

STUDY

Requested by the subcommittee on Tax Matters (FISC)



Exploring the opportunities and challenges of new technologies for EU tax administration and policy



Policy Department for Economic, Scientific and Quality of Life Policies
Directorate-General for Internal Policies
Authors: Jeffrey OWENS, Ivan LAZAROV and Nathalia OLIVEIRA COSTA
PE 695.458 - October 2021

EN

Exploring the opportunities and challenges of new technologies for EU tax administration and policy

Abstract

This research paper explores the opportunities and challenges faced by the EU from the rapid emergence of new technologies such as Artificial Intelligence, Machine Learning, Data Analytics and Blockchain in the area of taxation. These technologies enable a transformation of the way that tax administration interact with taxpayers and can move tax compliance into real time. At the same time they raise practical and legal challenges for both the Member States and the European Union.

This document was provided by the Policy Department for Economic, Scientific and Quality of Life Policies at the request of the Subcommittee on Tax Matters (FISC).

This document was requested by the European Parliament's Economic and Monetary Affairs' Sub Committee on Tax Matters (FISC).

AUTHORS

Jeffrey OWENS, Head of WU Global Tax Policy Center (Wirtschaftsuniversität Wien (WU) - Vienna University of Economics and Business)

Ivan LAZAROV, Senior Researcher at the WU Global Tax Policy Center

Nathalia OLIVEIRA COSTA, Research Associate at the WU Global Tax Policy Center

ADMINISTRATOR RESPONSIBLE

Dirk VERBEKEN

EDITORIAL ASSISTANT

Irene VERNACOTOLA

LINGUISTIC VERSIONS

Original: EN

ABOUT THE EDITOR

Policy departments provide in-house and external expertise to support European Parliament committees and other parliamentary bodies in shaping legislation and exercising democratic scrutiny over EU internal policies.

To contact the Policy Department or to subscribe for email alert updates, please write to:
Policy Department for Economic, Scientific and Quality of Life Policies
European Parliament
L-2929 - Luxembourg
Email: Poldep-Economy-Science@ep.europa.eu

Manuscript completed: September 2021

Date of publication: October 2021

© European Union, 2021

This document is available on the internet at:

<http://www.europarl.europa.eu/supporting-analyses>

DISCLAIMER AND COPYRIGHT

The opinions expressed in this document are the sole responsibility of the authors and do not necessarily represent the official position of the European Parliament.

Reproduction and translation for non-commercial purposes are authorised, provided the source is acknowledged and the European Parliament is given prior notice and sent a copy.

For citation purposes, the publication should be referenced as: Owens, J., Lazarov, I., Oliveira Costa, N., *Exploring the Opportunities and Challenges of New Technologies for EU Tax Administration and Policy*, Publication for the committee on Economic and Monetary Affairs' Sub Committee on Tax Matters (FISC), Policy Department for Economic, Scientific and Quality of Life Policies, European Parliament, Luxembourg, 2021.

© Cover image used under licence from Adobe Stock

CONTENTS

LIST OF FIGURES	4
LIST OF TABLES	4
LIST OF ABBREVIATIONS	5
EXECUTIVE SUMMARY	7
1. INTRODUCCION	9
2. THE INTERNAL MARKET DIMENSION	10
2.1. Fiscal autonomy of the Member States	10
2.2. The digital transformation of Member States	10
2.3. The need for EU coordination	14
2.4. Legal basis for EU action	15
2.5. The policy interest of Member States	15
2.6. The need for EU coordination	17
2.7. Legal basis for EU action	18
2.8. The policy interest of Member States	19
3. INITIAL AREAS OF ACTION	21
3.1. Withholding taxes	22
3.2. Value Added Tax	22
3.3. Exchange of information	23
3.4. Dispute resolution	24
4. LEGAL CHALLENGES	25
4.1. The legal basis, proportionality and subsidiarity	25
4.2. Protection of taxpayers' rights	26
4.3. The obligations upon intermediaries and legal responsibility	27
5. NEW AND EMERGING TECHNOLOGIES AND THEIR TAX APPLICATIONS	29
5.1. Opportunities deriving from emerging technologies	30
5.2. Risks deriving from emerging technologies	36
6. CONDITIONS FOR A SUCCESSFUL DIGITAL TRANSFORMATION OF TAX ADMINISTRATION	39
6.1. How can Member States get from where they are to where they want to be in terms of digitalisation?	39
6.2. What roles do the EU institutions have in the digitalisation efforts of Member States?	42
7. CONCLUSION	44
REFERENCES	45

LIST OF FIGURES

Figure 1: Radar for application of technologies	33
Figure 2: VAT treatment of virtual currencies in EU Member States	37
Figure 3: Different stages of a digital tax administration roadmap	41
Figure 4: Data quality is key	42

LIST OF TABLES

Table 1: Countries' experiences	12
Table 2: Technologies and their practical applications for tax purposes	30
Table 3: Blockchain and the Distributed Ledger Technology	35
Table 4: Levels of digital maturity of tax administrations	40

LIST OF ABBREVIATIONS

AEOI	Automatic exchange of information
AI	Artificial intelligence
AML	Anti-money laundering
BO	Beneficial ownership
CBDC	Central Bank Digital Currency
CCCTB	Common Consolidated Corporate Tax Base
CJEU	Court of Justice of the European Union
DAC	Directive on Administrative Cooperation
ECB	European Central Bank
EOI	Exchange of information
EP	European Parliament
EU	European Union
GDPR	General Data Protection Regulation
IAAS	Infrastructure as a service
IOT	Internet of things
IT	Information technology
KSI	Keyless signature infrastructure
KYC	Know your customer
ML	Machine learning
MAP	Mutual Agreement Procedure
MNE	Multinational enterprise
PAAS	Platform as a service
SAAS	Software as a service

SII	Spain's system on Immediate Supply of Information on VAT
SME	Small and medium size enterprise
TFEU	Treaty on the Functioning of the European Union
VAT	Value Added Tax
WHT	Withholding tax

EXECUTIVE SUMMARY

Background

A digital and sustainable transformation is one of the EU's top priorities. The European Commission, in its action plan for fair and simple taxation supporting recovery strategy, recognizes the importance of efficient taxation as the EU and global community seek to recover from the economic consequences of the COVID-19 crisis. In a digitalised era, the drivers of the next stage of tax reforms will be based on the need for sustainable and inclusive growth, and tax revenues to finance budget deficits. Governments will also strive to ensure a level playing field between digital and non-digital companies and that all companies pay tax in the place where value is created.

The transformation in the tax area relates not only to exploring the opportunities of making the national revenue collection more efficient but also to aligning the tax treatment in the internal market with the one under the domestic markets of Member States both with respect to the compliance burden and the enforcement mechanisms available. To do so, there is a number of technologies that have the potential of transforming tax systems as we know them, some of which are already being explored by the Member States, and might be at the centre of coordinated action by the EU. Among these are the blockchain (in a general sense, separate from the narrow use-case of cryptocurrencies), the internet of things, artificial intelligence and data processing, as well as cloud and quantum computing.

Aim

This research paper aims at:

- determining whether there is a risk for a negative impact on the internal market if Member States adopt unilateral and uncoordinated actions as regards the digitalisation of tax administrations and procedures;
- outlining the potential areas where coordinated action at EU level seems desirable and feasible;
- addressing some of the legal challenges that might arise from such coordinated action;
- discussing the key emerging technologies that are already used by certain Member States and that might be underpinning a coordinated EU approach; and
- exploring the necessary steps that domestic tax administrations should undergo for their digital transformation and the role Union institutions might have in assisting them.

Key Findings

Due to the existing fiscal autonomy regarding the digitalisation of tax administrations, Member States develop technological solutions unilaterally and in parallel to one another, except for the relatively limited areas of coordinated Union action such as the exchange of certain types of tax and customs information. The domestic solutions, developed by the Member States, perform similar tasks but are not necessarily compatible across Member States. The lack of interoperability puts cross-border taxpayers at a disadvantage since their tax liability cannot be subjected to an automated assessment due to the lack of structured real-time data that is equivalent to the one collected domestically.

Hence, a certain level of intra-EU coordination with respect to the interoperability of the domestic digitalisation efforts by the Member States is desirable especially in the context of achieving a single

digital market. The Member States would also have an interest in greater coordination due to the expansion of their tax bases with taxes that rely upon accurate cross-border information in real time.

Moreover, the fight against tax evasion and avoidance depends upon an ever-increasing cooperation between the authorities of the Member States, with the ultimate goal of having no difference in the information flows between purely domestic and intra-EU dimension.

In this sense, the coordination of the digitalisation efforts should result in a single EU-wide space for sharing tax information where the internal market is having the characteristics of a domestic market.

The successful coordinated implementation of new technologies and automation of processes depends upon two main factors: (i) the existence of standardised data and (ii) a sufficient level of harmonisation of the underlying rules. Therefore, in the context of EU law, possible first areas of action might be: withholding taxation and VAT as far as automation of processes is concerned; and exchange of information and dispute resolution, as regards the creation of a communication channel for sharing real-time standardised tax-relevant data.

A number of legal challenges arise in the context of a coordinated action at EU level with respect to digitalisation. These challenges relate to: (i) the legal basis and the need to demonstrate obstacles to cross-border mobility or appreciable distortions to competition in the absence of harmonisation; (ii) the need to protect taxpayers' rights, especially with respect to privacy of natural persons; (iii) the role of intermediaries such as banks, digital platforms, or advisors in providing structured data that allow for automatic calculation of tax liability.

The process of coordination might encompass a range of digitalisation possibilities for tax purposes, from process optimization to identification of risks and automation of processes. Different tax authorities are at different stages of their domestic digitalisation journey, but a number of technologies are already being explored and implemented by governments. This is something that the common EU approach might build upon.

Emerging technologies give rise to opportunities but also to some challenges. In particular, cryptocurrencies are digital assets that are outside of government control to a certain extent, which may result in the possibility of their use for criminal activities, exchange rate volatility, manipulation and tax challenges. Addressing these concerns uniformly in all Member States would prevent jurisdiction shopping and ensure a level playing field in the EU.

At the start of the coordinated digitalisation process, the EU institutions and Member States should focus on developing an EU-wide digital tax administration roadmap which could guide Member States' tax administrations as they digitalise their tax administrations and which would take into account the different stages of development in the 27 Member States. The EU can play a necessary yet modest role in the digitalisation efforts of the Member States by: (i) taking coordinated action at EU level in terms of ensuring the interoperability of the technological systems employed, especially with respect to the standardization of data collection and sharing; (ii) providing a common infrastructure for the automation of tax outcomes in harmonised areas; (iii) assisting the tax administration of the Member States by issuing soft-law instruments and providing the necessary framework for training and cooperation; (iv) providing regular updates to Member States on emerging technologies and their potential use in the tax area.

The ultimate shared goal between the Union and its Member States would be the creation of a more competitive digital internal market while fostering the revenue generating capabilities of the Member States from cross-border activities.

1. INTRODUCCION

A digital and sustainable transformation is one of EU's top priorities¹. The European Commission, in its action plan for fair and simple taxation supporting recovery strategy², recognises the importance of efficient taxation as the EU and global community seek to recover from the economic consequences of the COVID-19 crisis. In its effort to step up the fight against tax fraud and base erosion, the Commission highlights challenges arising from the digitalisation of the economy and emphasizes the need to help tax administrations to keep pace with continuously evolving technologies.

The matter of digital transformation has also an internal market dimension. In the absence of a coordinated action at EU level, the domestic digital transformation of tax procedures by the Member States would eventually diverge leading to the creation of domestic technological systems that lack cross-border interoperability. Very much in a similar way that contact tracing during the Covid pandemic remained impossible should an individual cross a border between the Member States: the contact tracing apps of the different Member States remained unilateral and not interoperable. This would potentially disadvantage taxpayers that operate cross-border, as they would be unable to rely on the ease of compliance burden that automation of tax processes offers. It would be also to the disadvantage of tax authorities as they would lack the same type of standardised real time data in order to evaluate tax risks and assess tax liability that would be otherwise available domestically. The latter would undermine the coordinated effort to combat tax evasion and avoidance.³

However, adopting a coordinated approach is only possible when there is a common understanding of new technologies. For instance, only after knowing that the successful deployment of Artificial Intelligence for risk analysis is dependent upon standardised data, one can move towards measures ensuring this standardization in a cross-border context. The same holds true for other technologies such as the blockchain that allow for automating the tax consequences of cross-border transactions only as long as sufficient coordination of the underlying substantive rules exists. Thus, developing a common understanding of the technologies and the need for common action at EU level are intertwined.

For this reason, this paper addresses both issues. First, it examines the status quo, demonstrating that by relying solely on the fiscal autonomy of Member States when designing their digital tax procedures, the cross-border situations are put at a disadvantage. This necessitates common action. Second, it envisages this common action in several areas that seem as the natural starting point due to the already existing harmonisation at EU level. Third, it looks at a number of the legal challenges that would arise, should a coordinated approach be pursued by the Union institutions. Fourth, it discusses some of the emerging technologies that might be the tools of such common measures, their relevance for tax purposes, as well as their particular utility in EU context. Finally, it assesses the practical dimension of digital transformation in the tax area by exploring the necessary steps that domestic tax administrations must undergo and the role Union institutions might have in assisting them.

¹ Council conclusions on shaping Europe's digital future, available at <https://data.consilium.europa.eu/doc/document/ST-8711-2020-INIT/en/pdf>; European Parliament News, Digital transformation: importance, benefits and EU policy (2021), available at <https://www.europarl.europa.eu/news/en/headlines/society/20210414STO02010/digital-transformation-importance-benefits-and-eu-policy>.

² Communication from the Commission to the Council and the European Parliament An Action Plan for fair and simple taxation supporting the recovery strategy, COM(2020) 312 final, 15 July 2020 available at https://ec.europa.eu/taxation_customs/system/files/2020-07/2020_tax_package_tax_action_plan_en.pdf.

³ Generally, research has demonstrated a correlation between improving the cross-border data flows and the possibility to combat tax evasion: Leo Ahrens & Fabio Bothner (2020) The Big Bang: Tax Evasion After Automatic Exchange of Information Under FATCA and CRS, *New Political Economy*, 25:6, 849-864.

2. THE INTERNAL MARKET DIMENSION

KEY FINDINGS

In principle, Member States have fiscal autonomy regarding the digitalisation of tax administrations. This leads to the development in parallel of technological solutions that perform similar tasks but are not necessarily interoperable. While such technological solutions have the potential of easing the tax compliance burden greatly in domestic scenarios, the lack of interoperability leads to putting cross-border transactions at a disadvantage. Thus, it is in the interest of the internal market to move towards a coordinated approach. The Member States would also have an interest in greater coordination due to the expansion of their tax bases with taxes that rely upon accurate cross-border information in real time..

2.1. Fiscal autonomy of the Member States

The principle of national procedural autonomy determines that each Member State is at liberty to design its own procedural rules, subject to the principles of equivalence (no less favorable treatment than similar domestic situations) and effectiveness (gaining the benefit must not be impossible or excessively difficult)⁴. This principle applies even if an area is covered by EU law rules⁵.

Same holds true whenever an area is not covered by secondary law rules. It is a conventional wisdom stemming from the principle of conferral that, in the absence of harmonizing Union measures, the Member States are at liberty to design and levy taxes as long as they do so in a non-discriminatory fashion⁶.

The process of digital transformation relates predominantly to procedural rather than substantive matters (i.e., how taxes are levied, instead of which taxes are levied). Hence, the initial starting point of the analysis must be that, in principle, the matter of digital transformation falls within the sphere of competence of the Member States and the principle of their fiscal autonomy⁷. In principle, the Union has no competence to regulate domestic procedural matters⁸.

2.2. The digital transformation of Member States

Based on national procedural autonomy, countries have been implementing technology tools in several ways and in different areas of tax, such as value added tax (VAT), wage taxes, transfer pricing and customs. Table 1 illustrate some examples of countries' experiences with the application of technology for tax purposes.

⁴ CJEU, 16 December 1976, Case C-33/76, Rewe-Zentralfinanz, EU:C:1976:188. CJCE, 26 January 2006, Case C-533/03, Commission v Council of the European Union, ECLI:EU:C:2006:64, para. 45-47.

⁵ For example, the Parent-Subsidiary Directive (Council Directive 2011/96/EU of 30 November 2011) exempts qualifying dividends from source taxation (substantive right derived from EU law by private parties), but each Member State can decide the procedural rules for gaining access to this exemption.

⁶ See CJEU, 28 January 1986, Case 270/83, Commission v France ('Avoir Fiscal'), EU:C:1986:37, para. 13.

⁷ See for example CJEU, 9 October 2014, C-326/12, van Caster, EU:C:2014:2269, para. 47.

⁸ The soft-law framework introduced by Article 197(2) TFEU underlines this conclusion: see S. Gaben, "Article 197" in The EU Treaties and the Charter of Fundamental Rights: A Commentary [Kellerbauer/Klamert/Tomkin], OUP (2019), p. 1561. This provision can also be relied upon for hard-law measures related to supporting the Member States (rather than harmonize their domestic laws): see for example Regulation (EU) 2021/847 of the European Parliament and of the Council of 20 May 2021 establishing the 'Fiscalis' programme for cooperation in the field of taxation and repealing Regulation (EU) No 1286/2013 (the Fiscalis Regulation).

These examples are illustrative and not meant to be a comprehensive comparative study, but serve the purpose of highlighting two points: (i) countries are looking at possibilities for digitalising their tax systems; and (ii) they do so unilaterally, in uncoordinated fashion, and are naturally at different stage of development. This will have an impact on the need and nature of coordinated action at the EU level.

Table 1: Countries' experiences

Country	Main technology	Use of technology
Italy ⁹	E-services (including pre-filled tax returns); data mining and analysis.	<p>The Italian tax administration is active in tackling the challenges and risks of the digital economy and takes a holistic and comprehensive approach¹⁰. The tax administration's institutional structure was reorganised to centralise the responsibilities related to the measures connected to the digital economy.</p> <p>The Italian tax administration uses data mining to identify discrepancies between data available to tax administration and tax returns, tax payments or cross-border data and information from AEOI. Based on this, the authorities developed benchmarks on industrial, commercial and professional activities, based on individual data to perform risk-analysis.</p> <p>Moreover, tax authorities rely on available data to model relationships among individuals and/or companies and apply Social Network Analysis tools and techniques to establish existing networks among parties. The aim is to identify individuals or companies involved in recurring high-risk behaviors and build chains of transactions based on e-invoice to detect recurring VAT frauds patterns. In addition, automate extraction of data from the web (web scraping and text mining) enhances available data with "fresh" information and to complement the available data sets.</p>
Spain ¹¹	Artificial intelligence; e-services	Spain implemented a real time VAT reporting system – Immediate Supply of Information on

⁹ For more information on the Italian tax administration digital transformation, see: "Fisco Oggi, L'Agenzia sempre più digital – 1 diventa un modello da seguire", available at <https://www.fiscooggi.it/rubrica/analisi-e-commenti/articolo/agenzia-sempre-piu-digital-1-diventa-modello-seguire>.

¹⁰ The legislations already implemented in Italy include MOSS (Mini One Stop Shop, effective as of 1 January 2015), Short term rentals withholding and reporting obligations for intermediaries and digital platforms (Decree Law n. 50 of 2017, article 4 paragraphs 4, 5, 5-bis and 6), Reporting obligations for e-commerce platforms (Law Decree 30 April 2019, n. 34, article 13, paragraph 1), Digital services tax (Law n. 145 of 30 December 2018, article 1, paragraphs 35 to 50, modified by Law n. 160 of 27 December 2019, article 1, paragraph 678).

¹¹ See the explanation provided by the official website of the Spanish tax authorities on New VAT management system based on: "Immediate Supply of Information", available at https://www.agenciatributaria.es/AEAT.internet/en_gb/Inicio/Ayuda/Modelos_Procedimientos_y_Servicios/Ayuda_P_G417_IVA_Llevanza_de_libros_registro_SII_/Informacion_general/Nuevo_sistema_de_gestion_del_IVA_basado_en_el_Suministro_Inmediato_de_Informacion.shtml.

		<p>VAT (SII). SII is a bookkeeping system maintained in the electronic office of the Spanish Tax Authorities, where billing records must be forwarded to the Tax Agency electronically. The result of SII has reduced the administrative burden on taxpayers as well as reduced mistakes as the systems can cross check self-information with other third parties.</p> <p>In addition, Spain developed a Virtual Assistance tool for VAT based on artificial intelligence. Taxpayers can access the portal and ask questions in the chatbot about information about registration and rectification of invoices, obligations related to foreign trade, chargeability, taxable amount, tax rate, exemptions and deductions on real estate transactions, etc. The AI tool provides a homogeneous, logic response with the necessary information and is available instantly and 24/7.¹²</p>
Estonia ¹³	Blockchain	<p>Estonia launched digital services such as e-Business and e-Register by implementing keyless signature infrastructure (KSI Blockchain). The use of KSI Blockchain allows the citizens and government to verify the integrity of their records on government databases.</p>
Slovenia ¹⁴	E-services	<p>Slovenia introduced eDavki, an electronic tax management system that enables paperless communication fulfilling tax obligations from anywhere in the world.</p>

Source: Authors' own elaboration.

The above overview demonstrates that EU Member States develop different platforms for achieving similar goals. This approach brings the risk of the majority of the platforms not being interoperable from a technological perspective. The following section looks at the possibilities for EU institutions to encourage a more coherent approach.

¹² OECD (2020), Tax Administration 3.0: The Digital Transformation of Tax Administration, OECD, Paris.

¹³ Find more information on the platform developed at <https://e-estonia.com/solutions/security-and-safety/ksi-blockchain/>.

¹⁴ Find more information on the possibilities provided by the e-services portal at the official governmental website: https://www.fu.gov.si/en/business_events_businesses/edavki_electronic_tax_management_system/.

2.3. The need for EU coordination

The national procedural autonomy might be limited whenever the lack of procedural coordination has an impact on the internal market. For instance, the cross-border procedural cooperation between the tax authorities of Member States is subject to extensive harmonisation as otherwise the proper functioning of the internal market would have been jeopardised¹⁵.

Until now, the harmonisation of administrative cooperation has been mostly focused on the need to provide the tax authorities with accurate information for assessing the taxes due by taxpayers that have activities in more than one Member State. This is the natural consequence of a tax system that relies predominantly on self-reporting as a mean for calculating taxes due: tax authorities must have a way to verify the accuracy of the self-reporting, independent of where the taxpayer is resident and her/his assets are located. Thus, the administrative cooperation until now is predominantly focused on enforcement.

The process of digitalisation of tax procedures adds a further layer of need for coordination. As will be discussed in greater detail in section 5 below, employing new technologies in administering taxation has a two-fold benefit: on the one hand it provides for an opportunity of better risk-analysis (the enforcement element), while on the other – it automates tax compliance making it easier and cheaper for taxpayers and tax administrations (the service element).

The implementation of both the enforcement and the service elements of digitalisation ultimately depends upon having high-quality structured data of taxable events in real time. The quality of the output of a digital process depends upon the quality of the data input. Ensuring the consistency and quality of this data input is easier in domestic situations and it is done by each Member State. However, as far as cross-border situations are concerned, the quality and structure of data depends ultimately on the interoperability of the different systems. The longer Member States develop independently their domestic systems, the further apart the interoperability of these systems would be.

As a result, in the absence of a coordinated action at EU level, two parallel compliance systems exist: one more efficient for purely domestic situations and a second, much more burdensome, for cross-border situations. The data on taxable events occurring domestically would be available to tax authorities in real time and in a structured manner, while the data on taxable events that occur across the border would not. As a result of the difference in the tax compliance burden, taxpayers may be dissuaded from conducting cross-border economic activity which has a negative impact on the internal market¹⁶. This is especially relevant for individuals and SMEs.

At the same time, the different compliance burden does not result from discriminatory treatment by any Member State but rather from the lack of coordination of the national approaches and the disparities that stem therefrom. Therefore, it is not the fundamental freedoms (that function as non-discrimination rules in the area of taxation) but harmonisation of the domestic approaches that can provide remedy to this unequal treatment between domestic and cross-border situations.

Adopting a coordinated approach to digitalisation is a matter of improving the competitiveness of the internal market. The main premise of the latter is that engaging in cross-border activities should not be more burdensome than staying purely domestic. As was demonstrated above, many Member States aim at delivering a more efficient, user-friendly and simplified tax system by relying on digital

¹⁵ See for instance Recital (1) to Council Directive 2011/16/EU of 15 February 2011 on administrative cooperation in the field of taxation and repealing Directive 77/799/EEC, OJ L 64, 11.3.2011 or Council Directive 2010/24/EU of 16 March 2010 concerning mutual assistance for the recovery of claims relating to taxes, duties and other measures OJ L 84, 31.3.2010.

¹⁶ The Court has already had the chance to rule on the fact that non-residents might be put at a disadvantage as regards the compliance burden related to producing evidence: see CJEU, 30 January 2020, Case C-156/17, Köln-Aktienfonds Deka, EU:C:2020:51, para. 61.

technologies. In the absence of coordinated action, however, such simplification is destined to remain available only to purely domestic situations. Hence, the digitalisation of tax systems has a profound internal market dimension.

This is reflected in certain initial actions that the EU institutions are taking such as the Fiscalis Regulation that is aimed at enhancing the cooperation between tax authorities of the Member States by digital means or the proposal for a uniform digital European e-ID¹⁷ that is aimed at introducing a common digital identifier. Especially, the Fiscalis Regulation, with its commitment to draw up a plan to 'ensure that IT capacity-building actions [across the Union] are coherent and coordinated'¹⁸, is a step that can be built upon precisely for ensuring full interoperability of IT systems of Member States and standardized data flows. However, while the Fiscalis Regulation is mostly focused on capacity building and providing the finances necessary for developing IT systems, the current paper is looking at the necessary minimum rules that are needed in order to align the compliance burden between purely domestic and cross-border situations – for the areas of action, see section 3.

2.4. Legal basis for EU action

In the absence of general competence of the Union to act in the area of tax law, all harmonizing measures should be adopted on the internal market legal bases (Article 113 and Article 115 TFEU). That being the case, any measure would eventually be aimed at pursuing not fiscal objectives per se (and unlike the domestic tax measures) but the objective of removing obstacles to cross-border movement or appreciable distortions to competition that arise from this movement¹⁹. As an area of shared competence and in accordance with the principle of conferral, all the tax measures are constrained by the principles of proportionality (they must not go beyond what is necessary to attain their objectives) and subsidiarity (the Union must act only as long as the objective cannot be attained at national level to a sufficient degree). This paper will examine in more details the legal challenges posed by this approach below in section 4.

As long as the supporting elements to successful implementation of a coordinated digital transformation are concerned the appropriate legal basis might be Article 197 TFEU, a provision already relied upon regarding the Fiscalis Regulation²⁰. Naturally, the Commission may also adopt soft-law recommendations based on Article 292 TFEU or guidelines/notices.

2.5. The policy interest of Member States

It is in the nature of the legal bases in the area of taxation that successful harmonisation depends upon aligning the interests of the Union and its internal market with the interests of each individual Member State²¹. The question of the coordinated digitalisation of (certain) tax procedures is among these matters where such alignment is feasible: it is to the best interest of both tax administrations and taxpayers that the cross-border and domestic tax compliance burdens are sufficiently equivalent.

¹⁷ Proposal for a Regulation of the European Parliament and of the Council amending Regulation (EU) No 910/2014 as regards establishing a framework for a European Digital Identity (SEC(2021) 228 final).

¹⁸ Recital 13 Fiscalis Regulation.

¹⁹ As to the meaning of the wording "directly affect the establishment or functioning of the internal market" see the interpretation provided by the CJEU, 5 October 2000, Case C-376/98, Tobacco Advertising I, EU:C:2000:544.

²⁰ In its relevant part, Article 197(2) TFEU provides: The Union may support the efforts of Member States to improve their administrative capacity to implement Union law. Such action may include facilitating the exchange of information and of civil servants as well as supporting training schemes.

²¹ This is due to the required unanimity in the Council for bringing forward a successful action.

Digitalisation created new business models, which resulted in new tax challenges. In the last years, the possibility of companies to scale without mass²² resulted in tax enforcement challenges. There are a number of topics being discussed among the international tax community in order to address various concepts that are currently outdated in light of the evolution into a digitalised harmonised economy. For example, the nexus rule of permanent establishment, traditionally linked to the physical presence of a non-resident company in a country, faces the need of a revision as digital progress allows businesses to operate in a jurisdiction through an online presence²³.

There is a growing consensus that the current tax system, designed many decades ago, is not suited to deal with the challenges presented by the digitalised economy. Stakeholders are currently addressing these issues. The international community is witnessing the implementation in several countries of new tax bases (e.g., digital services taxes, environmental taxes, upcoming fees and levies), tax base broadening measures²⁴ and new ways of applying old tax concepts (e.g., digital permanent establishment concept²⁵). All of these culminate in the discussion currently held by the G20 and the OECD on a comprehensive international tax reform²⁶.

Additionally, the COVID crisis led to an unprecedented increase in income inequality in most European countries. The discussion on inequality and its side effects, however, is not new. The historical concentration of wealth by a small number of people has many adverse implications in the social and political spheres, whether it is a disproportionate concentration of power in the hands of a small group of people, leading to their capacity to influence public decisions, or the popular belief that this results in a moral affront²⁷.

Even though wealth taxes have long been levied around the globe, their relevance within modern systems has been considered fairly limited. Historically, the application of taxation of wealth has been linked to the increase of use of international tax planning tools²⁸. This is especially true in an internal market where the free movement of people is guaranteed. However, the recent developments on international tax transparency and effective exchange of information, paired with renewed political interest, brought taxes on net wealth, inheritance, real estate and capital gains – to name a few – back to governments' agendas. This culminates in a different challenge: while in the past, little information was available to fight offshore non-compliance; nowadays governments have access to a range of databases and the technology to process the high quantity of data.

²² In its 2015 BEPS Action 1 Report, the OECD explains that technological advances make it possible for businesses to substantially increase in size and reach with minimal need for personnel required to manage day-to-day operations of the business. This phenomenon is referred to as "scale without mass". See OECD (2015), Addressing the Tax Challenges of the Digital Economy, Action 1 - 2015 Final Report, OECD/G20 Base Erosion and Profit Shifting Project, OECD Publishing, Paris, available at <http://dx.doi.org/10.1787/9789264241046-en>.

²³ The EU, of course, has not been a by-stander in these debates: see for example, Proposal for a COUNCIL DIRECTIVE laying down rules relating to the corporate taxation of a significant digital presence, COM/2018/0147 final - 2018/072 (CNS).

²⁴ Some examples include: Hungary introduced a one-off tax on banks and credit institutions and a special retail tax temporarily in 2020. France introduced a temporary tax on private healthcare in 2021. Luxembourg introduced a 20% WHT on income derived from real estate located in Luxembourg by certain Luxembourg investment funds. Sweden announced a new tax on the financial sector from 2021 onwards. See OECD (2021), Tax Policy Reforms 2021: Special Edition on Tax Policy During the COVID-19 Pandemic, OECD, Paris, p. 44. <https://www.oecd.org/fr/ctp/tax-policy-reforms-26173433.htm>

²⁵ European Commission, Proposal for a Council Directive laying down rules relating to the corporate taxation of a significant digital presence, COM(2018) 147, Article 4, available at: https://ec.europa.eu/taxation_customs/system/files/2018-03/proposal_significant_digital_presence_21032018_en.pdf

²⁶ See the OECD Statement on a Two-Pillar Solution to Address the Tax Challenges Arising From the Digitalisation of the Economy, available at <https://www.oecd.org/tax/beps/statement-on-a-two-pillar-solution-to-address-the-tax-challenges-arising-from-the-digitalisation-of-the-economy-july-2021.pdf>.

²⁷ R. S. Rudnick & R. K. Gordon, Taxation of Wealth in Tax Law Design and Drafting vol. 1, ch. 10, V. Thuronyi, ed., International Monetary Fund 1996, p. 5-6. <https://www.imf.org/external/pubs/nft/1998/tlaw/eng/ch10.pdf>

²⁸ M. Lang et al., Trends and Players in Tax Policy, ch. 1, General Report.

As explored in section 5, digital tools have a key role to play in data analytics. Thus, the technology developments allow governments to rethink their attitude when it comes to the policy choices and implementation of these taxes.

The abovementioned tax bases - on MNEs that operate digitally or on high net worth individuals - have one thing in common: they depend upon accurate real time cross-border information. In this sense, any expansion of the tax base of Member States would be conditional upon fostering international coordination.

The above overview demonstrates that EU Member States develop different platforms for achieving similar goals. This approach brings the risk of the majority of the platforms not being interoperable from a technological perspective. The following section looks at the possibilities for EU institutions to encourage a more coherent approach.

2.6. The need for EU coordination

The national procedural autonomy might be limited whenever the lack of procedural coordination has an impact on the internal market. For instance, the cross-border procedural cooperation between the tax authorities of Member States is subject to extensive harmonisation as otherwise the proper functioning of the internal market would have been jeopardised²⁹.

Until now, the harmonisation of administrative cooperation has been mostly focused on the need to provide the tax authorities with accurate information for assessing the taxes due by taxpayers that have activities in more than one Member State. This is the natural consequence of a tax system that relies predominantly on self-reporting as a mean for calculating taxes due: tax authorities must have a way to verify the accuracy of the self-reporting, independent of where the taxpayer is resident and her/his assets are located. Thus, the administrative cooperation until now is predominantly focused on enforcement.

The process of digitalisation of tax procedures adds a further layer of need for coordination. As will be discussed in greater detail in section 5 below, employing new technologies in administering taxation has a two-fold benefit: on the one hand it provides for an opportunity of better risk-analysis (the enforcement element), while on the other – it automates tax compliance making it easier and cheaper for taxpayers and tax administrations (the service element).

The implementation of both the enforcement and the service elements of digitalisation ultimately depends upon having high-quality structured data of taxable events in real time. The quality of the output of a digital process depends upon the quality of the data input. Ensuring the consistency and quality of this data input is easier in domestic situations and it is done by each Member State. However, as far as cross-border situations are concerned, the quality and structure of data depends ultimately on the interoperability of the different systems. The longer Member States develop independently their domestic systems, the further apart the interoperability of these systems would be.

As a result, in the absence of a coordinated action at EU level, two parallel compliance systems exist: one more efficient for purely domestic situations and a second, much more burdensome, for cross-border situations. The data on taxable events occurring domestically would be available to tax authorities in real time and in a structured manner, while the data on taxable events that occur across the border would not. As a result of the difference in the tax compliance burden, taxpayers may be

²⁹ See for instance Recital (1) to Council Directive 2011/16/EU of 15 February 2011 on administrative cooperation in the field of taxation and repealing Directive 77/799/EEC, OJ L 64, 11.3.2011 or Council Directive 2010/24/EU of 16 March 2010 concerning mutual assistance for the recovery of claims relating to taxes, duties and other measures OJ L 84, 31.3.2010.

dissuaded from conducting cross-border economic activity which has a negative impact on the internal market³⁰. This is especially relevant for individuals and SMEs.

At the same time, the different compliance burden does not result from discriminatory treatment by any Member State but rather from the lack of coordination of the national approaches and the disparities that stem therefrom. Therefore, it is not the fundamental freedoms (that function as non-discrimination rules in the area of taxation) but harmonisation of the domestic approaches that can provide remedy to this unequal treatment between domestic and cross-border situations.

Adopting a coordinated approach to digitalisation is a matter of improving the competitiveness of the internal market. The main premise of the latter is that engaging in cross-border activities should not be more burdensome than staying purely domestic.

As was demonstrated above, many Member States aim at delivering a more efficient, user-friendly and simplified tax system by relying on digital technologies. In the absence of coordinated action, however, such simplification is destined to remain available only to purely domestic situations. Hence, the digitalisation of tax systems has a profound internal market dimension.

This is reflected in certain initial actions that the EU institutions are taking such as the Fiscalis Regulation that is aimed at enhancing the cooperation between tax authorities of the Member States by digital means or the proposal for a uniform digital European e-ID³¹ that is aimed at introducing a common digital identifier. Especially, the Fiscalis Regulation, with its commitment to draw up a plan to 'ensure that IT capacity-building actions [across the Union] are coherent and coordinated'³², is a step that can be built upon precisely for ensuring full interoperability of IT systems of Member States and standardized data flows. However, while the Fiscalis Regulation is mostly focused on capacity building and providing the finances necessary for developing IT systems, the current paper is looking at the necessary minimum rules that are needed in order to align the compliance burden between purely domestic and cross-border situations – for the areas of action, see section 3.

2.7. Legal basis for EU action

In the absence of general competence of the Union to act in the area of tax law, all harmonizing measures should be adopted on the internal market legal bases (Article 113 and Article 115 TFEU). That being the case, any measure would eventually be aimed at pursuing not fiscal objectives per se (and unlike the domestic tax measures) but the objective of removing obstacles to cross-border movement or appreciable distortions to competition that arise from this movement³³. As an area of shared competence and in accordance with the principle of conferral, all the tax measures are constrained by the principles of proportionality (they must not go beyond what is necessary to attain their objectives) and subsidiarity (the Union must act only as long as the objective cannot be attained at national level to a sufficient degree). This paper will examine in more details the legal challenges posed by this approach below in section 4.

As long as the supporting elements to successful implementation of a coordinated digital transformation are concerned the appropriate legal basis might be Article 197 TFEU, a provision already

³⁰ The Court has already had the chance to rule on the fact that non-residents might be put at a disadvantage as regards the compliance burden related to producing evidence: see CJEU, 30 January 2020, Case C-156/17, Köln-Aktienfonds Deka, EU:C:2020:51, para. 61.

³¹ Proposal for a Regulation of the European Parliament and of the Council amending Regulation (EU) No 910/2014 as regards establishing a framework for a European Digital Identity (SEC(2021) 228 final).

³² Recital 13 Fiscalis Regulation.

³³ As to the meaning of the wording "directly affect the establishment or functioning of the internal market" see the interpretation provided by the CJEU, 5 October 2000, Case C-376/98, Tobacco Advertising I, EU:C:2000:544.

relied upon regarding the Fiscalis Regulation³⁴. Naturally, the Commission may also adopt soft-law recommendations based on Article 292 TFEU or guidelines/notices.

2.8. The policy interest of Member States

It is in the nature of the legal bases in the area of taxation that successful harmonisation depends upon aligning the interests of the Union and its internal market with the interests of each individual Member State³⁵. The question of the coordinated digitalisation of (certain) tax procedures is among these matters where such alignment is feasible: it is to the best interest of both tax administrations and taxpayers that the cross-border and domestic tax compliance burdens are sufficiently equivalent.

Digitalisation created new business models, which resulted in new tax challenges. In the last years, the possibility of companies to scale without mass³⁶ resulted in tax enforcement challenges. There are a number of topics being discussed among the international tax community in order to address various concepts that are currently outdated in light of the evolution into a digitalised harmonised economy. For example, the nexus rule of permanent establishment, traditionally linked to the physical presence of a non-resident company in a country, faces the need of a revision as digital progress allows businesses to operate in a jurisdiction through an online presence³⁷.

There is a growing consensus that the current tax system, designed many decades ago, is not suited to deal with the challenges presented by the digitalised economy. Stakeholders are currently addressing these issues. The international community is witnessing the implementation in several countries of new tax bases (e.g., digital services taxes, environmental taxes, upcoming fees and levies), tax base broadening measures³⁸ and new ways of applying old tax concepts (e.g., digital permanent establishment concept³⁹). All of these culminate in the discussion currently held by the G20 and the OECD on a comprehensive international tax reform⁴⁰.

Additionally, the COVID crisis led to an unprecedented increase in income inequality in most European countries. The discussion on inequality and its side effects, however, is not new. The historical concentration of wealth by a small number of people has many adverse implications in the social and political spheres, whether it is a disproportionate concentration of power in the hands of a small group

³⁴ In its relevant part, Article 197(2) TFEU provides: The Union may support the efforts of Member States to improve their administrative capacity to implement Union law. Such action may include facilitating the exchange of information and of civil servants as well as supporting training schemes.

³⁵ This is due to the required unanimity in the Council for bringing forward a successful action.

³⁶ In its 2015 BEPS Action 1 Report, the OECD explains that technological advances make it possible for businesses to substantially increase in size and reach with minimal need for personnel required to manage day-to-day operations of the business. This phenomenon is referred to as "scale without mass". See OECD (2015), Addressing the Tax Challenges of the Digital Economy, Action 1 - 2015 Final Report, OECD/G20 Base Erosion and Profit Shifting Project, OECD Publishing, Paris. Available at <http://dx.doi.org/10.1787/9789264241046-en>.

³⁷ The EU, of course, has not been a by-stander in these debates: see for example, Proposal for a COUNCIL DIRECTIVE laying down rules relating to the corporate taxation of a significant digital presence, COM/2018/0147 final - 2018/072 (CNS).

³⁸ Some examples include: Hungary introduced a one-off tax on banks and credit institutions and a special retail tax temporarily in 2020. France introduced a temporary tax on private healthcare in 2021. Luxembourg introduced a 20% WHT on income derived from real estate located in Luxembourg by certain Luxembourg investment funds. Sweden announced a new tax on the financial sector from 2021 onwards. See OECD (2021), Tax Policy Reforms 2021: Special Edition on Tax Policy During the COVID-19 Pandemic, OECD, Paris, p. 44. <https://www.oecd.org/fr/ctp/tax-policy-reforms-26173433.htm>

³⁹ European Commission, Proposal for a Council Directive laying down rules relating to the corporate taxation of a significant digital presence, COM(2018) 147, Article 4. https://ec.europa.eu/taxation_customs/system/files/2018-03/proposal_significant_digital_presence_21032018_en.pdf

⁴⁰ See the OECD Statement on a Two-Pillar Solution to Address the Tax Challenges Arising From the Digitalisation of the Economy, available at <https://www.oecd.org/tax/beps/statement-on-a-two-pillar-solution-to-address-the-tax-challenges-arising-from-the-digitalisation-of-the-economy-july-2021.pdf>.

of people, leading to their capacity to influence public decisions, or the popular belief that this results in a moral affront⁴¹.

Even though wealth taxes have long been levied around the globe, their relevance within modern systems has been considered fairly limited. Historically, the application of taxation of wealth has been linked to the increase of use of international tax planning tools⁴². This is especially true in an internal market where the free movement of people is guaranteed. However, the recent developments on international tax transparency and effective exchange of information, paired with renewed political interest, brought taxes on net wealth, inheritance, real estate and capital gains – to name a few – back to governments' agendas. This culminates in a different challenge: while in the past, little information was available to fight offshore non-compliance; nowadays governments have access to a range of databases and the technology to process the high quantity of data.

As explored in section 5, digital tools have a key role to play in data analytics. Thus, the technology developments allow governments to rethink their attitude when it comes to the policy choices and implementation of these taxes.

The abovementioned tax bases - on MNEs that operate digitally or on high net worth individuals - have one thing in common: they depend upon accurate real time cross-border information. In this sense, any expansion of the tax base of Member States would be conditional upon fostering international coordination.

⁴¹ R. S. Rudnick & R. K. Gordon, Taxation of Wealth in Tax Law Design and Drafting vol. 1, ch. 10, V. Thuronyi, ed., International Monetary Fund 1996, p. 5-6. <https://www.imf.org/external/pubs/nft/1998/tlaw/eng/ch10.pdf>

⁴² M. Lang et al., Trends and Players in Tax Policy, ch. 1, General Report.

3. INITIAL AREAS OF ACTION

KEY FINDINGS

The successful coordinated implementation of new technologies and automation of processes depends upon two main factors: the existence of standardised data and a sufficient level of harmonization of the underlying rules.

Therefore, in the context of EU law, possible first areas of action might be: withholding taxation and VAT as far as automation of processes is concerned; and exchange of information and dispute resolution, as regards the creation of a communication channel for real-time standardised tax-relevant data.

The digitalisation of tax administrations has been understood predominantly by governments in its procedural aspects – i.e., the measures impact mostly the tax procedure that puts the substantive rules into action. However, a meaningful digitalisation of tax procedures requires also an intervention at the level of substantive rules in order to ensure that these rules can be applied with a sufficient ease on a binary basis – i.e., the substantive conditions for gaining a tax advantage must be objective and quantifiable so that they can be successfully subjected to automation (or at the very least rebuttable presumptions must be relied on).

Keeping the aforesaid in mind, a few preliminary observations are worth noting. First, the different *substantive areas* of tax law within the EU are subject to very different levels of harmonisation. While VAT is subject to material level of harmonisation⁴³, corporate taxation is scarcely harmonized⁴⁴ and personal income tax that is not harmonised at all.

If the substantive rules of a particular area are not subject to harmonisation, then implementing an EU-wide digital automation process seems unlikely due to the divergent rules that are hard to account for under a common technological umbrella. In such cases, the coordinated action would likely remain only at the level of exchange of structured data.

On the other hand, what is practically more desirable and legally possible is a deeper harmonized action in a limited number of key areas, where the substantive rules have already been harmonised but the national procedural autonomy produces sub-optimal results in the context of an internal market.⁴⁵ Having this in mind, the following potential areas appear suitable for initial coordinated-EU action in the field of taxation.

⁴³ Council Directive 2006/112/EC of 28 November 2006 on the common system of value added tax, OJ L 347, 11.12.2006.

⁴⁴ With the exception of qualifying withholding tax situations and the anti-avoidance. See: Council Directive 2011/96/EU of 30 November 2011 on the common system of taxation applicable in the case of parent companies and subsidiaries of different Member States, OJ L 345, 29.12.2011 [Parent-Subsidiary Directive]; Council Directive 2003/49/EC of 3 June 2003 on a common system of taxation applicable to interest and royalty payments made between associated companies of different Member States, OJ L 157, 26.6.2003 [Interest-Royalties Directive]; and Council Directive (EU) 2016/1164 of 12 July 2016 laying down rules against tax avoidance practices that directly affect the functioning of the internal market OJ L 193, 19.7.2016.

⁴⁵ The possible areas of action under the Fiscalis Regulation for technical coordination are even broader – see Article 2 of the regulation.

3.1. Withholding taxes

The first potential area where the system would benefit from a coordinated EU action on the digitalisation of tax procedures is the entitlement to reduced withholding tax (WHT) rates. Currently, although the Parent-Subsidiary Directive, the Interest-Royalties Directive and Double Tax Treaties essentially eliminate or greatly reduce WHT on qualifying dividends, interests and royalties, the underlying domestic procedural rules in the Member States are generally burdensome and costly, thereby undermining the internal capital market⁴⁶. The situation is especially burdensome for small investors where the compliance costs would often outweigh the reduction of the withholding tax due⁴⁷. An estimate calculated by the EU Commission suggests that the cost of WHT refund procedures in the EU alone was EUR 8.4 billion per year, which refers to foregone tax relief, costs of reclaim procedures and opportunity costs⁴⁸.

It is for this reason that the European Commission has committed to launch a legislative initiative in 2022/2023 *“for introducing a common, standardised, EU-wide system for withholding tax relief at source, accompanied by an exchange of information and cooperation mechanism among tax administrations”*⁴⁹. When drafting this initiative, the European Commission should take into account already existing technologies that might transform the intra-European withholding tax system⁵⁰.

In this sense, the limited area of WHT is an appropriate starting point for coordinated technological advancement of the tax administrations of the 27 Member States. As mentioned above, such step would require not only the introduction of a common procedural framework and technical standards but also a review of the underlying substantive tax rules related to the entitlement to reduced WHT rates⁵¹.

3.2. Value Added Tax

The area of VAT is a good opportunity for further harmonisation of technologies in the EU context, as it has significant cross-border impact, and the Member States are already operating in a coordinated fashion within the VAT area for a number of years.

Thus, it is no surprise, that the VAT is high on the Commission’s agenda in terms of digital reforms. The planned update of the VAT rules in light of the digital economy, the impact assessment of Eurofisc

⁴⁶ Report from the Commission to the Council and the European Parliament Accelerating the Capital Markets Union: addressing national barriers to capital flows, COM(2017) 147 final, pp. 10-11. <https://eur-lex.europa.eu/legal-content/en/TXT/?uri=CELEX%3A52017DC0147>

⁴⁷ This is part of the more general issue of higher (in relative terms) compliance costs for SMEs: see Communication from the Commission to European Parliament and the Council - An action plan for fair and simple taxation supporting the recovery strategy, COM(2020) 312 final, p 6. <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A52020DC0312&qid=1603446886789>

⁴⁸ Report from the Commission to the Council and the European Parliament Accelerating the Capital Markets Union: addressing national barriers to capital flows, COM(2017) 147 final, p. 11.

⁴⁹ Communication from the Commission to European Parliament and the Council - An action plan for fair and simple taxation supporting the recovery strategy, COM(2020) 312 final, p 10.

⁵⁰ See for example the already completed pilot study on the possible utilization of the blockchain technology in the area of WHT: https://assets.ey.com/content/dam/ey-sites/ey-com/en_gl/topics/tax/tax-pdfs/ey-withholding-tax-distributed-ledger-report.pdf

⁵¹ One example in this respect would be the rules on beneficial ownership and anti-avoidance that are based on vague standards, varying to a degree in the Member States based on their legal tradition. The need to apply such varying standards to a WHT relief entitlement makes its automation a difficult task. A possible way forward in this regard might be the introduction of preliminary (and binary) criteria that trigger a rebuttable presumption of abuse/lack of beneficial ownership status, thereby leaving only a limited proportion of red-flagged taxpayers outside the scope of automatic WHT entitlement. A proposal in similar terms was made by Pistone/Nogueira/Turina/Lazarov, Abuse through shell companies and structures in the EU internal market: Feedback to the EU consultation, ITAXS (forthcoming). The current initiative of the EU Commission on the fight against shell arrangements might be a suitable occasion in outlining such criteria. See the developments on the future proposal of such a directive here: https://ec.europa.eu/info/law/better-regulation/have-your-say/initiatives/12999-Tax-avoidance-fighting-the-use-of-shell-entities-and-arrangements-for-tax-purposes_en.

2.0^{52,53}, the (future) single VAT registration⁵⁴ and expanding the One-Stop-Shop⁵⁵ are a few examples in this regard⁵⁶. The main objective of these changes is to lower the VAT compliance burden on taxpayers that operate in multiple Member States, and to improve the resilience of the system against abuse and fraud.

Achieving these goals requires a great degree of integration and interoperability of the technical infrastructure behind the VAT systems of the Member States. Some of the technologies that might underpin such a system, such as blockchain, were already discussed at length within the framework of the VAT in the Digital Age conference organised by the European Commission⁵⁷. However, when implementing such technologies, one must be wary of the challenges that may arise. Section 4 discusses some of these challenges in more details.

3.3. Exchange of information

The current framework of exchange of information within the EU (including the newly adopted DAC 7⁵⁸) is based upon the premise that all reporting obligations of private parties – including of those that act as intermediaries for the taxpayer (e.g., financial institutions, advisors, or digital platforms) – are fulfilled when the private party reports to its domestic tax administration. The domestic tax administration in turn (usually under an automatic exchange of information regime) transmits that information to the tax authorities of the country where a taxable event has allegedly occurred. The main downside of this system design is that it prevents the possibility of real-time tax compliance in a cross-border setting: information is exchanged between the Member States on a periodical basis – for instance quarterly⁵⁹.

While the automatic exchange on a periodical basis poses no significant issues in a system of reporting that is also periodical (i.e., the tax systems of today), it would be a significant hurdle in a digital tax system where information flows real-time, leading to pre-filled tax returns and significantly lowers compliance burden while ensuring greater resilience to fraud⁶⁰. Moreover, in the context of the lack of adequate technical infrastructure for data processing on the one hand but also lack of quality of data checks put in place, much of the data exchanged between the Member States today remains essentially unused.⁶¹

⁵² [Action 9](https://eur-lex.europa.eu/legal-content/EN/ALL/?uri=CELEX:52020DC0312) proposed in Communication from the Commission to European Parliament and the Council - An action plan for fair and simple taxation supporting the recovery strategy, COM(2020) 312 final, available at: <https://eur-lex.europa.eu/legal-content/EN/ALL/?uri=CELEX:52020DC0312>

⁵³ https://ec.europa.eu/commission/presscorner/detail/en/IP_19_2468 - https://ec.europa.eu/taxation_customs/vat-and-administrative-cooperation_en

⁵⁴ [Action 1](https://eur-lex.europa.eu/legal-content/EN/ALL/?uri=CELEX:52020DC0312) proposed in Communication from the Commission to European Parliament and the Council - An action plan for fair and simple taxation supporting the recovery strategy, COM(2020) 312 final, available at: <https://eur-lex.europa.eu/legal-content/EN/ALL/?uri=CELEX:52020DC0312> - for comparison see current Articles 212-216 of Consolidated text: Council Directive 2006/112/EC of 28 November 2006 on the common system of value added tax as last amended by Council Directive 2021/115

⁵⁵ [Action 5](https://eur-lex.europa.eu/legal-content/EN/ALL/?uri=CELEX:52020DC0312) proposed in Communication from the Commission to European Parliament and the Council - An action plan for fair and simple taxation supporting the recovery strategy, COM(2020) 312 final, <https://eur-lex.europa.eu/legal-content/EN/ALL/?uri=CELEX:52020DC0312> - for comparison see the current OSS https://ec.europa.eu/taxation_customs/business/vat/vat-e-commerce/oss_en

⁵⁶ Annex to the Communication from the Commission to the European Parliament and the Council an Action Plan For Fair And Simple Taxation Supporting The Recovery Strategy, COM(2020) 312 Final.

⁵⁷ See https://ec.europa.eu/taxation_customs/vat-digital-age_en

⁵⁸ See Article 8ac(2) of Council Directive (EU) 2021/514 of 22 March 2021 amending Directive 2011/16/EU on administrative cooperation in the field of taxation, OJ L 104, 25.3.2021.

⁵⁹ See for example Article 8ab(2) para. 18 of Council Directive (EU) 2018/822 of 25 May 2018 amending Directive 2011/16/EU as regards mandatory automatic exchange of information in the field of taxation in relation to reportable cross-border arrangements, OJ L 139, 5.6.2018.

⁶⁰ Often fraud is possible because of timing differences and lack of information.

⁶¹ European Parliament resolution of 16 September 2021 on the implementation of the EU requirements for exchange of tax information: progress, lessons learnt and obstacles to overcome (2020/2046(INI)).

Bearing this in mind, there are two possible courses of action for making the exchange of information system more efficient in the future:

- The first possibility is to introduce the digital infrastructure and legal framework that makes the automatic exchange of information immediate upon receipt by the tax authorities of the transmitting Member State⁶².
- The second (and more ambitious) possibility is the introduction of a common technical infrastructure that moves from a system of tax-administration-to-tax-administration information exchange to a system of direct cross-border information sharing between private parties and foreign tax administrations.

A permissioned blockchain system encompassing all 27 tax administrations and EU intermediaries under a reporting obligation with respect to their clients would be a possible way forward in this respect. To the extent such a system guarantees not only the real-time prevention of abuse and fraud but also the automatic tax compliance in a cross-border setting, it would be a welcomed development in terms of the facilitation of the internal market.

3.4. Dispute resolution

While the integration of the technical infrastructure of the Member States in the areas governed by EU law would lead to a simplified compliance in a cross-border setting, instances would nevertheless persist where cross-border disputes and double taxation would occur. However, even if not fully eliminating disputes, the employment of standardised technology would greatly benefit the possibilities for swift resolution. In the context of the aftermath of the Covid-19 pandemic leading to an increase usage of digital interaction, the reliance on technologies for dispute resolution is already being considered⁶³, including exclusively in a digital environment⁶⁴. There is no reason why tax MAP and arbitration procedures should not follow, especially given the already existing uniform EU framework under the Dispute Resolution Directive⁶⁵ that can benefit from a common technical infrastructure guaranteeing thereby the efficiency of the procedure and adherence to the minimum EU standards on the protection of taxpayers' rights.

The resolution of any legal dispute (including in international tax) goes through two main phases: first – a factual one, where evidence is gathered, and a second one – legal – where the established factual circumstances are subsumed under a legal norm. While the employment of technology at its current state would scarcely help when there is a disagreement between two jurisdictions as to the interpretation of a provision (besides the fact that as mentioned earlier it might serve as a drive towards simplifying the tax systems), it would greatly reduce the timing of the fact-gathering phase. This is so because the blockchain technology in particular allows for a real time, time stamped, common understanding of the truth.⁶⁶ For more information on the blockchain technology see Table 3 in section 5.1 below.

⁶² This should not face substantial issues as far as taxpayers' rights are concerned due to the principle of mutual trust and automatic recognition between the Member States. See for example (in the tax area) ES: CJEU, 20 January 2021, Case C-420/19, *Heavyinstall*, EU:C:2021:33.

⁶³ See the UNCITRAL conference on Dispute Resolution in the Digital Economy, available at <https://uncitral.un.org/en/disputeresolutiondigitaleconomy>

⁶⁴ See for instance the new Swiss Arbitration Platform at <https://www.swissarbitration.org/asa-launches-new-swiss-arbitration-platform/>

⁶⁵ Council Directive (EU) 2017/1852 of 10 October 2017 on tax dispute resolution mechanisms in the European Union, OJ L 265, 14.10.2017.

⁶⁶ For the utility of blockchain in international tax dispute resolution see Christina Dimitropoulou, Sriram Govind, Laura Turcan, *Applying Modern, Disruptive Technologies to Improve the Effectiveness of Tax Treaty Dispute Resolution: Part 1 and Part 2*, (2018), 46, *Intertax*.

4. LEGAL CHALLENGES

KEY FINDINGS

A number of legal challenges arise in the context of coordinated action at EU level with respect to digitalisation. These challenges related to: (i) the legal basis and the need to demonstrate obstacles to cross-border mobility or appreciable distortions to competition in the absence of harmonization; (ii) the need to protect taxpayers' rights, especially with respect to privacy of natural persons; (iii) the role of intermediaries such as banks, trading platforms, or advisors in providing structured data that allow for automatic calculation of tax liability and their legal responsibility should they fail to provide information with sufficient accuracy.

Implementing digital technologies to tax procedures and administrations comes with a set of challenges. This section will highlight the general elements that need to be considered in the context of implementing EU-wide digital tax administration reforms. The section is not meant to be an exhaustive list of the issues that might arise or to address them at too much length, as the intricate details would necessarily relate to the specificities of the area where the action is taken.

4.1. The legal basis, proportionality and subsidiarity

As outlined above, all EU (hard-law) actions related to the digitalisation of tax administrations and procedures must be based on an appropriate legal basis (Articles 113-116 TFEU) and in accordance with the principles of subsidiarity and proportionality. To the extent the actions taken by the Union institutions are confined to the areas covered above (WHT, VAT, EOI, and dispute resolution), meeting this legal standard should be generally possible. There are three reasons for that.

First, there is already sufficient data to support the impact assessments that would need to be performed by the Commission in demonstrating obstacles to cross-border movement or appreciable distortions to competition, necessitating common action⁶⁷: e.g., both the inefficiencies in the cross-border WHT regime and the VAT are well documented⁶⁸.

Second, as far as the internal market legal bases are concerned, the Court has adopted an approach whereby the Union institutions have a considerable margin of discretion, with the CJEU interfering only when a measure is *manifestly inappropriate*⁶⁹. Although the substantive scope and applicable procedure is different between Articles 113, 114, 115 and 116 TFEU, the standard of review as regards the balance between market and non-market objectives remains the same.⁷⁰

Third, in practical terms it seems unlikely that a measure in the above mentioned areas would be challenged in light of its legal basis: unless Article 116 TFEU is relied upon, the Member States would need to agree unanimously.

⁶⁷ On the importance of these impact assessments when relying on the internal market legal bases see CJEU, 7 Sept. 2006, Case C-310/04, Spain v. Council, EU:C:2006:521; UK: CJEU, 8 June 2010, Case C-58/08, Vodafone, EU:C:2010:321.

⁶⁸ Report from the Commission to the Council and the European Parliament Accelerating the Capital Markets Union: addressing national barriers to capital flows, COM(2017) 147 final, pp. 10-11; VAT Gap: EU countries lost €140 billion in VAT revenues in 2018, with a potential increase in 2020 due to coronavirus (accessible at https://ec.europa.eu/commission/presscorner/detail/en/IP_20_1579)

⁶⁹ PL: CJEU, 7 March 2017, Case C-390/15, RPO, EU:C:2017:174, para. 54.

⁷⁰ Compare the reference to *manifestly inappropriate* in both the *RPO* case (cited above) under the unanimity procedure of [what is now] Article 113 TFEU and the *Vodafone* case (cited above) under the qualified majority procedure under [what is now] Article 114 TFEU.

It comes without saying that, to the extent that the Commission decides to rely on Article 116 TFEU as indicated in its action plan⁷¹, the conditions for its application would also need to be met and the possibility of facing a legal challenge becomes much greater⁷².

4.2. Protection of taxpayers' rights

If the Union institutions enjoy a wide margin of discretion in balancing the internal market objective against social, economic or political interests, they enjoy much narrower discretion whenever the fundamental rights of private parties are concerned⁷³. Thus, when designing secondary law, specific attention should be given on establishing a sufficient protection of fundamental rights. As far as digital tax processes and administrations are concerned, the following fundamental rights should be contemplated.

First, the right to privacy has a specific manifestation in EU context, entailing among others the right not to be subjected to automated decision-making, including profiling⁷⁴. An exception to this right is permissible only as far as it is provided by law and such law includes "suitable measures to safeguard the data subject's rights and freedoms and legitimate interests"⁷⁵. In other words, the outcome of an automated system must not be definitive. For example, when applying smart contracts within a blockchain system, the system would need to be designed in a way that allows the results to be reviewed (upon request of the taxpayer within a reasonable time frame), including at a judicial level. In addition, the right to privacy requires that any data sharing must take place on a need-to-know basis and, therefore, excludes having personal data shared directly on a blockchain with multiple participants⁷⁶. However, as per the proposal of a regulation harmonising rules on artificial intelligence, whenever employed by tax and customs authorities, AI systems should not be considered as high-risk in terms of the necessary safeguards for affected parties.⁷⁷ It is questionable to what extent such distinction should be made since the findings of tax and customs authorities might lead to criminal charges are amount themselves to criminal charges (irrespective of their domestic law classification) under the autonomous *Engel* criteria.⁷⁸

Second, although the cross-border information exchange within the EU takes place on the basis of mutual trust (i.e., all Member States are deemed to provide a sufficient minimum standard of fundamental rights protection), this trust is nevertheless based on a *rebuttable* presumption. Thus, in exceptional circumstances, where a Member State manifestly acts contrary to a minimum fundamental rights standard, there is an "emergency brake" allowing other Member States to deny cooperation when it would put the fundamental rights of taxpayers in jeopardy⁷⁹.

⁷¹ Communication from the Commission to European Parliament and the Council - An action plan for fair and simple taxation supporting the recovery strategy, COM(2020) 312 final, p. 2.

⁷² See for an elaboration in this respect Englisch, Article 116 TFEU—The Nuclear Option for Qualified Majority Tax Harmonization?, EC tax review 29.2 (2020). See Nouwen's reaction to Englisch's article in M. F. Nouwen, The Market Distortion Provisions of Articles 116-117 TFEU: An Alternative Route to Qualified Majority Voting in Tax Matters?, (2021), 49, Intertax, Issue 1; M. Nouwen, Inside the EU Code of Conduct Group: 20 Years of Tackling Harmful Tax Competition, Doctoral Thesis submitted to the University of Amsterdam; I. Lazarov, Anti-Tax-Avoidance in Corporate Taxation under EU Law: The Internal Market Narrative, IBFD Doctoral Series, section 3.2.2. (forthcoming).

⁷³ IR: CJEU, 8 April 2014, Case C-293/12, Digital Rights Ireland, EU:C:2014:238, para. 47-48.

⁷⁴ Article 22 of Regulation (EU) 2016/679 of the European Parliament and of the Council of 27 April 2016 on the protection of natural persons with regard to the processing of personal data and on the free movement of such data, and repealing Directive 95/46/EC (GDPR).

⁷⁵ Article 22(3) of the GDPR.

There are potential solutions to this problem whereby all personal data is stored off-chain, while the system relies on Zero-Knowledge Proof for validating outcomes. See What happens when government, industry and investors seek common digital ground?, available at https://assets.ey.com/content/dam/ey-sites/ey-com/en_gl/topics/tax/tax-pdfs/ey-withholding-tax-distributed-ledger-report.pdf p. 21.

⁷⁷ Recital 38 to the Proposal for a Regulation of the European Parliament and of the Council laying down harmonised rules on Artificial Intelligence (Artificial Intelligence act) and amending certain union legislative acts com/2021/206 final⁷⁷.

⁷⁸ ECHR, *Engel and others v the Netherlands*, 8 June 1976 (Application no. 5100/71).

⁷⁹ IR: CJEU, 26 April 2018, Case C-34/17, Donnellan, EU:C:2018:282.

Hence, any digital system for real time data sharing between tax authorities (and especially between private parties and foreign tax authorities) must have a tool allowing for continuous monitoring of the fundamental rights protection in the Member States in case of manifest inadequacies. This would allow for swift decisions on temporary suspension of the cooperation with some Member States.

4.3. The obligations upon intermediaries and legal responsibility

One of the main venues for intra-EU coordination is the standardization of data and technical standards for its processing. Thus, having a system in place that guarantees the data quality is of crucial importance. Key players in such a system would be those businesses that act as intermediaries for taxpayers⁸⁰, have sufficient knowledge of their customers, and therefore might provide valuable data input. EU law is already moving in that direction by obliging digital platforms to share data on their clients for better assessing the income and VAT tax liability⁸¹. There are two sets of legal issues that arise with respect to the role of such intermediaries: (i) the limits to their obligations; and (ii) the legal responsibility when data of poor quality is provided.

Regarding the limits to the obligations of intermediaries, legal professional privilege and the right against self-incrimination (when the reportable actions amount to tax evasion) are relevant to consider.

Professional privilege is key to the efficiency of the system and there are two approaches possible. One possibility is to move forward by adopting an approach similar to the one under DAC 6, whereby the scope of the privilege depends on the domestic laws of the Member States⁸². The downside of this approach is that it creates an uneven playing field within the EU, putting legal professionals from Member States with broad legal professional privilege at an advantage compared to legal professionals in Member States where the scope of privilege is narrow. The advantage of referring to the domestic standard, however, is that the scope of legal professional privilege would not differ within a single Member State depending on whether it is applied to a situation covered by EU law or not.

A second possibility would be to refer to a common EU-wide standard of legal professional privilege. Such a standard has already been developed by the CJEU under the general principle of Union law⁸³. Hence, it is conceivable to adopt a measure of secondary law that codifies this standard for areas of cross-border cooperation between the Member States. The benefit of the second approach is that it would guarantee the equality between the Member States (no matter what their domestic stance on legal professional privilege is), as well as equivalent data streams from the same type of intermediary, no matter where in the Union it is established.

Another potential issue that arises regarding the data quality relates to the legal responsibility in case the intermediary provides inaccurate information. This raises the question of the legal standard of care that the intermediary should have exercised⁸⁴. In order to account for the differences between the different business sectors and in order to not set the compliance burden too high, this might be the required standard of care applicable to the activity in question (e.g. banking, accounting, financial

⁸⁰ For example, these would be banks, advisors, digital platforms, etc.

⁸¹ Council Directive (EU) 2021/514 of 22 March 2021 amending Directive 2011/16/EU on administrative cooperation in the field of taxation, OJ L 104, 25.3.2021.

⁸² Article 8ab (5) of Council Directive (EU) 2018/822 of 25 May 2018 amending Directive 2011/16/EU as regards mandatory automatic exchange of information in the field of taxation in relation to reportable cross-border arrangements.

⁸³ CJEU, 18 May 1982, Case 155/79, *AM & S Europe Limited v Commission*, EU:C:1982:157; CJEU, 14 September 2010, Case C-550/07 P, *Akzo Nobel Chemicals and Akcros Chemicals v Commission*, EU:C:2010:512.

⁸⁴ The matter of the balance between providing reliable information and the burden that excessive checks might cause to businesses has already been contemplated in the area of online trading: Proposal for a Regulation of the European Parliament and of the Council on a Single Market For Digital Services (Digital Services Act) and amending Directive 2000/31/EC, COM/2020/825 final, para. 50.

intermediary, etc.). If this standard is not met, resulting in sharing data of poor quality, the Member States should in turn consider applying penalties that are effective, proportionate and dissuasive.

5. NEW AND EMERGING TECHNOLOGIES AND THEIR TAX APPLICATIONS

KEY FINDINGS

There is a range of digitalisation possibilities for tax purposes, from process optimization, to identification of risks and automation of processes. Different tax authorities are in different stages of their domestic digitalisation journey, but a number of technologies are already being explored and implemented by governments.

Emerging technologies give rise to opportunities (e.g., possibility of providing better and more efficient e-services, ability to analyse high amounts of data, improve risk management, automate tax processes, etc.), but also to some challenges. In particular, cryptocurrencies are digital assets that are outside of government control to a certain extent, which may result in the possibility of its use for criminal activities, exchange rate volatility, manipulation and tax challenges.

The first three sections of this paper focus on the need for common EU action, what the potential areas for such action might be, and the legal challenges that arise. This section will explore the technologies that might be at the centre of the coordinated EU approach. Understanding the nature and functioning of these technologies will inform the framework that is necessary for their implementation in a coordinated fashion. Moreover, the legacy already created at the level of the Member States in their effort to digitalise tax processes must also be taken into account.

At the early stages of the digitalisation process, tax administrations generally focus on reducing costs and improving tax collection. The steps include the digitalisation of paper-based and manual processes, the incorporation of third party data and the use of enhanced analytical tools. Even though these steps contribute to achieve common overarching goals of tax administrations, they face the structural limitations of the current system, thereby limiting the possible outcomes that can be achieved⁸⁵.

The widespread digitalisation of society now offers new opportunities for EU institutions and tax administrations to tackle some of these structural limitations and go several steps further. A deeper transformation entails that the tax system will be embedded within taxpayers' existing systems, digital platforms will become agents of tax administration, processes will be increasingly operating in a real-time fashion and the system will be more transparent and trustworthy.

Taking a prominent role in this process would be essential for the EU institutions as far as the internal market is concerned. To the extent that the digitalisation of tax processes would make it possible for tax compliance to become an integral real-time element of transactions, the interoperability of cross-border systems would be key. Otherwise, the compliance in a cross-border setting would be by definition more burdensome as it would need to rely on the 'old' compliance mechanisms. The section above explored a range of specific areas of EU law that can be a natural starting point in the process of transformation: where the compliance burden in the internal market matches the compliance burden in a domestic market⁸⁶.

⁸⁵ OECD (2020), Tax Administration 3.0: The Digital Transformation of Tax Administration, OECD, Paris. <https://www.oecd.org/tax/forum-on-tax-administration/publications-and-products/tax-administration-3-0-the-digital-transformation-of-tax-administration.htm>

⁸⁶ The convergence between the internal and the domestic markets is the ultimate goal of the European economic integration: CJEU: 5 May 1982, Case C-15/81, Schul, EU:C:1982:135, para. 33.

5.1. Opportunities deriving from emerging technologies

Regarding the emerging technology tools, an important aspect of digital transformation is how to choose among different combination of technologies. A set of factors should be considered by tax administrations, such as the already established processes, the quality of the data available, the technical skills of the relevant staff and the potential use of each technology.

There is a range of digitalisation possibilities, from process optimization, to identification of risks and automation of processes. While different tax authorities are in different stages of the digitalisation journey, these are some of the current technologies being explored and applied by tax administrations:

Table 2: Technologies and their practical applications for tax purposes

Technology tool	Definition	Practical application for tax purposes
Cloud computing	<p>Cloud computing is the shared use of storage, computational capacity and application software provided externally and interconnected by internet.</p> <p>It allows for the remote delivery of on-demand computing services over a network, usually on a pay-for-use basis⁸⁷. The models of service provision include Infrastructure as a service (IaaS), Platform as a Service (PaaS) and Software as a Service (SaaS).</p> <p>Some examples of cloud service providers are Oracle, SAP, Microsoft (Azure) and Google (Cloud Platform).</p>	<p>The cloud concept has the potential to reduce the costs and increase the institutional agility by allowing tax administrations to not depend solely on IT equipment (e.g., specific computers, data centres, etc.), since the cloud does not depend on a specific physical equipment and can be accessed from different locations. This provides for the ability to release computer resources that are no longer being used and the availability of the same information in different computers⁸⁸.</p> <p>From an EU perspective, the possibilities of cloud computing would result in greatly reducing the costs for each Member State as there would be less need for substantial hardware and software costs. A single system might be developed and made available to the Member States via the cloud.</p>
Big data and data analytics	<p>Big data involves the concept of volume, variety, velocity, veracity and value of data.</p> <p>Data analytics allows for autonomous examination of data or content using statistical techniques or tools to discover more data patterns, make forecasts, or generate recommendations.</p>	<p>Tax administrations have access to a large amount of data collected through tax returns, assessments, tax collection, automatic exchange of information (AEOI), EU DAC, external sources (utility contracts, bank information, insurance contracts), etc.</p> <p>Processing the immense amount of information collected is a major challenge for most jurisdictions. The approach taken by some tax authorities focuses on a risk analysis and selection of relevant information through advanced analytics techniques, such as machine learning and AI. These techniques allow for a faster and more accurate analysis.</p>
Artificial intelligence (AI)	<p>AI is a key technology that allows for the application of advanced analysis and logic techniques, including machine learning and natural</p>	

⁸⁷ International Tax Review, Cloud computing and international tax issues, available at <https://www.internationaltaxreview.com/article/b1fyg9xg9h94pq/cloud-computing-and-international-tax-issues>

⁸⁸ Seco, Antonio (CIAT), Cloud Computing in Tax Administrations (i), 18 April 2018, available at <https://www.ciat.org/cloud-computing-in-tax-administrations-i/?lang=en>

Technology tool	Definition	Practical application for tax purposes
	<p>language processing, to interpret events and support automated decisions.</p>	<p>In that sense, an increased investment in tools and skills, as well as the IT infrastructure of a government is determinant. It is also important to put together a tax team, which includes professionals with different backgrounds (such as IT professionals, economists and statisticians). Other advanced tools may be considered as well, such as network analysis, text mining and web scraping.</p> <p>From the perspective of the need for coordination so that the internal market reflects the characteristics of a domestic market, the data exchanged via the DAC system should be structured and with a similar intensity as the one shared domestically.</p>
Blockchain	<p>Blockchain is a distributed ledger of network nodes maintaining a list of registries or transactions gathered in data blocks. What the blockchain does in practice is to allow for establishing an immutable version of the truth (based on a consensus) in a network of participants without the need for an intermediary (i.e., creating a distributed ledger).</p> <p>Smart contracts in turn allow for the consequences of an event that has been recorded to automatically occur.</p>	<p>In particular, this is one of the key technologies that have the potential to disrupt the way tax systems operate and is already being implemented as a way of modernizing the existing tax systems.</p> <p>The technology has several potential applications in tax and businesses in general, eliminating the need for intermediaries and allowing for real-time information sharing, tax collection and more efficient administration⁸⁹.</p> <p>This is one of the key technologies in an EU context since it requires a certain level of harmonisation of the underlying rules internationally (so that smart contracts can operate) while allowing for sufficient decentralization.</p>
Internet of things (IoT)	<p>IoT refers to a category of devices (i.e., objects, vehicles, and other items) that contain electronic sensors and software with online connectivity, allowing the devices to collect and exchange data. The technology generates data for real-time monitoring and measuring (services carried out through apps).</p>	<p>The IoT is another key component in an EU setting as it allows for connecting the physical world (the 'things') with its virtual representation on the blockchain thereby ensuring that what is recorded as an event on the blockchain corresponds with the objective reality.</p> <p>The importance of this for matters such as intra-Community supply and acquisition of goods can hardly be overstated.</p>

⁸⁹ See Owens, J. and De Jong, J. 2017. Taxation on the Blockchain: Opportunities and Challenges. Tax Notes International. Volume 87, Number 6, available at: https://www.wu.ac.at/fileadmin/wu/d/i/taxlaw/institute/WU_Global_Tax_Policy_Center/Articles_by_Owens/Owens_de_Jong_2017_Taxation_on_the_Blockchain.pdf

Technology tool	Definition	Practical application for tax purposes
Quantum computing	<p>Quantum computers are supercomputers that have the capacity to rapidly process a high amount of data that traditional computers do not. Thus, quantum computers solve complex problems quickly, regardless of the number of variables involved.</p> <p>As a highly theoretical and subject study, not many technologies have a role to play in this analysis.</p> <p>Quantum computers, however, have the potential to measure the amount of “activity” a company conducts in an individual Member State and better inform the implementation of the formula to split the consolidated taxable profit⁹⁰.</p>	<p>Quantum computing can be applied in the context of tax impact theory, a subject that studies how changes imposed by governments in tax systems affect taxpayers’ observations and responses. This study is useful to address matters of fair taxation or international tax issues. For example, tax impact theory can better inform the decision-making process related to EU initiatives such as the Common Consolidated Corporate Tax Base (CCCTB).</p> <p>It is possible that quantum computers could also play a role in the complex calculations required for the attribution of profits under the upcoming OECD Pillar 1.</p> <p>Therefore, quantum computing may help solve challenges arising in a domestic or cross border scenario by modeling hypothesis or performing a more robust tax impact analysis before enacting legislation⁹¹.</p>

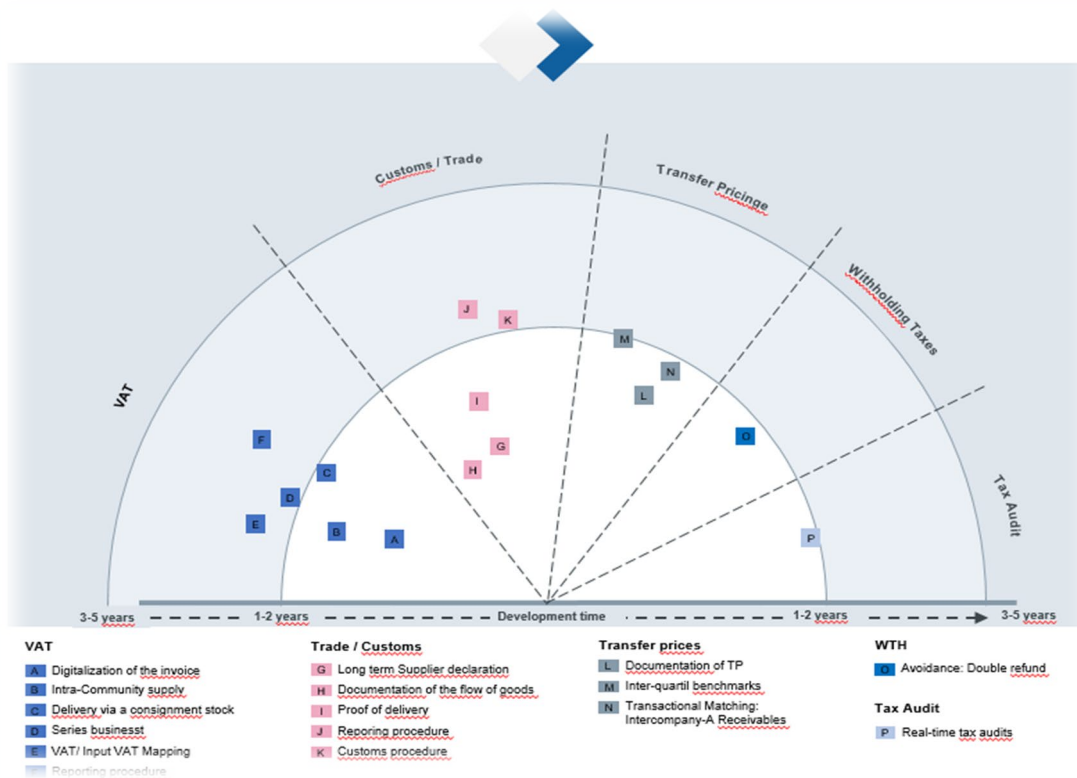
Source: Authors’ own elaboration.

As seen above, digital tools can be applied in many ways: to deliver better and more efficient services to taxpayer (the so-called “e-services”); to assist in analysing the high amounts of data collected by tax authorities, i.e., through the application of data analytics technologies, and thereby improve risk management; to nearly fully automate tax processes and make them more efficient; and to facilitate the cooperation between different government bodies. The figure below demonstrates some relevant tax areas for relying on digital technologies.

⁹⁰ See EY, How quantum computing will improve tax administration and compliance, available in https://www.ey.com/en_us/tax/how-quantum-computing-will-improve-tax-administration-and-compliance

⁹¹ Ibid.

Figure 1: Radar for application of technologies



Source: Risse, Robert; Gries, Matthias, *Der Einsatz von Blockchain-Technologie in der Steuer- und Zollfunktion*, (2020) Beckdigitax

In relation to e-services, tax administrations have been investing time and resources in the past decades towards the creation of digital applications with the aim to facilitate compliance and interaction with taxpayers. The earliest examples of e-services are online service portals (e.g., for online tax return filings and payments), which are now available to taxpayers in many EU countries. Other examples of e-services include mobile apps and compliance communications tools. More recently, pre-filled tax returns and electronic invoicing services (“e-invoicing”) were introduced in some jurisdictions. Naturally, however, the pre-filling of tax returns depends upon having the data of transactions that is necessary. While this data can be made relatively easily available in a domestic setting by having real-time access to e-invoicing information, cross-border transactions would be outside the scope if the systems of the Member States involved do not ‘talk’ to one another.

Technology can also be applied in the core tax functions of tax administrations, including taxpayer registration (collection, recording and maintenance of basic identifying taxpayer information), filing and processing of tax declarations and tax payments, audits, taxpayers objections and appeals, enforcement measures, tax fraud investigations and debt management.

In fact, considering the rapid growth and relevance of digital platforms and e-commerce in Europe, there is a paradigm shift in the role of digital platforms in the collection of VAT and income taxes on online sales. The role of platforms should move from a voluntary intermediary regime to a full liability regime, where digital platform providers would disclose information on all individual platform sellers

and withhold tax on payment to individual platform sellers⁹². The DAC 7 in the context of EU law is a move precisely in that direction⁹³.

Opportunities to use technology for transfer pricing purposes include detecting deviations from expected prices, finding comparable transactions more efficiently, obtaining relevant information and exchanging it with other countries, and resolving cross border disputes (i.e., joint audits, mutual agreement procedures, advance pricing agreements more efficiently).

Moreover, technology can help facilitating cooperation between the different government bodies: customs, tax, social security, financial intelligence units, ministry of justice, and ministry of finance. To achieve a whole of government approach, the technical platforms used by these departments should be interoperable internally, but also in a cross-border setting. Moreover, they should target comprehensive intra-agency cooperation between tax authorities and financial intelligence units with DAC 5 (on sharing of information between AML units and tax authorities)⁹⁴ already providing 'fertile soil' for a more effective EU actions in combating money laundering, bribery, tax evasion, and other financial crimes.

Lastly, technology offers the opportunity to create open and more comprehensive registries of the ultimate physical owners of opaque offshore vehicles as trust, shell entities, foundations and holding companies, thereby preventing such entities from exploiting tax benefits (e.g. reduced withholding tax rates) and opportunities for fighting offshore non-compliance. Blockchain can help in moving towards registries that are transparent and updated regularly and in which the data is verified nationally and is made available at EU level to the authorities of other Member States in real time, thereby serving as an EU-wide digital register. If other digital technologies are used instead, these may nevertheless offer more opportunities than paper based systems to link up these registers in Member States.

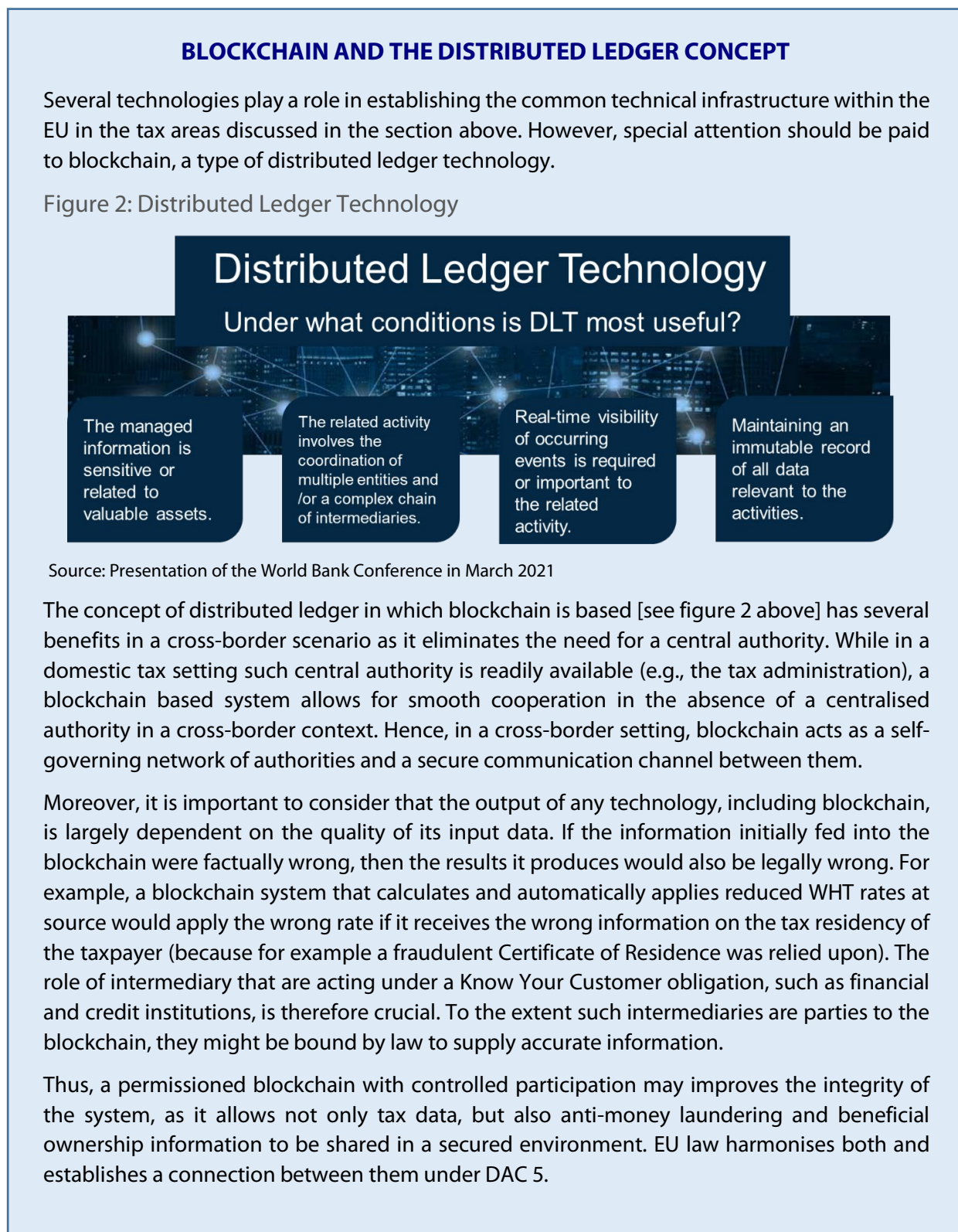
The interoperability of the technologies employed by EU countries is therefore crucial to accurately perform these tasks (some of which are mandated by EU law, e.g., exchange of information).

⁹² See OECD (2019), The Role of Digital Platforms in the Collection of VAT/GST on online sales, OECD, Paris. Available at: <https://www.oecd.org/tax/consumption/the-role-of-digital-platforms-in-the-collection-of-vat-gst-on-online-sales.pdf>

⁹³ Council Directive (EU) 2021/514 of 22 March 2021 amending Directive 2011/16/EU on administrative cooperation in the field of taxation, OJ L 104, 25.3.2021.

⁹⁴ Council Directive (EU) 2016/2258 of 6 December 2016 amending Directive 2011/16/EU as regards access to anti-money-laundering information by tax authorities, OJ L 342, 16.12.2016.

Table 3: Blockchain and the Distributed Ledger Technology



Source: Authors' own elaboration.

5.2. Risks deriving from emerging technologies

New and emerging technologies bring opportunities for the transformation of tax processes that would advance the internal market by making it more competitive and resilient to tax fraud and avoidance. At the same time, the implementation of these technologies bring some challenges that should be considered.

Particular attention should be given to the development of cryptocurrencies, i.e., virtual currencies secured by cryptography. Most cryptocurrencies are based on a blockchain (decentralised) system and, thus, are not issued or controlled by a centralizing authority. This intrinsic characteristic brings many benefits (portability, transparency, less costs, etc.), but also some risks that are mostly associated with the fact that these digital assets are outside of government control to a certain extent, which may result in the possibility of its use for criminal activities, exchange rate volatility or manipulation⁹⁵.

A key challenge relates to the tax treatment of virtual currencies. In many countries, guidance has not yet been provided or it only covers a limited number of issues. Potential taxable events during the life cycle of virtual currencies include (i) the moment of creation, (ii) the storage and transfer, and (iii) the exchange of the crypto-asset. Some countries impose tax upon receipt of a cryptocurrency; others focus on the event of disposal, while it is not common for storage to give rise to a taxable event⁹⁶. Identifying a specific taxable event and the responsible taxpayer, however, still poses challenges and countries struggle to effectively impose tax on cryptocurrencies. It is estimated that the revenue potential for the EU of taxing realized Bitcoin capital gains in 2020 could amount to approximately EUR 800 million to EUR 900 million.⁹⁷

The characterization of the cryptocurrencies for tax purposes varies: while the majority of jurisdictions treat them as property (which englobes intangible assets, commodities or financial instruments), others take a different approach and consider virtual currencies as foreign fiat currencies⁹⁸ or as “digital representation of value”⁹⁹. Different tax treatments arise depending on how the asset is characterised in a particular State. Below is a description of the VAT treatment of virtual currencies in EU Member States.

⁹⁵ For more information, see Investopedia, Cryptocurrency, available at <https://www.investopedia.com/terms/c/cryptocurrency.asp>

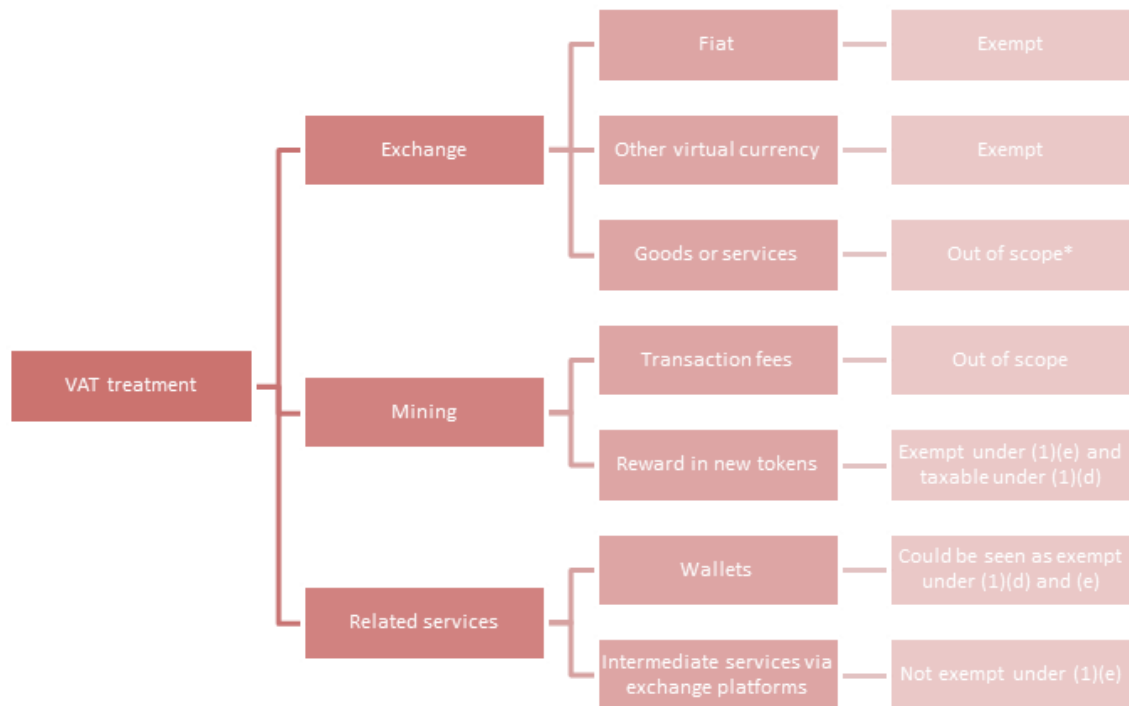
⁹⁶ OECD (2020), Taxing Virtual Currencies: An Overview of Tax Treatments and Emerging Tax Policy Issues, OECD, Paris. <https://www.oecd.org/tax/tax-policy/taxing-virtual-currencies-an-overview-of-tax-treatments-and-emerging-tax-policy-issues.htm>

⁹⁷ Thiemann, A. (2021), Cryptocurrencies: An empirical View from a Tax Perspective, JRC Working Papers on Taxation and Structural Reforms No 12/2021, European Commission, Joint Research Centre, Seville, JRC126109.

⁹⁸ Few countries consider these virtual assets to be a type of currency for tax purposes (the decentralization, lack of backing, price volatility and limited use as a means of exchange are the reasoning behind this approach).

⁹⁹ Ibid.

Figure 2: VAT treatment of virtual currencies in EU Member States



Source: OECD Secretariat, based on the Hedqvist decision and European Commission Value Added Tax Commission (2016), Issues arising from recent judgement of the Court of Justice of the European Union, 135(1)(e) and (d) SUBJECT : CJEU Case C-264/14 Hedqvist : Bitcoin, No. 892.

Notes: *The supply of the good or service remains taxable under normal VAT rules. The Figure should be read as considering the VAT treatment of virtual currency in the case of (i) exchange for fiat currency, for other virtual currency or for goods or services, (ii) mining resulting in transaction fees or reward in new tokens, and (iii) the related services provided to the virtual currency holder such as wallets or intermediate services via exchange platforms.

Other emerging developments in the crypto-asset environment are worth noting. With the aim to minimise volatility, stablecoins combine the features of both fiat and virtual currency by maintaining a stable price based on a fiat currency, a commodity, another virtual asset or an algorithm. Policy challenges associated with stablecoins are high in the international agenda¹⁰⁰. Similar challenges to traditional cryptocurrencies arise: risk of money laundering, effect on the integrity of payment systems, challenges related to tax compliance, legal and regulatory framework, among others. In particular, the European Central Bank (ECB) considers that the asset management function of stablecoins poses significant risks to financial stability¹⁰¹. The tax treatment of stablecoins is not clear and there is no international consensus on whether they should be treated as classic virtual currencies (e.g., considered as asset and treated as property) or as a security or foreign currency¹⁰².

Moreover, cryptocurrencies can pose a threat to monetary policy and money issuance monopoly. For this reason, central banks have been among the first public authorities to issue a statement on crypto-assets and propose to define and regulate digital assets¹⁰³.

¹⁰⁰ The G7, Bank for International Settlements and the IMF are investigating the impact of global stablecoins. See G7 Working Group on Stablecoins (2019), Investigating the impact of global stablecoins, October 2019, available at <https://www.bis.org/cpmi/publ/d187.pdf>

¹⁰¹ European Central Bank (2020), A regulatory and financial stability perspective on global stablecoins, available at https://www.ecb.europa.eu/pub/financial-stability/macprudential-bulletin/html/ecb.mpbu202005_1~3e9ac10eb1.en.html.

¹⁰² OECD (2020), Taxing Virtual Currencies: An Overview of Tax Treatments and Emerging Tax Policy Issues, OECD, Paris.

¹⁰³ Cambridge Center for Alternative Finance (2019), Global Cryptoasset Benchmarking Study, available at <https://www.jbs.cam.ac.uk/faculty-research/centres/alternative-finance/publications/3rd-global-cryptoasset-benchmarking-study>.

A number of countries (e.g. China, Singapore, U.K.) are now considering issuing their own virtual currencies (referred to as Central Bank Digital Currencies, or CBDC), which is a digital form of currency that is issued by a central public authority and denominates in the currency of that country. CBDC would co-exist with physical cash, and not necessarily replace it. Different CBDC designs are currently being explored, but most projects are at early stages¹⁰⁴.

The ECB launched a project in July 2021 to explore the possibility of issuing a digital euro¹⁰⁵. The project is in its first stages and the ECB is investigating how to design and distribute it to merchants and citizens, as well as the impact it would have on the market and the changes to European legislation that might be needed¹⁰⁶. The FISC Subcommittee may at the same time wish to consider how a CBDC would impact on the operations of EU tax systems.

¹⁰⁴ OECD (2020), Taxing Virtual Currencies: An Overview of Tax Treatments and Emerging Tax Policy Issues, OECD, Paris.

¹⁰⁵ European Central Bank, Eurosystem launches digital euro project, available at <https://www.ecb.europa.eu/press/pr/date/2021/html/ecb.pr210714~d99198ea23.en.html>

¹⁰⁶ See more information in European Central Bank, A digital Euro, available at https://www.ecb.europa.eu/paym/digital_euro/html/index.en.html

6. CONDITIONS FOR A SUCCESSFUL DIGITAL TRANSFORMATION OF TAX ADMINISTRATION

KEY FINDINGS

Even before starting the process of digitalisation, Member States should focus on developing a digital tax administration roadmap, having in mind the long-term goals of the domestic administration and the digital internal market.

The Commission can assist the Member States in their digitalisation efforts by: (i) taking coordinated action at EU level in terms of interoperability of the systems; (ii) providing a common infrastructure for the automation of tax outcomes in harmonised areas; (iii) assisting the tax administration of the Member States by issuing soft-law instruments and providing the necessary framework for training and cooperation; and (iv) acting as an EU-wide observatory of emerging technologies and their potential use in the tax area.

6.1. How can Member States get from where they are to where they want to be in terms of digitalisation?

EU tax administrations are at different stages in their digital development. This should be taken into account when designing a common approach to digitalisation, especially with respect to its time frame: it will need to account for those Member States that are relatively behind in their digital maturity. Digital maturity refers to the sophistication of the technology being applied in a certain public body (for example, the range of technologies used by tax administrations: from the implementation of a web portal and online filing of tax returns to a more complex and advanced implementation of systems such as advanced analytics and blockchain-based applications). Several organizations came up with benchmarks to assess the digital maturity level of different governments¹⁰⁷.

According to one study¹⁰⁸, the digital profiles of national tax administrations can be generally grouped under six levels, as laid out below.

¹⁰⁷ See, for example, OECD (2016), Technologies for Better Tax Administration. <https://www.oecd.org/publications/technologies-for-better-tax-administration-9789264256439-en.htm>

¹⁰⁸ See EY, Tax Authorities are Going Digital (2017), available at https://assets.ey.com/content/dam/ey-sites/ey-com/en_gl/topics/digital/ey-tax-authorities-are-going-digital.pdf; EY, How Tax Administration is Going Digital (2019), available at https://www.ey.com/en_gl/tax/how-tax-administration-is-going-digital

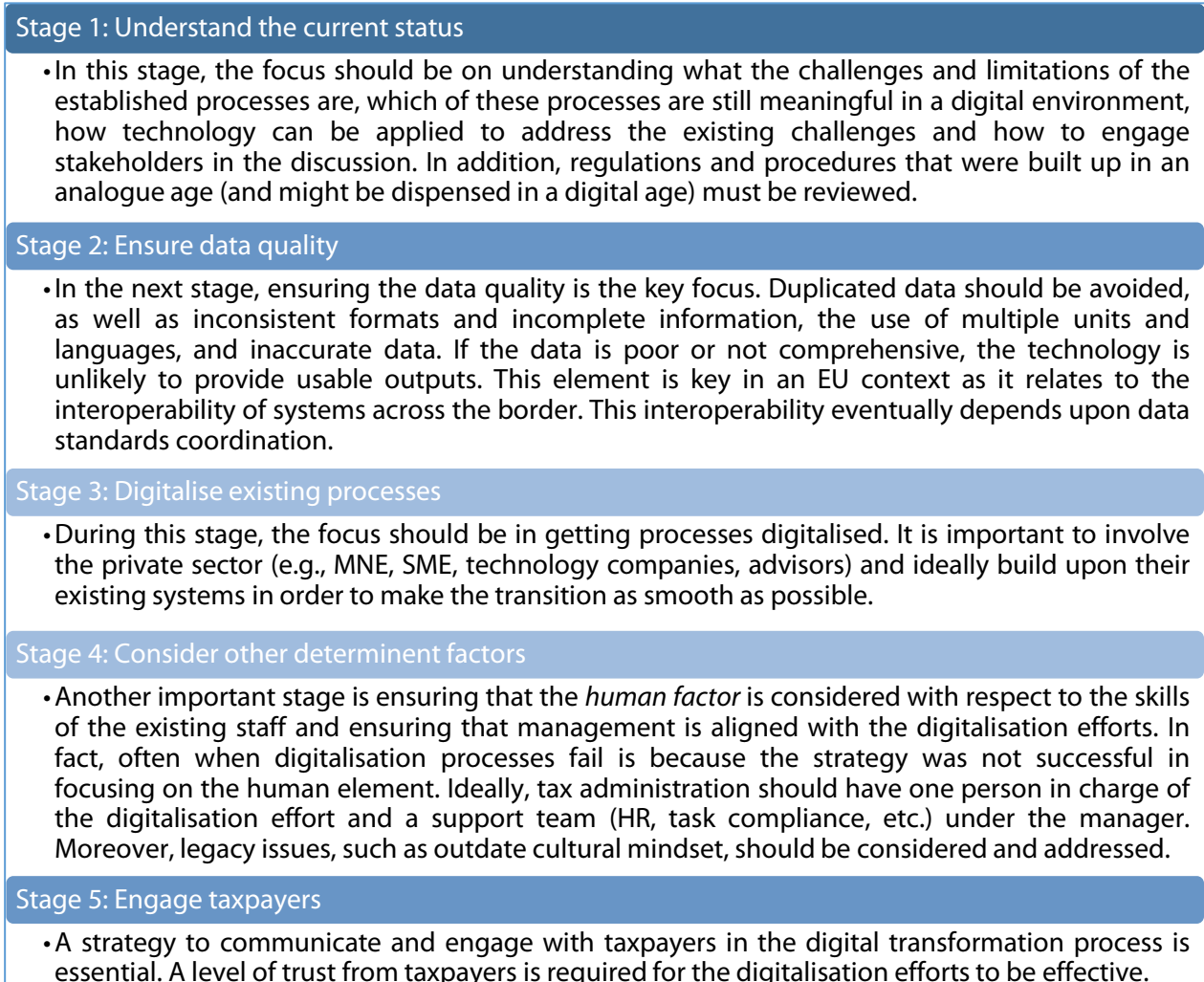
Table 4: Levels of digital maturity of tax administrations

Level 1	Level 2		Level 3	Level 4		Level 5	Level 6
"E-file"	"E-accounting"		"E-match"	"E-audit"		"E-assess"	"E-government"
Use of standardised electronic form for filing tax returns required or optional; other income data (e.g., payroll and financial) filed electronically and matched annually	Submit accounting or other source data to support filings (e.g., invoices and trial balances) in a defined electronic format to a defined timetable; frequent additions and changes at this level	Paradigm shift	Submit additional accounting and source data; government accesses additional data (bank statements) and begins to match data across tax types, and potentially across taxpayers and jurisdictions, in real time	Level-2 data analysed by government entities and cross-checked to filings in real time to map the geographic economic ecosystem; taxpayers receiving electronic audit assessments with limited time to respond	Transformational	Government entities using submitted data to assess tax without the need for tax forms; taxpayers allowed a limited time to audit government-calculated tax	All government interaction with citizens and enterprises digitalised; seamless international digital exchange of information between law enforcement and tax authorities in different countries

Source: EY, Tax Authorities are Going Digital (2017), available at https://assets.ey.com/content/dam/ey-sites/ey-com/en_gl/topics/digital/ey-tax-authorities-are-going-digital.pdf and EY, How Tax Administration is Going Digital (2019), available at https://www.ey.com/en_gl/tax/how-tax-administration-is-going-digital.

In order to ensure a successful digital transformation, one should take a strategic rather than opportunistic approach. This means that even before beginning the process of digitalisation, the focus should be on developing a coordinated digital tax administration roadmap, having in mind the long-term goals of the administration and the internal market. This is important in light of the cross-temporal interoperability of systems: while the initial effort will likely be in a limited area, the underlying technology and infrastructure should allow for scalability and comprehensive digital transformation in the future. Hence, when the EU institutions design a common strategy in the narrow fields outlined in Section 3 above, this should be done by keeping the longer-term goal of a digital internal market in mind. When drafting a digital roadmap, Figure 3 describes several aspects that must be considered.

Figure 3: Different stages of a digital tax administration roadmap



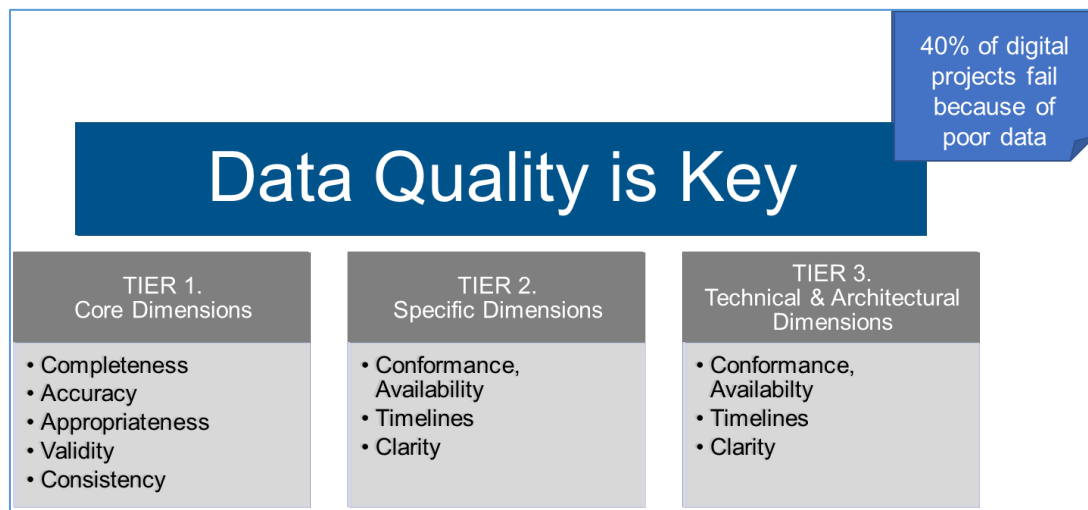
Source: Authors' own elaboration.

During the digitalisation process, tax administrations must ensure that:

- senior management understands the importance of data driven approaches and regularly and effectively communicates this to staff;
- there is effective collaboration between data officers and enforcement / administrative specialists;
- a structured training program exists to support skills building in the areas defined by the competency profiles covering key job streams;
- databases have been inventoried, fields described, data owners identified, etc.;
- data quality is being regularly assessed and improved and there is a central repository with red flags for subsequent improvement (in this regard, see Figure 4 below);
- analytics and visualization software is routinely used to analyse complaints, cases and investigative performance;
- the enforcement unit has effective partnership with frontline staff (i.e., tax administration and procurement staff) necessary to understand their data, reflect red flags, etc.;

- effective data sharing arrangements have been established with other agencies such as the police, tax administration, procurement, financial-intelligence units, etc. and
- information security strategy and control framework are in place and legal risks (e.g., those related to GDPR) are well understood, and responsibilities are assigned and monitored.

Figure 4: Data quality is key



Source: Presentation of the World Bank Conference in March 2021

Thus, tax administrations will need to adapt to this new digitalised economy by restructuring their organizations and the way they operate in order to keep up with the developments in the tax landscape. With emerging technologies, a new potential to outsource much of routine compliance and assessment burdens emerges. A number of tasks that were once fulfilled by the employees of tax administrators (e.g., registration of taxpayers, tax assessments, verifications to tax collection and assessment of dispute) will likely be included in a fully automated digital system in the future. In this scenario, the role of tax authorities would no longer be as verifiers of the outcomes, but rather certifiers of the digital systems that are put in place for the purposes of tax compliance.

6.2. What roles do the EU institutions have in the digitalisation efforts of Member States?

Undergoing each of the steps mentioned in Section 6.1 above would predominantly be an obligation for the tax administrations of the Member States. Yet, the EU institutions can have a three-fold role in light of the impact on the internal market, outlined above in section 2. First, they can set the area of coordinated action at EU level in terms of interoperability of the systems as regards standardisation of data and its automatic real-time sharing in a cross-border context. Second, the EU might provide a common infrastructure that ensures automation of tax outcomes in a limited number of areas that are within the scope of already existing harmonisation – withholding taxes and VAT. Finally, the Union might assist the tax administration of the Member States by issuing soft-law instruments as well as by providing the framework for training and cooperation necessary for being successful in the digitalisation efforts.

The EU Commission could also play a useful role in monitoring the emergence of new technologies and in assessing where they can be used in the tax area. The Commission could also assist the Member States in capacity building and maybe provide the technical infrastructure for some of the measures – e.g., an agreed upon blockchain design, potentially in close cooperation with business.

Hence, in designing the intricate details of any technical measure (for example, in an implementing piece of secondary legislation based upon a framework set by a Council directive), the Commission might find itself in the position of having to set, alongside the legal standards, the technical standards that go with the legal framework. The Commission might also have a role to play in helping the Member States in preparing for these technical standards.

In this sense, the future legislative process would be a process that simultaneously sets the necessary technology that puts the newly adopted legislation in motion (for example, by relying on blockchain and smart contracts). The technology (almost) becomes the law: therefore, the process of “implementing” relates to having technical capacity as much as it relates to amending the domestic legal framework. This is posing a number of fundamental questions. Some of these questions are ‘traditional’ to EU law: would such way of legislating be in accordance with the Treaties and the principle of conferral? Other issues are even more general and relate to the legitimacy of the legal framework: can the law be accessible to a number of technically skilled few individuals? Should we make sure that in the future everyone is technically skilled just like in the past it was important to be literate to take part in the democratic process? Such more general questions must go hand in hand with any current development.

7. CONCLUSION

The EU and Member States must seek scenarios that integrate existing technology with the vision of future in which digital compliance is designed as a natural part of business operations for both small and large business, in a domestic and cross-border context. Blockchain, machine learning, IoT, big data and AI are at the core of this transformation. These opportunities can be best realised by integrating design compliance solutions into business existing processes and using new technologies to create compliance proof systems within those areas where the EU law sets a common framework that can be used as a basis. The EU Commission should take the lead to ensure the technical interoperability and EU law compatibility of such a system. The European electronic system envisaged under Article 2(3) of the Fiscalis Regulation might be the backbone of such a coordinated approach.

To sum up, technologies - those which we know today and those which we have not even anticipated - offer exciting opportunities for EU tax administrations and policy makers to provide a business friendly environment which stimulates growth, increases revenue, reduces the deadweight loss associated with tax and at the same time reduces inequalities in the distribution of income and wealth.

In order to achieve its policy objectives, the Union should make sure that the areas covered by EU measures are not only harmonised from the point of view of substantive rules but also in terms of technical infrastructure: e.g. digitalizing the VAT system will be difficult if the Union has no common technical VAT infrastructure. The same would be true for more and more areas of taxation as the economic integration of the internal market expands. Customs duties, withholding taxes, exchange of information or dispute resolution are examples that already exists, but future carbon taxes, wealth taxes, digital services taxes or rules on shell entities are other instances that are likely to occur. In this sense, the EU could play a leading role in ensuring that the procedural and technical aspects of the digitalisation of tax administrations are coordinated to avoid barriers to interoperability of national technical platforms recognizing that greater coordination in these areas may also have unintended spillover effects in areas where the Union has not exercised its competence.

REFERENCES

- A. Seco (CIAT), *Cloud Computing in Tax Administrations (i)*, 18 April 2018, available at <https://www.ciat.org/cloud-computing-in-tax-administrations-i/?lang=en>.
- A. Thiemann (2021), *Cryptocurrencies: An empirical View from a Tax Perspective*, JRC Working Papers on Taxation and Structural Reforms No 12/2021, European Commission, Joint Research Centre, Seville, JRC126109.
- Belt and Road Initiative Tax Journal, *Digital Transformation: BRITACOM perspective*, vol. 1, no. 2 (2020), pp. 55 and 83-84, available at P020201229609118824967.pdf (britacom.org).
- C. Dimitropoulou, S. Govind, L. Turcan, *Applying Modern, Disruptive Technologies to Improve the Effectiveness of Tax Treaty Dispute Resolution: Part 1 and Part 2*, (2018), 46, Intertax.
- Cambridge Center for Alternative Finance (2019), *Global Cryptoasset Benchmarking Study*, available at <https://www.jbs.cam.ac.uk/faculty-research/centres/alternative-finance/publications/3rd-global-cryptoasset-benchmarking-study>.
- CJEU, 14 September 2010, Case C-550/07 P, Akzo Nobel Chemicals and Akros Chemicals v Commission, EU:C:2010:512.
- CJEU, 16 December 1976, Case C-33/76, Rewe-Zentralfinanz, EU:C:1976:188.
- CJEU, 18 May 1982, Case 155/79, AM & S Europe Limited v Commission, EU:C:1982:157.
- CJEU, 20 January 2021, Case C-420/19, Heavyinstall, EU:C:2021:33.
- CJEU, 26 April 2018, Case C-34/17, Donnellan, EU:C:2018:282.
- CJEU, 28 January 1986, Case 270/83, Commission v France ('Avoir Fiscal'), EU:C:1986:37, para. 13.
- CJEU, 30 January 2020, Case C-156/17, Köln-Aktienfonds Deka, EU:C:2020:51, para. 61.
- CJEU, 5 October 2000, Case C-376/98, Tobacco Advertising I, EU:C:2000:544.
- CJEU, 7 March 2017, Case C-390/15, RPO, EU:C:2017:174, para. 54.
- CJEU, 7 Sept. 2006, Case C-310/04, Spain v. Council, EU:C:2006:521; UK: CJEU, 8 June 2010, Case C-58/08, Vodafone, EU:C:2010:321.
- CJEU, 8 April 2014, Case C-293/12, Digital Rights Ireland, EU:C:2014:238, para. 47-48.
- CJEU, 9 October 2014, C-326/12, van Caster, EU:C:2014:2269, para. 47.
- CJEU: 5 May 1982, Case C-15/81, Schul, EU:C:1982:135, para. 33.
- Communication from the Commission to the Council and the European Parliament *An Action Plan for fair and simple taxation supporting the recovery strategy*, COM(2020) 312 final, 15 July 2020, available at https://ec.europa.eu/taxation_customs/system/files/2020-07/2020_tax_package_tax_action_plan_en.pdf.
- Council conclusions on shaping Europe's digital future, available at <https://data.consilium.europa.eu/doc/document/ST-8711-2020-INIT/en/pdf>.
- Council Directive (EU) 2016/1164 of 12 July 2016 laying down rules against tax avoidance practices that directly affect the functioning of the internal market OJ L 193, 19.7.2016.

- Council Directive (EU) 2016/2258 of 6 December 2016 amending Directive 2011/16/EU as regards access to anti-money-laundering information by tax authorities, OJ L 342, 16.12.2016.
- Council Directive (EU) 2017/1852 of 10 October 2017 on tax dispute resolution mechanisms in the European Union, OJ L 265, 14.10.2017.
- Council Directive (EU) 2021/514 of 22 March 2021 amending Directive 2011/16/EU on administrative cooperation in the field of taxation, OJ L 104, 25.3.2021.
- Council Directive 2003/49/EC of 3 June 2003 on a common system of taxation applicable to interest and royalty payments made between associated companies of different Member States, OJ L 157, 26.6.2003 [Interest-Royalties Directive].
- Council Directive 2006/112/EC of 28 November 2006 on the common system of value added tax, OJ L 347, 11.12.2006.
- Council Directive 2010/24/EU of 16 March 2010 concerning mutual assistance for the recovery of claims relating to taxes, duties and other measures OJ L 84, 31.3.2010.
- Council Directive 2011/16/EU of 15 February 2011 on administrative cooperation in the field of taxation and repealing Directive 77/799/EEC, OJ L 64, 11.3.2011.
- Council Directive 2011/96/EU of 30 November 2011 on the common system of taxation applicable in the case of parent companies and subsidiaries of different Member States, OJ L 345, 29.12.2011 [Parent-Subsidiary Directive].
- Englisch, Article 116 TFEU–*The Nuclear Option for Qualified Majority Tax Harmonisation?*, EC tax review 29.2 (2020).
- European Central Bank (2020), *A regulatory and financial stability perspective on global stablecoins*, available at https://www.ecb.europa.eu/pub/financial-stability/macprudential-bulletin/html/ecb.mpbu202005_1~3e9ac10eb1.en.html.
- European Central Bank, *A digital Euro*, available at https://www.ecb.europa.eu/paym/digital_euro/html/index.en.html.
- European Central Bank, *Eurosystem launches digital euro project*, available at <https://www.ecb.europa.eu/press/pr/date/2021/html/ecb.pr210714~d99198ea23.en.html>.
- European Commission Value Added Tax Commission (2016), *Issues arising from recent judgement of the Court of Justice of the European Union, 135(1)(e) and (d) SUBJECT: CJEU Case C-264/14 Hedqvist: Bitcoin*, No. 892.
- European Commission, *VAT Gap: EU countries lost €140 billion in VAT revenues in 2018, with a potential increase in 2020 due to coronavirus*, available at https://ec.europa.eu/commission/presscorner/detail/en/IP_20_1579.
- European Parliament News, *Digital transformation: importance, benefits and EU policy (2021)*, available at <https://www.europarl.europa.eu/news/en/headlines/society/20210414STO02010/digital-transformation-importance-benefits-and-eu-policy>.
- EY, *How quantum computing will improve tax administration and compliance*, available in https://www.ey.com/en_us/tax/how-quantum-computing-will-improve-tax-administration-and-compliance.
- EY, *How Tax Administration is Going Digital (2019)*, available at https://www.ey.com/en_gl/tax/how-tax-administration-is-going-digital.

- EY, *Tax Authorities are Going Digital* (2017), available at https://assets.ey.com/content/dam/ey-sites/ey-com/en_gl/topics/digital/ey-tax-authorities-are-going-digital.pdf.
- EY, *What happens when government, industry and investors seek common digital ground?* (2021), available at https://assets.ey.com/content/dam/ey-sites/ey-com/en_gl/topics/tax/tax-pdfs/ey-withholding-tax-distributed-ledger-report.pdf.
- Fisco Oggi, *L'Agenzia sempre più digital – 1 diventa un modello da seguire*, available at FiscoOggi.it - L'Agenzia sempre più digital - 1 diventa un modello da seguire.
- G7 Working Group on Stablecoins (2019), *Investigating the impact of global stablecoins*, October 2019, available at <https://www.bis.org/cpmi/publ/d187.pdf>.
- Lazarov, *Anti-Tax-Avoidance in Corporate Taxation under EU Law: The Internal Market Narrative*, IBFD Doctoral Series, section 3.2.2. (forthcoming).
- International Tax Review, *Cloud computing and international tax issues*, available at <https://www.internationaltaxreview.com/article/b1fyg9xg9h94pq/cloud-computing-and-international-tax-issues>.
- Investopedia, *Cryptocurrency*, available at <https://www.investopedia.com/terms/c/cryptocurrency.asp>.
- J. Owens and J. De Jong, 2017. *Taxation on the Blockchain: Opportunities and Challenges*. Tax Notes International. Volume 87, Number 6.
- M. F. Nouwen, *The Market Distortion Provisions of Articles 116-117 TFEU: An Alternative Route to Qualified Majority Voting in Tax Matters?*, (2021), 49, Intertax, Issue 1.
- M. Lang et al., *Trends and Players in Tax Policy*, ch. 1, General Report.
- M. Nouwen, *Inside the EU Code of Conduct Group: 20 Years of Tackling Harmful Tax Competition*, Doctoral Thesis submitted to the University of Amsterdam.
- OECD (2015), *Addressing the Tax Challenges of the Digital Economy, Action 1 - 2015 Final Report, OECD/G20 Base Erosion and Profit Shifting Project*, OECD Publishing, Paris. Available at <http://dx.doi.org/10.1787/9789264241046-en>.
- OECD (2016), *Technologies for Better Tax Administration*, OECD, Paris.
- OECD (2019), *The Role of Digital Platforms in the Collection of VAT/GST on online sales*, OECD, Paris. Available at www.oecd.org/tax/consumption/the-role-of-digital-platforms-in-the-collection-of-vat-gst-on-online-sales.pdf.
- OECD (2020), *Tax Administration 3.0: The Digital Transformation of Tax Administration*, OECD, Paris.
- OECD (2020), *Taxing Virtual Currencies: An Overview of Tax Treatments and Emerging Tax Policy Issues*, OECD, Paris.
- OECD (2021), *Tax Policy Reforms 2021: Special Edition on Tax Policy During the COVID-19 Pandemic*, OECD, Paris.
- OECD Statement on a *Two-Pillar Solution to Address the Tax Challenges Arising From the Digitalisation of the Economy*, available at <https://www.oecd.org/tax/beps/statement-on-a-two-pillar-solution-to-address-the-tax-challenges-arising-from-the-digitalisation-of-the-economy-july-2021.pdf>.
- Pistone, Nogueira, Turina, Lazarov, *Abuse through shell companies and structures in the EU internal market: Feedback to the EU consultation*, ITAXS (forthcoming).

- Proposal for a COUNCIL DIRECTIVE laying down rules relating to the corporate taxation of a significant digital presence, COM/2018/0147 final - 2018/072 (CNS).
- R. S. Rudnick & R. K. Gordon, *Taxation of Wealth in Tax Law Design and Drafting*, vol. 1, ch. 10, V. Thuronyi, ed., International Monetary Fund 1996.
- Report from the Commission to the Council and the European Parliament. *Accelerating the Capital Markets Union: addressing national barriers to capital flows*, COM(2017) 147 final.
- UNCITRAL conference on *Dispute Resolution in the Digital Economy*, accessible at <https://uncitral.un.org/en/disputeresolutiondigitaleconomy>.

This research paper explores the opportunities and challenges faced by the EU from the rapid emergence of new technologies such as Artificial Intelligence, Machine Learning, Data Analytics and Blockchain in the area of taxation .These technologies enable a transformation of the way that tax administration interact with taxpayers and can move tax compliance into real time. At the same time they raise practical and legal challenges for both the Member States and the European Union.

This document was provided by the Policy Department for Economic, Scientific and Quality of Life Policies at the request of the subcommittee on subcommittee on Tax Matters (FISC).

PE 695.458
IP/A/FISC/2021-01

Print ISBN 978-92-846-8602-5 | doi: 10.2861/07713 | QA-05-21-289-EN-C
PDF ISBN 978-92-846-8603-2 | doi: 10.2861/44431 | QA-05-21-289-EN-N