and the country of taxation would be determined based on the IP address.²¹

The United States has been characterized by the Internet Freedom Tax Act, enacted in 1997, that prohibit taxes on internet access. Internet access is defined as a service that allows users to access content, information, email or other services offered over the internet. The Act contains exceptions for sales taxes on online purchases for physical goods. The act has been amended three times and included the extension of the act, the further clarification on the definition of internet access and narrowing of the definition of internet access to exclude voice, audio and video programming.²² Given the legal structure in the United States that allows states to individually specify the taxes they are charging, some states have started charging taxes on digital goods and services. Given the act, most states presume that most of these digital goods and services are already covered by their existing franchise, sales and use taxes and apply them to these service purchases. On the other hand, North

¹³ EC (2018), Article 3.

¹⁴ EC. *Directive 2014/65/EU*. Brussels: Official Journal Of the European Parliament, 2014, Article 4 (20).

¹⁵ EC (2018), Article 3 (8).

¹⁶ EC (2018), Article 5 (4).

¹⁷ EC (2018), Article 5 (4).

¹⁸ EC (2018), Article 10-12.

¹⁹ NOVE. *Nove Digital Tax Package*. NOVE, 2018, 1-2.

²⁰ EC (2018), Article 5.

²¹ EC (2018), Article 9-11.

²² Stupak, Jeffrey. *The Internet Tax Freedom Act: In Brief*. CRS Report, Washington: Congressional Research Service, 2016, 1-2.

Dakota explicitly defined digital products and then established an exemption for them. Recent years have brought changes in that the government of North Dakota enacted a bill that requires out-of-state sellers that do not have a physical footprint to collect and remit sales taxes.²³

Having briefly discussed the European and American initiatives related to taxing digital services, other countries have already implemented legislation related to taxing digital services. Starting January 1st, 2018, Brazil has a federal law that allows cities to create a minimum service tax for companies that provide video, imaging, sound and text for downloading.²⁴ The two largest cities, Sao Paulo and Rio de Janeiro, have both imposed this minimum service tax which is paid by these companies. Another South American country, Colombia, has implemented a law a year prior that requires that digital services provided by a non-resident company to a Colombian beneficiary is subject to VAT tax.²⁵ The law stipulates that credit and debit card issuers and other payment processors, such as PayPal, need to withhold VAT for these services.²⁶ The regulation exhibits in terms of its implementation several challenges as it requires these service providers to determine the exact type of purchase made by the user.

There are several more countries being in the stage of implementing a tax on digital services, where the tax falls either in the category of VAT or as a separate tax.

Significant Digital Presence

Existing corporate tax rules rely extensively on the physical presence of a corporation without reflecting the value created by the user participation. Non-residents are considered to be tax liable in a country, only if they have a permanent establishment there.²⁷ Digital activities may be carried out in a country without ever having set a foot in the country and hence the rules fail to address this occurrence and require a new indicator for economic presence such that the business pays its fair share of taxes for its activities. While determining the tax status of a company is one aspect, attributing the profits derived by the business in the country is a different challenge. The existing regulatory framework specifies transfer pricing rules in order to attribute the profits of multinational corporations.²⁸ The attribution to the various countries is based on an analysis of the functions, assets and risks within the value chain of the group and a separate entity is hypothesized for applying the OECD Transfer Pricing Guidelines²⁹. The major issue is that digital business models have substantially different characteristics as compared to traditional ones in terms of how value is created. The strong reliance on intangible assets, such as user data and advanced data analytics methods in order to extract value from the data, leads to a situation, where these businesses may not easily be compared with conventional brick and mortar businesses. Hence, the application of the existing regulatory framework leads to a distortion of competition and negatively affects public revenues. Given that more and more multinational companies are driven by these business patterns, the difficulty in valuing the contribution is significant.³⁰

²³ McLoughlin, Jennifer. *North Dakota Digital Sales Tax Enacted With Postponed Date*. April 12, 2017. <https://www.bna.com/north-dakota-digital-n57982086576/> (accessed February 3, 2019).

²⁴ KPMG. *Brazil: ICMS imposed on electronic commerce, digital goods (São Paulo)*. March 28, 2018. <https://home.kpmg/xx/en/home/insights/2018/03/tnf-brazil-icms-imposed-on-electronic-commerce-digital-goods-sao-paulo.html> (accessed February 2, 2019).

²⁵ Sanchez, Luis. *Colombia's Tax Authority issues draft resolution on VAT collection on electronic digital services provided from abroad*. October 18, 2018. <https://taxinsights.ey.com/archive/archive-news/colombias-tax-authority-issues-draft-resolution-on-vat-collection.aspx> (accessed February 2, 2019).

²⁶ AICPA (2018), 13-15.

²⁷ OECD. *Model Tax Convention on Income and on Capital*. New York: Organisation of Economic Cooperation and Development, 2016, Article 5.

²⁸ EC COM(2018) 147 final. *Proposal for a council directive laying down rules relating to the corporate taxation of significant digital presence*. Brussels: European Commission, 2018, 1-2.

²⁹ OECD. *OECD Transfer Pricing Guidelines for Multinational Enterprises and Tax Administrations 2017*. Paris: OECD Publishing, 2017.

³⁰ OECD (2016), 1-5.

The European Union has pushed forward a proposal in order to address this issue and establish a new nexus for taxation of digital businesses operating across borders. The major difference compared to existing regulations is that they have a non-physical commercial presence, and the European Commission argues that the new indicators are necessary in order to protect the taxing rights of member states for new digitalized business models.³¹ The European Union also outlines the principles of attributing profits to a digital business that aims to better capture the value creation of digital business models³².

The scope of the proposal affects any corporation both within the European Union as well as outside, given that there is no double taxation agreement that has a significant digital presence. The concept of significant digital presence represents a new nexus for taxation and is a complement to the existing permanent establishment concept. The proposal sets out that an enterprise is assumed to have a significant digital presence if they meet revenue thresholds obtained from digital services, numbers of users of digital services and the number of contracts of digital services. The reason for choosing three different parameters for determining the taxable nexus is due to the fact that digital businesses are quite diverse and may come in various forms. The proposal by the European Union foresees that the minimum revenue threshold shall be set to 7 million Euros and the number of users of digital services shall exceed 100,000 in the tax period. Furthermore, the number of business contracts for the digital services shall be greater than 3,000. If any of these thresholds is met within a jurisdiction of a member state, then this implies that the enterprise has a significant digital presence.³³ The argument is that the revenue threshold is set sufficiently high in order to cover the cost of an additional permanent establishment. The threshold for users was based on the premise that each user returns a certain value in monetary terms and the summation of these values lead to an approximate revenue value as set out in the first threshold. The same is true for business contracts as the assumption is that the value of business contracts is far more substantial as compared to user contracts and would therefore amount to approximately the same.

Artificial Intelligence utilized in the area of taxation law

Artificial intelligence has in recent years assumed great significance in the legal and judiciary system. Artificial intelligence is defined as the study of intelligent agents which is any device that observes its environment and undertakes actions in order to maximize the probability that it reaches its objectives.³⁴ This implies that these systems utilize the data provided to them in order to undertake actions, and may in the legal system be used for legal research and due diligence, review documents and contracts as well as predict legal outcomes. In the area of legal research, these systems may read over million pages of law and extract the relevant passages needed. The main focus in this instance is on rapidly finding information that is relevant for the subject matter, and hence reduce the time it takes for fact finding. The second area that is of great interest for artificial intelligence systems is the reviewing of contracts and documents. This allows a machine to scan an existing document, and then find documents that are similarly relevant. A third major area is the prediction of legal outcomes, as well as the assistance of law officials in drafting new laws via determining their effect on future instances. This feedback related to the drafted laws may assist in fine-tuning the existing laws and reduce loopholes related to legislation.³⁵

³¹ EC COM(2018) 147 final, 2.

³² EC COM(2018) 147 final, 3.

³³ EC COM(2018) 147 final, 7.

³⁴ Russel, Stuart, and Peter Norvig. *Artificial Intelligence: A Modern Approach*. New Jersey: Prentice Hall, 2003, 34-35.

³⁵ Law Technology Today. *Three ways law firms can use artificial intelligence*. February 19, 2019. <https://www.lawtechnologytoday.org/2019/02/three-ways-law-firms-can-use-artificial-intelligence/> (accessed April 27, 2019).

Related to taxation, artificial intelligence has been utilized in a variety of cases. For compliance purposes artificial intelligence is used for analyzing company data and label it. Subsequently, the labeling allows the provider to determine the employment tax obligations relatively easily for a company, which in turn allows the company to manage its tax position as well as control the costs. While the majority of labeling may be done automatically, there is still human intervention required where the labeling is not complete or cannot be performed.³⁶

While all these developments are promising, one should always take into account the dis-connects between algorithmic decision making and the function of law.³⁷ In almost all instances of law, the authorities are required to adhere to a process that establishes norms and guidelines that all have to follow. Algorithmic decision making on the other hand is not based on the process but in terms of the outcome, and the success is determined by whether the system complies with specific examples or not³⁸. The challenges that arises from this is that the decision process is circular. This implies that the decision of what is right, is based on the decision of someone else deciding what is right. Given the necessity to reasonably manage the complexity of an algorithmic decision system, this may have to be taken into account. Another distinction between algorithmic decision making and function of law is that most laws are partially articulated vaguely in order to allow for context and nuance for taking decisions. Such vagueness is however not possible to be implemented properly for artificial intelligence systems, nor can decisions be justified if this arbitrariness is incorporated.³⁹ While the aspect of process and vagueness may in certain circumstances be beneficial in law, the ability of artificial intelligence systems to efficiently and thoroughly assist decision makers may lead to more consistent judgements of the law.

Research Questions

The research questions posed in this paper revolve around the international taxation of digital services. The first research question is whether a digital service tax or the nexus of significant digital presence is more adequate in the context of international taxation of digital services. The question arises whether digital services shall be subject to a user tax, or whether a profit-based tax is more beneficial. In the case of the profit-based taxation, the major question arises to what extent the nexus of permanent establishment needs to be modified.

The second research question revolves around the impact of artificial intelligence on adapting tax treaties in order to achieve fairer taxation for digital services.

The third research question addresses the impact of the taxation of digital services on developing versus developed countries. A major question addressed in the research will be the impact of the modified trans-pacific partnership (CPTPP) on the taxation of digital services on the parties and impact on the tax treaties with China.

Digital Service Tax versus Significant Digital Presence

The first research question deals with whether a specific digital service tax or the concept of a significant digital presence may be more adequate in the context of the international taxation of digital services. This fundamental question in taxation law depends on the implementation of both regimes as well as how it can be best executed in an international setting. Necessarily, enforcement capabilities, ensuring oversight and justifying the legitimacy of the taxation regimes to the stakeholders are equally important. A fundamental question is whether a sales versus profit tax is more adequate in order to achieve fairness of taxation and compare this to existing approaches worldwide in dealing with digital services. Given the novelty of this type of service, there is still considerable disagreement on how to handle these

³⁶ Van Trigt, Jan, David Miller, Stuart Black, and Albert Fleming. *Artificial Intelligence - entering the world of tax*. Report, London: Deloitte Touche Tohmatsu Ltd., 2017, 4-5.

³⁷ Venkatasubramanian, Suresh. *Structural disconnects between algorithmic decision-making and the law*. Armed Conflict Series, Boston: International Committee of the red cross, 2019.

³⁸ Venkatasubramanian 2019, 2.

³⁹ Venkatasubramanian 2019, 2.

services. Opponents of sales taxes argue that this may create additional burden for businesses and will make services for users more expensive, while proponents of sales taxes argue that these services and generated revenues from users are similar to existing services provided to users already, and hence not taxing them would be discriminatory⁴⁰.

The hypothesis outlined in this paper is that a separate nexus for a tax for digital services and a digital service tax is necessitated in order to overcome the challenges arising from the lack of consensus with respect to the development of a new nexus related to permanent establishment.

The hypothesis will be empirically tested using the results from the survey and data collection and complemented by a qualitative analysis of recent legal developments.

Impact of artificial intelligence in the development of tax treaties for greater fairness in the taxation of digital services

The second research question addresses the question of how international or bilateral tax treaties shall be modified in order to ensure fairness in taxation of digital services. The main focus will be on tax treaties between China and other nations given the extensive penetration of digital services in China as well as growing outward export of its services. Balancing the interests of the individual nations is rather critical in light of the growing penetration of these services and the current lack of firm international best practices related to it.

The hypothesis set up is that artificial intelligence assists the existing law drafting process for bi- and multilateral taxation treaties in order to ensure fairness of taxation related to digital services. Using the existing data, an artificial intelligence system will be utilized in order to examine the quality of assistance related to drafting law for digital services.

Research Design/Methodology

Taxation of digital services have attracted significant interest by governments given the perception that new business models may bypass existing regulations in order to reduce their taxation levels.

For the research design, an empirical research approach related to legal studies will be utilized. Empirical research design in legal studies has grown in recent decades in importance and has led to significant research results in law studies.⁴¹ The first crucial step in empirical legal research is to formulate the research questions that should be both relevant to real world and contribute to an existing body of the scholarly literature. Based on the research question, a falsifiable hypothesis has to be derived that shall be stated clearly enough such that the proposed answer to the research question can be investigated in terms of its truthfulness. Furthermore, the relationship between an outcome (dependent variable) and several explanatory variables (independent variables) has to be specified.

In case the evidence is strong enough that the falsifiable hypothesis is not able to be rejected, then the established theory may be more and more plausible. If the theory has several observable implications and if the hypotheses derived from it are not able to be rejected, then the theory may be rather strong.

Most empirical legal research can be divided into three main types that consist of the judicial opinion coding, descriptive statistics and inferential statistics.

The first major type of empirical legal research deals with the characterization of judicial opinions depending on the basis of their content. The judicial opinion is first analyzed in terms of its content, then codified in order to be used in a subsequent analysis. The advantage that this type brings is that the number of raw data, hence cases, is quite substantial and given the heterogeneity in terms of developments in the various jurisdictions, this can provide essential clues about these areas. A

⁴⁰ Kim, Young Ran. "Digital Services Tax: A Cross-Border Variation of the Consumption Tax Debate." *72 Alabama Law Review*, 2020.

⁴¹ Heise, Michael. "The Importance of Being Empirical." *Cornell Law Faculty Publications*, 1999: 807-833.

challenge this type of research encountered is that it relies heavily on the subjective determinations of the statements of judicial opinions⁴².

A second major type of empirical legal research is the descriptive usage of data. This implies that one or more variables are described or presented according to the properties they possess. The arising properties may convey crucial information such as the means, medians, modes, rates and frequency counts, and these data may well illustrate the correlation between two or more parameters⁴³.

A third type of empirical research is the inferential usage of statistics. The research may focus on deriving generalizations based on data drawn from a sample of cases or the subjects of the object population. Essential in this regard is to ensure that the sample is drawn from the sample population in a random form. The usage of inferential statistics then allows to make inferences regarding selected attributes of a population solely on the information obtained from the random sample.

Within this article a combined case content analysis - inferential statistics approach will be utilized for addressing the research questions. The research design will first consist of a survey addressing the first research question. The survey will encompass various parameters that are analyzed based on the response from individuals. The aim is to provide a statistically significant recommendation on how to approach the current issues with the taxation of digital services. Furthermore, the survey will also encompass data related to achieving fairness of taxation for digital services given the existing treaties.

The survey encompasses forty respondents that were randomly selected. The sample size is sufficient in order to reach an effect size of 0.5 and power of 0.6 for the employed t-test for testing the hypotheses.⁴⁴ The one-tailed t-test allows the testing the statistical significance into one direction, allowing for a binary outcome, such as in the considered cases, to be tested. One of the tests is testing the hypothesis that the digital service tax may be preferred from a legal as well as fairness point of view as compared to the nexus of a significant digital presence.

Results

Digital Service Tax versus Significant Digital Presence

Service taxes, such as the digital service tax, as well as other consumption taxes are indirect taxes as compared to corporate taxes that are directly incurred from the corporations.⁴⁵ The term “service” is characterized legally typically by two factors. The first, a service needs to be a real activity. Secondly, the activity has to be performed in order to benefit someone else than the provider of the services.⁴⁶ In the digital space, the difference between a digital good or service may sometimes be non-existent or may have a dual characteristic. While many nations have implemented regulations relating to the taxation of services, that include digital services as well, the digital services under consideration may in many instances be similar or equivalent to digital goods. These digital services encompass a limited portion of the revenues companies make from digital services provided to users. For individuals purchasing services from abroad with a distinctive transaction source originating from their country, the existing taxation frameworks may be able to trace these transactions. Global digital service providers may in many instances receive most of their revenues from advertising and utilization of user data for marketing purposes. Furthermore, the user data may be utilized in services for companies that may have their billing address and revenue allocated in another jurisdiction. This implies that although the user data and revenues may be sourced from the jurisdiction of the user, the revenues may not be taxed in the jurisdiction but solely in the jurisdiction of the billing address.

⁴² Heise (1999), 825-826.

⁴³ Heise (1999), 827.

⁴⁴ Kenny, David. *Statistics for the social and behavioral sciences*. Boston: Little Brown, 1987, 207-2010.

⁴⁵ OECD. *Addressing the tax challenges of the digital economy*. Paris: OECD Publishing, 2014.

⁴⁶ EY. *Worldwide VAT, GST and Sales Tax Guide*. Report, London: Ernst & Young, 2019.

When addressing the matter of a digital service tax, the main underlying question is whether the revenue generated from the utilization of user data and revenues received from advertisement can be perceived as an indirect payment of individual users for utilizing the services. Given the current proposals for digital services taxes, the approaches would all be directly applicable to the revenues generated from certain digital services, especially taxation and search engine remunerations. Considering that the taxation base is revenues this would then amount to an additional consumption tax, or tax provided for services. The main fundamental question is why existing consumption taxes do not already sufficiently capture the revenues arising from digital platforms for several governments. The main public recognition is that digital platforms provide very distinctive economic characteristics that are not sufficiently captured with the existing legal taxation frameworks. These characteristics are amongst others the network effects that generate market power, multi-sided business models that allow pricing choices to maximize profit and negligible marginal cost as well as geographical mobility⁴⁷. Existing taxation concepts may not or only partially take into account these characteristics, and hence companies may be able to shift their revenues and profits to constituencies with preferential tax treatments.

Given the declared empirical approach to investigating whether a direct taxation approach via a digital service tax or a change of the nexus to a digitally significant presence is preferred, the results of the survey will be discussed below and analyzed. Furthermore, the analysis will be complemented by putting the results in context with existing legal theories and law developments.

When analyzing the responses from the questionnaire, several trends are observable. The first major trend is that the majority, thirty-one, of the respondents recommend a digital service tax as compared to relying on the adaptation of permanent establishment clause. When inquiring about the reason for preferring either a digital service tax or digital significant presence, one determines that most of the respondents have the opinion that the digital service tax and local implementation of a digital service tax (similar to domestic value added taxes) may easier to be realized as compared to achieving a global consensus on adapting the nexus of permanent establishment. The results correspond with the wider opinion of many governments pushing for the introduction of a digital service tax. Given the governments legal right to be solely responsible for consumption taxes related to domestic consumption, the digital service tax approach allows to introduce a consumption tax related to the usage of consumers of its services, while avoiding to directly tax the profits of the corresponding companies. The digital service tax further does not distinguish between domestic and foreign companies, given that the place of taxation is the location of the consumer of the services, which additionally makes it rather attractive in order to avoid the impression of discrimination against foreign companies.

In contrast, the survey respondents outlined in their preference for the significant digital presence that it encompasses a broader base of taxation, based on the nexus of significant digital presence. The argument is that this allows for the more comprehensive taxation of digital goods and services, while maintaining the existing taxation based on permanent establishment. An additional argument presented is that the nexus of significant digital presence can be easier incorporated into double taxation treaties. The main opinion supporting this argument is that it broadens the definition of when a company is fully taxable in a jurisdiction and broadens the tax base for it. Furthermore, the approach would be in close alignment with the recommendations by the OECD, and even though the approach may take longer, the survey respondents argued that it may be preferable over instituting additional consumption taxes.

When surveying the percentage amount of revenue that shall be taxed by the digital service tax, the majority of respondents recommended to charge less than 3 percent but more than 1 percent. The main justification for the stated percentage range is that an additional consumption tax should be sufficient enough in order to receive the justified taxation amounts resulting from the profits the companies generate in the jurisdiction, while avoiding high taxation levels that may reduce the attractiveness of operating in the country as well as lead to tax evasion. When dealing with taxation rates, it is essential to determine them based on the scope of the proposed taxation. The more comprehensive the taxation

⁴⁷ Cui, Wei. *The Digital Services Tax: A Conceptual Defense*. Faculty Publications, Vancouver: Peter A. Allard School of Law - University of British Columbia, 2018, 1-2.

will be, the less should be the taxation rate. While the amount may be less than what has been put forward in other countries such as in Malaysia, the scope of the proposed digital services tax may be significantly broader as compared to that of other nations⁴⁸. In the case of Malaysia, the Malaysian government primarily aims at digital services that are provided by foreign service providers in order to remove the existing gap that foreign service providers are not responsible for the service taxes. Being applied to solely foreign service providers, the tax is intended to counter foreign companies that derive revenues from Malaysia but do not pay any taxes in the country. An essential aspect outlined when analyzing the survey respondents is that both domestic and foreign digital service providers should be treated equally in terms of taxation of digital services. Given the international nature and ability to provide services within an instant from any point in the world, ensuring that there is no nationality attached to taxation is quintessential for the development of international taxation treaties, as well as avoid legal challenges resulting from existing treaties.

When addressing which services shall be encompassed by the digital services tax most of the respondents indicated that revenues from the utilization of user data shall be included, while advertising revenues are mentioned second most often. Search engine as well as referencing services generate significant revenues via allowing companies to let their services and company information be ranked higher in the search results as compared to that of other providers, as well as utilize user data for their service provisioning.

Most of the respondents indicated that search engine related revenues as well as advertising revenues shall fall within the mentioned category. Considering large digital service providers, such as Google, Facebook and Twitter, the mentioned revenue categories encompass most of the revenues of these companies that are typically directed into low tax constituencies. The main legal reason is that value generation is occurring at the consumer's site, and not the place where the company declares the revenues to be taxed⁴⁹. While an argument has been that the user data's value is too attenuated in order to justify the institution of corporate taxes, many companies are creating significant income or even their primary income base arises from the utilization and commercialization of user data. Even the argument that users may opt out from providing the data, may not be convincing, since it is nearly impossible to not use digital services in one's life, which renders it non-optional to not keep a digital footprint. Therefore, user data's value is significant as well as allows the generation of considerable income from the commercialization of them.

The next question addressed in the survey was how to incorporate the digital services tax into bilateral or multilateral double taxation agreements. The expectation was that there will be a difference in viewpoints with respect to whether solely treat digital service tax as a value added tax or whether allow it to be accounted for in repatriated profits. In the case of a value added tax, then this would be like any other value added tax for products, which would make it rather unlikely to be incorporated in any double taxation agreements. The main viewpoint of the respondents was that a digital service tax shall be a value added tax, and not be relevant for a double taxation agreement, given that it is a domestic consumption tax. The nexus of permanent establishment does not have to be modified in such an instance, which provides governments with the time to engage in constructive discussions and aim at a comprehensive solution regarding the modification of the nexus of permanent establishment. As mentioned by the survey respondents, the current rather intensive discussions regarding a digital service tax are primarily the result of the stalled progress with respect to the change of the nexus of permanent establishment at the OECD level. Addressing potential complaints of governments, whose companies may be adversely affected by such domestic charges, a dual charge of revenues should be avoided. This requires that if both governments charge a digital service tax and the revenue charged

⁴⁸ Baker & McKenzie. *Service Tax on Imported Digital Services*. April 15, 2019. <https://www.bakermckenzie.com/en/insight/publications/2019/04/service-tax-on-imported-digital-services> (accessed May 13, 2019).

⁴⁹ Connon, Davida, and Simeon Djankov. *Tax policy should recognize the true value of user data*. December 27, 2018. <https://blogs.worldbank.org/developmenttalk/tax-policy-should-recognize-true-value-user-data> (accessed June 30, 2019).

overlaps between the jurisdiction, then respective tax rebates should be incorporated into the double taxation agreement.

For the question of addressing the legal challenges arising from a digital service tax, there were several key challenges that were mentioned most. A major potential challenge is that a digital service tax may be argued to be discriminatory as it treats certain businesses differently. This may be argued in terms of nationality as well as size of the businesses, which may in the European Union lead to challenges. Another challenge that was expressed by the survey respondents were technical grounds that may arise from companies outlining that the revenues do not fall under the scope of the law. A further challenge that may arise is the matter state subsidies where certain provisions in the digital service tax may allow certain companies to be better off than others. This may then be argued to result into unfair subsidies. Another final challenge raised by most respondents is the impact of tax treaties on the implementation of a digital service tax. For example, a company may ask to invoke conditions of a tax treaty with another country to outline that the other country does not have the right to tax the revenue or income. The resulting question is what kind of tax the digital service tax is considered, in particular a consumption or revenue-profit based tax⁵⁰. As seen in the latest implementations of a digital service tax in France, there may be significant disagreement by other nations whose companies might be affected by these taxes⁵¹. In particular, the United States government argues that the digital service tax in this form, disproportionately affects American companies and amounts to an unfair trade practice. The threshold levels stipulated in the law encompass both a global revenue level of 750 million euros, and 25 million in France. The main challenge arising from this definition is that a global revenue threshold may give the impression that it targets large global corporations to generate additional revenues, while failing to outline the relationship to the revenue generated from domestic consumers. Determining the revenue generated from domestic consumers may be rather challenging, given that the revenue is declared in another jurisdiction, and many governments consider defining the application of the tax in terms of general revenue levels as easier to be enforced.

For the question whether a digital service tax improves or worsens fairness of taxation most of the respondents replied that fairness of taxation will improve given that it allows countries to avoid losing out on taxes due to bilateral income tax treaties or lack of jurisdictions. The justification is that the tax allows the place of taxation to be shifted to the place where the value is generated, which is the user site. Furthermore, even in the case that companies shift their revenues into low-tax jurisdictions, the digital service tax will still apply since it is based on location of the user. This supports the growing pressure to change the nexus of permanent establishment to one related to significant digital presence, irrespective of whether the company has a physical presence in the country or not.

The next related question dealt with the impact artificial intelligence has in determining whether a digital service tax is preferred over the utilization of the nexus of a significant digital presence as well as the integration of artificial intelligence technology for the development of treaties and laws. Several respondents outlined the ability of artificial intelligence to scan through thousands of treaties and law and extract important sections that may be utilized for the development of the laws. Further mentioned is the usage of artificial intelligence methods for determining the user related derived revenues in order to reduce tax evasion attempts by corporations. In particular, this involves the scanning of user data related revenue information and avoid under- or false reporting of revenues. The ability to very efficiently investigate user data and relate them to the cases under investigation allows law professionals to more efficiently develop new regulations as well as ensure that taxation laws and bilateral taxation treaties are in alignment.

⁵⁰ Ali, Hamza, and Isabel Gottlieb. *How Amazon, Facebook Could Challenge Europe's Digital Taxes*. January 22, 2019. <https://news.bloombergtax.com/daily-tax-report-international/how-amazon-facebook-could-challenge-europes-digital-taxes> (accessed May 16, 2019).

⁵¹ Alderman, Liz. *France Moves to Tax Tech Giants, Stoking Fight With White House*. July 11, 2019. <https://www.nytimes.com/2019/07/11/business/france-digital-tax-tech-giants.html> (accessed July 13, 2019).

The final question deals with tax evasion measures that may be incorporated into law development of a digital service tax in order to counter some of the existing challenges encountered by governments. The main recommendation is to set safeguard measures for exchange of information related to taxable subjects. A major challenge existing taxation treaties face is the lack of information regarding the jurisdiction's taxable subjects and their taxation levels. This is even more substantial for digital service providers that may utilize this lack of intergovernmental cooperation in order to bypass to pay their required taxes.

The survey results outline the growing preference to overcome the challenges and differences in opinion between the members of the OECD via the implementation of domestic consumption taxes. As compared to profit-based taxes that may cause concerns related to double taxation, a digital service tax is levied on the consumer and hence an entirely domestic issue. While there will be disputes related to additional taxes that have to be paid by companies, the reference to the domestic nature of the taxes will be a decisive point.

Fairness of taxation – Artificial intelligence approach to the development of a digital service tax

Fairness of taxation is amongst the most crucial aspect of any developed tax system. With taxation systems becoming more and more complex as well as introduction of digital service taxes, there may be major challenges for conventional law development. The challenges for the development of a digital service tax are manifold and encompass areas such as discrimination, technical grounds, state aid, tax treaties and the regulations set up by the world trade organization. These challenges may be significant and render the law unenforceable or even requires it to be withdrawn. Given these obstacles, the major question arises how artificial intelligence may assist in the development of regulations related to digital service taxes. The first area of assistance is in the research phase relating to documents and laws being relevant or affected by a digital service tax. Natural language processing (NLP) plays here a crucial role. NLP extracts information from large amounts of data and text, and then processes it in order to relate the various information. In the case of a digital service tax, treaties and laws may be searched in terms of containing information such as “service taxes”, “value added taxes” and “double taxation”. The processing may be more refined depending on the search results, with several parameters being utilized. The document processing phase may even be more extensive if a paragraph or document is uploaded and then utilized for queries in order to extract the relevant sections⁵². These systems have been greatly extended, in the sense that someone may ask a legal question and the system then provides legal information related to the question, as well as a legal recommendation. While for several law areas the approach may result into adequate recommendations and statements, given the relative novelty of the research area, this may pose a challenge for the existing methods. Most of these methods rely on extensive number of cases and documents that may not be available for these systems to learn and derive conclusions.

Digital technology and artificial intelligence have in the tax area shown great potential in ensuring strengthening compliance of companies in multiple jurisdictions. For value added taxes, the traceability of transactions provides a strong incentive in becoming more tax compliant⁵³. Additional findings outlined that if the probability of detection of the evasion of taxes is low, then taxpayers may be even more inclined to evade taxes. A similar issue currently arises from digital services. The transactions of users are in many instances not explicitly traced by the providers, and due to the in many instances different jurisdictions the authorities may not have any traces regarding the transactions. While foreign purchases of digital services may be traceable based on a credit or debit card transaction, or bank transfer, value generation created by user interaction may be more difficult to be traced since the transactions may not fall within the jurisdictions at all.

⁵² Dale, Robert. *Law and Word Order: NLP in Legal Tech*. December 16, 2018. <https://towardsdatascience.com/law-and-word-order-nlp-in-legal-tech-bd14257ebd06> (accessed May 19, 2019).

⁵³ Pomeranz, Dina. "No Taxation without Information: Deterrence and Self-Enforcement in the Value Added Tax." *American Economic Review* 105, no. 8 (2015): 2539-69.

When dealing with artificial intelligence techniques for the development of a digital service tax, then most of the use cases may be addressed by either predictive or prescriptive techniques. Predictive techniques are used for the anticipation of problems and allows for the tax administration to decide which actions to take and when. Such techniques may be used for the estimation of revenues derived from individual users, as well as the location of these users. Predictive artificial intelligence techniques are rather crucial allowing to recognize patterns in the user data, and the revenues the service companies receive for these users. Prescriptive artificial intelligence techniques then allow to take actions and understand the causes of these actions. The latter is rather crucial in order to determine the best approaches in ensuring compliance of companies with the digital service tax, as well as allow to institute actions in order to proactively allow for the collection of digital service taxes. Current digital service tax proposals are strongly reliant on the data provided by the companies in order to determine the taxable amounts. The challenge that arises is that companies may report varying degrees information in order to minimize their taxation needs outlining that their in-country generated revenues may be lower than in reality. In this instance, artificial intelligence techniques may be of significant assistance in analyzing the extent of access to the services of a service provider from users in the country, and hence is able to estimate the necessitated taxes⁵⁴. The French implementation of the digital service tax has outlined for digital interfaces and targeted advertising two different calculation methods. In both instances the total turnover related to the portion of taxable services of the company is considered and multiplied with the proportion derived from France. For digital interfaces, the proportion may be either calculated as the ratio of the number of transactions involving at least one French user by the total number of transactions, or the number of French accounts divided by the total number of accounts⁵⁵. For targeted advertising the ratio may be calculated as either the ratio of advertising messages targeting French users by the total number or the number of French user data that was collected divided by the total number of users for which the data were collected. Determining these ratios pose the greatest challenge and predictive techniques may be utilized for estimating these ratios or check the company's provided data in terms of accuracy and plausibility. Existing website access tracking methods are easily able to determine the IP address of the accessor, and therefore the ratio of users accessing the website from a specific country may easily be determinable. While data of individual users may cause legal challenges due to the data privacy regulations of the European Union, the aggregated form of the data as well as limited details may render it easily retrievable.

The main fairness challenge is whether the simple ratio allows to properly attribute revenues generated in the country from the user interaction, which may pose challenges. The assumption for the ratio calculation is that the value of each user is the same irrespective of the individual user, as well as the value generated from various countries for a single user is regarded as the same. Just considering various purchasing powers across multiple countries, the revenue generated due to a single user in the United States may be significantly higher as compared to India, even though the number of users may significantly be higher in India. Therefore, the amount of taxes paid in India may be significantly higher as compared to those in the United States, even though the generated revenue from the users in the United States may be higher. Therefore, the type of tax may be similar to a poll tax as it solely based on users and not the value generated.

In order to overcome this challenge, the usage of artificial intelligence techniques may assist in more closely connecting revenues to the users they have generated it from. In doing so there needs to be a differentiation between advertising and providing digital interfaces where the user data are utilized implicitly for providing services. For advertising revenues, artificial intelligence methods can easily be determined based on the user access and IP address of this user. As each access causes certain revenues, artificial intelligence methods may rather easily allow the companies to determine the attributable revenues and arising taxation. For revenues related to digital interfaces a different approach may be applied. For digital interfaces there is no direct connection between the user access and the

⁵⁴OECD, *Advanced Analytics for Better Tax Administration: Putting Data to Work*. Paris: OECD Publishing, 2016.

⁵⁵KPMG, *France: Digital Services tax (3%) is enacted*. July 25, 2019. <https://home.kpmg/us/en/home/insights/2019/07/tnf-france-digital-services-tax-enacted.html> (accessed July 27, 2019).

derived revenues from it. Hence, an implicit relationship must be developed between the user accesses and the derived revenues. While this differs for various situations and the application under consideration, artificial intelligence methods allow for deriving patterns and relationships between the former and estimate the approximate taxation base. While there are several potential approaches in establishing guidelines for the derivation of the taxation base, a flexible approach may be recommended in order to encompass the variety of different digital interface models. Nevertheless, all models should encompass the number of accounts registered as well as the number of users accessing the website as the basis for determining the attributable taxation base.

The advantages of such a differentiated approach to taxation are manifold given the significant diversity and business models under consideration, as well as ensuring that a stable taxation framework is established for the digital economy. Ensuring the stimulation of innovation, avoiding market fragmentation and allowing all players to enter the market under fair and balanced conditions is vital to create a stimulating market environment.

Avoiding sole access-based models allows companies to more accurately calculate the revenues generated from the user interaction. In particular, multiple companies may evaluate the value generated by individual user data differently and use various ways to commercialize these data. Allowing to use AI based models to more accurately connect user interaction and derived revenues will enable tax authorities to fairer calculate digital service tax related revenues and avoid over- as well as undertaxation. Necessarily, guidelines related to the model application as well as allowed influencing factors are crucial in order to also avoid tax evasion.

Conclusion

Digital services have grown in importance across the world and created new business models. Given the intangible nature of these businesses and the ability to provide services from anywhere in the world has challenged conventional taxation frameworks and led to growing calls amongst governments to reduce the perceived imbalance with respect to the profits generated by these companies as compared to the taxes they pay. The article provides an inferential – case study approach to deal with the question whether a consumption or profit based approach to taxation is preferential, as well as what impact artificial intelligence methods may have on assisting in achieving greater fairness in the taxation of digital services. The results clearly outline a preferential view of the digital service tax as compared to a significant digital presence due to the growing resemblance that the services should be taxed based on the user interaction as compared to a fictitious location of the company that provides these services. Furthermore, artificial intelligence methods may definitely play a beneficial role in avoiding tax avoidance and determining more accurately the enterprise's fair share of taxes. The article presents recommendations towards the structuring of a taxation framework for digital services supported by empirical data.

Klemens Katterbauer

Klemens Katterbauer is an Associate Professor of Earth Science and Global Management focusing on international taxation for the digital economy, and is pursuing his PhD in international taxation at Euclid University. He obtained his Doctor of Business Administration from Middlesex University in the UK, focusing on advanced AI techniques for taxation revenue analysis of the digital economy. His current research interest focuses on AI in taxation law for the digital economy, as well as the impact of AI on international treaties and laws.