

DIGITAL REALITY, INDIRECT TAXATION AND INTERNATIONAL TRENDS: WHAT DOES – OR COULD – BLOCKCHAIN HAVE TO DO WITH IT?

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Abstract: Digitalization is reshaping global consumption patterns and exposing the limits of value-added tax (VAT) regimes designed for an analogue economy. While Brazilian tax-reform proposals focus on merging six cascading levies into a single VAT-style tax, this structural simplification alone will not align the system with the realities of cross-border electronic commerce. Drawing on OECD guidelines and the BEPS Action 1 report, this article reviews two decades of international debate on destination-based VAT, especially for business-to-consumer supplies of intangibles. It highlights the practical impasse surrounding customer identification, jurisdictional allocation and collection in high-volume, real-time digital marketplaces. The paper argues that recent suggestions to shift liability to dominant e-commerce platforms, although politically feasible, still rely on “verified self-identification” and fragmented registration procedures that are ill-suited to the velocity of automated transactions. As a forward-looking alternative, the study explores how distributed-ledger technology—particularly smart-contract-enabled split-payment mechanisms executed on blockchain networks and settled with central-bank digital currencies—could embed compliance by design, enhance traceability, and lower administrative costs for both taxpayers and revenue authorities. Implementation prerequisites (digital identities, standardized e-invoicing, regulatory sandboxes) and technological hurdles (scalability, interoperability, tokenization) are mapped, providing a research agenda for a VAT 4.0 architecture. The conclusion contends that harnessing blockchain’s immutability and programmability is essential for a resilient, fraud-resistant indirect-tax system capable of addressing the borderless nature of 21st-century commerce.

Keywords: Blockchain; Value-added tax; Digital economy; Indirect taxation; Compliance-by-design.

INTRODUCTION

Doubt is the genesis of knowledge¹. Ours arises from the recent debates held here in Brazil on the urgent tax reform of our consumption-tax system. One element that adds complexity to the Brazilian framework is the

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¹ Gama, Tácio Lacerda. *Competência Tributária: Fundamentos para uma Teoria da Nulidade*. 2nd rev. & exp. ed. São Paulo: Editora Noeses, 2001, xxv.

division—among all levels of government and according to conceptually delimited “taxable events”—of the taxation of the consumption chain. Unlike most countries, which have created a single tax on the bulk of consumer operations (namely, a Value Added Tax), we have structured six separate levies—IPI, PIS/COFINS, ICMS and ISS²—shared, as noted, by the three tiers of government.

Undoubtedly, simplifying our indirect-tax system by merging those taxes into a single levy, as proposed in the main tax-reform bills, is a sound measure in an increasingly globalised setting, because it would make our rules easier to harmonise with so many others. Yet—and here lies the point that stirs our concern—would that be enough to make our consumption-tax regime more consonant with present reality? We suspect not. We need to grasp that even VAT systems were built for analogue realities that no longer prevail.

Consumption patterns have undergone significant changes through the growing use of information and communication technologies. E-commerce’s share of global retail trade is estimated to have risen from 10.4 % in 2017 to 14.1 % in 2019³. In services, e-services⁴ rose from 45 % to 52 % of total exports between 2005 and 2019⁵. This expansion of electronic commerce has prompted discussion about how far tax systems must adapt—and how rapidly—to this “digital-economy” reality⁶.

The questions arise chiefly because commercial operations now take place in global, virtual “marketplaces” that, unlike conventional marketplaces, are unconstrained by geographical limits or business hours. Consequently, the location of the contracting parties matters little, just as physical contact for concluding deals and delivering goods or services matters little. As Marie Lamensch reminds us, these characteristics confer a measure of anonymity on users⁷.

² Tax on Industrialized Products (IPI), Social Integration Program Contribution (PIS), Contribution for the Financing of Social Security (Cofins), Tax on the Circulation of Goods and on Interstate and Intermunicipal Transportation and Communication Services (ICMS), and Tax on the Rendering of General Services (ISS).

³ Lipsman, Andrew. “Global E-commerce 2019: E-commerce Continues Strong Gains amid Global Economic Uncertainty.” *eMarketer*, September 17, 2019. <https://www.emarketer.com/content/global-e-commerce-2019>

⁴ The term is used here to refer to services delivered digitally.

⁵ UNCTAD. *COVID-19 and E-Commerce: A Global Review*. Geneva, 2021.

⁶ Among others, cf. Johnson, David R., and David G. Post. “Law and Borders—The Rise of Law in Cyberspace.” *Stanford Law Review* 48 (1996): 1367–1402. <https://ssrn.com/abstract=535>; Lessig, Lawrence. *Code: And Other Laws of Cyberspace*. Version 2.0. New York: Basic Books, 2006; Hellerstein, Walter. “Electronic Commerce and the Challenge for Tax Administration.” Paper presented at the WTO Seminar on Revenue Implications of E-Commerce for Development, Geneva, 2002.

⁷ Lamensch, Marie. *European Value Added Tax in the Digital Era: A Critical Analysis and Proposals for Reform*. IBFD Doctoral Series 36. Amsterdam: IBFD, 2015, 39-40.

In short, the potentially global nature of e-marketplaces vis-à-vis the relative anonymity of Internet users are the main reasons why electronic commerce, broadly understood, challenges the traditional tax structure. On the one hand, legal systems are normally grounded in territorial concepts, designed to apply to physically identifiable persons tied to a given (and geographically limited) national jurisdiction, which makes it extremely difficult for e-merchants to be globally compliant when they face a multiplicity of national regulations simultaneously. On the other hand, enforcement of national laws in cross-border digital operations is at least problematic: first, because states have limited capacity to apply their rules beyond their own frontiers; second, because it is hard to identify those who take part in online transactions.

This is obviously a global problem common to most nations. Moreover, any statutory change in a given country reverberates in many others, considering the growing trend toward transnationalisation of social (and consumer) relations. Hence we increasingly witness concerted efforts by many governments to establish minimum and/or more harmonious legal standards. In tax law, especially in the taxation of operations carried out in fully digital environments, the OECD (Organisation for Economic Co-operation and Development) plays a central role. The OECD has become a true forum for debate and for producing international documents that set down worldwide guidelines to be considered by countries when they (re)structure their consumption-tax systems, making them more attuned to the digital reality.

Therefore—and returning to the core of our concern—it seems necessary to engage critically with the debates and guidelines developed internationally on consumption taxation in the context of e-commerce. Such awareness also helps us better focus attention on building a tax system and a Fiscal Administration 4.0 more coherent with the status quo of increasing economic digitalisation. First, we shall consider why consulting internationally debated guidelines is not only advisable but ever more inescapable in a global web of socioeconomic relationships. Next, we shall examine the main suggestions offered by the OECD for countries to deal with the difficulties that digital commerce imposes on their indirect-tax systems; finally (in a concluding third stage), we shall take a position on the paths Brazil should follow to make its consumption-tax regime more consistent with the digital era. We note that our methodological scope—and therefore our analytical filter—lies in business-to-consumer operations involving intangibles, precisely because these are the transactions that have posed the greatest challenges to legal-tax systems.

I. GLOBALISATION AND LAW:
WHY THE DOMESTIC SPHERE MUST OVERFLOW

The phenomenon of globalisation, enabled above all by the revolution in transportation and by the development of information and communication technologies, has substantially altered the logic of social relations and has produced obvious repercussions in national legal systems. Human interaction is no longer confined to a given territorial boundary. The development and widespread adoption of communication tools, especially the Internet, have made it possible to “be” in the world, so that today’s social and economic relationships are, before anything else, potentially worldwide. The most pressing challenges on the agenda of most governments are therefore no longer local matters but global ones, common to nearly all countries and interconnected within a broad network of mutual implications—such is the social reality that now frames human coexistence.

This paradigmatic shift obviously demands an institutional readjustment of the State, making it more consistent with the new challenges posed by novel global relationships. Traditional ideas of sovereignty, power and jurisdiction, once tied to specific territory, no longer make sense in the present context, which inevitably affects the work of national public administrations. There is talk of a crisis, or even the end, of the sovereign State and thus of the very possibility—and effectiveness—of regulating human relations.

Yet human beings naturally seek security, and the alignment of social conduct with normative guidelines that ensure it—legal certainty, in this case—is an imperative for life in society. This means that, although we are indeed witnessing the crisis and weakening of State sovereignty as the origin and guarantor of legal norms, new standards are being, and will be, constructed, for legal certainty (predictability and clarity regarding the consequences of actions) remains a necessary condition for human coexistence. What is emerging is a new normative model better suited to the complexity and global scale of contemporary legal-social relations.

Gustavo Binenbojm aptly notes that globalisation, though it does not entail the total dismantling of the State, acts as a true driving force for institutional reform which, while weakening domestic sovereignty to some extent, encourages the redefinition of regulatory strategies so as to adapt to a new international reality, bringing fresh norm-producing actors and additional sources into administrative law. He argues that we are witnessing the growth of transnational administrative normativity, closely linked to the creation—by many countries—of numerous international organisations devoted to discussing globally relevant issues. These transnational bodies serve as genuine forums in which minimal points of convergence or

coordination among their members are debated, essentially using soft-law instruments capable of guiding public policy or recommending institutional changes to member countries, generally through structured issuances—by topic—of guidelines, lists of general principles or recommendations⁸.

We concur with the author just cited. We believe that, in this paradigmatic transition and consequent quest to adapt legal systems, it is indeed possible to detect a process of harmonisation—perhaps even a tendency toward normative homogenisation—based on exchanging experience, levelling and disseminating information among participants. Such exchange, carried out in deliberations with broad procedural participation by governments, market actors and academia, has been generating consensual documents with shareable regulatory guidelines that possess a considerable degree of persuasive effectiveness. This is a coherent strategy in a new setting of increasingly transnational relations. Looking exclusively inside one's own legal system no longer answers adequately to the complexity of human interaction in global networks. In so complex a reality, with potentially interconnected systems that influence one another, it makes sense to draw on foreign experience for purposes of interpreting and/or integrating one's own law.

As António Cortés reminds us, legal norms must be constructed by means of an integral methodology in which “texts are nothing more than starting points—or, if you will, the ‘raw material’—that the jurist has at hand to fashion sound legal solutions.”⁹ He goes on to stress that, in a complex and global environment such as ours, legal systems touch, influence and even nourish one another in a constant movement of reciprocity. Accordingly, norms structured in a purely domestic sphere cannot be applied to the detriment of norms that emerge from international instruments negotiated at the global level; hence the meaning assigned to texts produced by internal legislative activity must pass through the consultation and analysis of a variety of sources—including international and foreign materials, doctrinal writings, case law, and so on—which belong to this intricate ebb and flow of legal argument¹⁰.

Establishing normative guidelines in international discussion forums is therefore a coherent move toward building new national legal systems that are more harmonised and mutually influential, in true resonance with the

⁸ Binenbojm, Gustavo. *O poder de polícia, ordenação, regulação: transformações político-jurídicas, econômicas e institucionais do direito administrativo ordenador*. Belo Horizonte: Fórum, 2021, 335-338.

⁹ Cortês, António. “Para uma metodologia jurídica integral.” *Direito e Justiça*, Separata, v. esp. (2013): 51 ff. Faculdade de Direito, Universidade Católica Portuguesa, 51.

¹⁰ Cortês, António. “Para uma metodologia jurídica integral.” *Direito e Justiça*, Separata, v. esp. (2013): 51 ff. Faculdade de Direito, Universidade Católica Portuguesa, 51.

status quo. Consequently, critical and proper examination of domestic legal rules can no longer dispense with an outward glance—a “bit of conversation” (or even a more fruitful dialogue) with foreign sources as well. In tax matters this is especially true: the OECD has played a central role and is the forum par excellence for addressing the challenges that expanding cross-border trade in tangible and digital goods¹¹—enabled above all by the Internet—poses to systems of direct and indirect taxation.

In direct taxation the debates centre on the OECD Model Convention, the reference document for negotiating treaties that avoid double—or non—taxation of income. In indirect, consumption-based taxation, which is of greater interest here, the principal initiatives, reports and proposals that guide VAT-system¹² reforms have originated within the same organisation. Indeed, as a result of this work the OECD recently published an official international document, the “International VAT/GST Guidelines,” proposing legal rules better suited to cross-border¹³ trade and having potentially global persuasive reach.

Accordingly, it is to the principal orientations contained in that document—the International VAT/GST Guidelines—that we shall now turn. Our aim is to equip ourselves with international trends so that we can reflect critically on the course our own indirect-tax system should follow, making it more coherent with—and even at the forefront of—this era of transnational normativity.

II. INTERNATIONAL GUIDELINES, VAT AND B2C E-COMMERCE IN INTANGIBLES: KEY ISSUES

The purpose of the guidelines issued by the OECD is to provide the overall framework for the indirect taxation of the digital economy in cross-border transactions. More specifically, the guidelines seek to build international consensus on how VAT¹⁴ systems should be designed and

¹¹ The term digital is used here as a synonym for intangible.

¹² We refer to the European system and, consequently, to the systems of South Africa, South Korea, Japan, and New Zealand. Stanley-Smith, Joe. “E-commerce: The Global Shift in Taxation.” *International Tax Review*, October 2016, online edition.

¹³ It is worth noting that the OECD’s VAT Model Guide explicitly states that the guidelines apply broadly to cross-border trade in goods, services, and intangibles, and are not confined to electronic commerce. OECD. *International VAT/GST Guidelines*. Paris: OECD Publishing, 2017, 9.

¹⁴ The terms “value added tax” and “VAT” are used here to denote any national levy—regardless of its official name or acronym, such as Goods and Services Tax (GST)—that possesses the basic features of a value added tax: a broad-based tax on final consumption that is charged to businesses yet, in principle, not borne by them, and that is collected through a staged process irrespective of the method used to calculate the liability (for example, the invoice-credit or the subtraction method). OECD. *International VAT/GST Guidelines*. Paris:

implemented so as to reduce the risks of double taxation and/or non-taxation created by inconsistencies in applying VAT to cross-border trade in services and intangibles. It should be emphasised that the document brings together much of the debate that has been under way within the OECD since 1998, when the Ottawa Taxation Framework was approved.

Chapter 1 sets out theoretical considerations, recalling that VAT is a broad-based, multi-stage, non-cumulative tax on consumption, generally levied on a destination basis¹⁵. Its design aims to place the fiscal burden not on businesses—although they stand on the liability side of the tax obligation and act merely as collectors—but on the final consumer. In that first chapter the guidelines also incorporate, as a necessary premise for the indirect taxation of transactions in services and intangibles, the general fiscal-policy principles endorsed at the 1998 Ottawa Ministerial Conference on Electronic Commerce. At the time, the OECD Committee on Fiscal Affairs, which had been debating the issue since 1996, introduced into the Ottawa Taxation Framework the principles on which rules for taxing the digital economy should rest: (i) neutrality, (ii) efficiency, (iii) certainty and simplicity, (iv) effectiveness and fairness, and (v) flexibility.

Chapter 2 concentrates on neutrality, which is both structural and structuring for VAT regimes and underpins adoption of the destination principle. In short, it stresses that neutrality requires certainty, clarity and consistency in international tax rules for the digital economy and the avoidance of undue compliance burdens for business. It then states six general propositions (Guidelines 2.1 to 2.6) according to which VAT systems should be built. Guideline 2.1 observes that consumption tax should not, in principle, represent a net cost to businesses, though exceptions may be established in law. Guideline 2.2 forbids disparate treatment of businesses in similar situations or of comparable transactions. Guideline 2.3 insists that consumption tax should not influence business decisions. Finally, Guidelines 2.4, 2.5 and 2.6 provide that VAT rules must not discriminate against non-residents compared with resident businesses, though proportionate and appropriate distinctions may in some cases be applied¹⁶.

Chapter 3 contains numbered guidelines on the place of taxation and the rules for collecting tax on supplies of services and intangibles in both business-to-business (B2B) and business-to-consumer (B2C) transactions. Its aim is to present guidance for destination-based taxation as a means of ensuring fiscal neutrality. In essence, it adopts the short-term recommendations set out in the Ottawa Framework for implementing the

OECD Publishing, 2017, 3.

¹⁵ In other words, the tax is levied in the jurisdiction where the intangible good or service is deemed to be consumed.

¹⁶ OECD. *International VAT/GST Guidelines*. Paris: OECD Publishing, 2017, 19-36.

destination principle. With regard to B2B transactions, jurisdiction is determined by evidence that the purchaser is registered for VAT purposes, in which case the reverse-charge mechanism is advised. For B2C transactions, OECD reports indicate that the supplier must register and account for the tax in the destination State, yet they provide no definitive guidance on how to identify the jurisdiction of consumption—that is, how to verify the information supplied by the customer. It should be recalled that, according to the Ottawa reports, the solution adopted by the guidelines—verified self-identification—was intended as short-term. Long-term solutions for collecting tax on B2C transactions, which the guidelines did not address, were expected to emerge from technological evolution; at the time, considerable faith was placed in digital certificates.

Chapter 4 offers guidance aimed at promoting consistent application of the International VAT Guidelines, including recommendations on mutual assistance, exchange of information among jurisdictions and improvements in taxpayer services.

Our focus is on the methods for identifying and collecting tax in B2C transactions. This issue received the greatest attention in drafting the International VAT Guidelines precisely because it presents the most difficulties in implementing the destination principle. Under the classic VAT design, suppliers of intangibles are responsible for registering and remitting the amounts due in every jurisdiction where their consumers are resident, imposing discouraging compliance costs in view of the multitude of obligations involved. Worse still, the destination jurisdiction lacks enforcement powers to compel compliance by foreign suppliers.

A. General rules for determining the place of taxation in B2C supplies of intangibles and services—and the related collection methods: the state of the art under the International VAT Guidelines

We shall take as our premise the general guidance contained in the “International VAT Guidelines” and any developments consolidated in reports¹⁷ stemming from, or underlying, that document. In a B2C context the VAT Guidelines distinguish between (i) “on-the-spot supplies” and (ii) “supplies that are not on-the-spot supplies” (other supplies), laying down different general rules¹⁸ for each of those categories. On-the-spot supplies

¹⁷ We cite the relevant reports as the drafting of this article progresses.

¹⁸ We limit our discussion to the general rules, because they are the focus of the main debates; moreover, Guideline 3.7—the “specific rule”—offers only the broad instruction that, if applying the general rule does not yield an appropriate outcome, the competent jurisdictions should select an alternative connecting factor (proxy). OECD. *International VAT/GST Guidelines*. Paris: OECD Publishing, 2017, 78.

focus on cases in which personal presence in the performance and/or delivery is indispensable—services that are consumed where they are carried out (such as hairdressing, accommodation, restaurant and catering services, cinema admission, theatrical performances, fairs, museums, exhibitions, and so forth)—and that circumstance becomes the criterion for determining the competent jurisdiction. Assigning competence to the jurisdiction in which the service is performed is not only intuitive but perfectly fulfils the aim of taxing consumption where it occurs; moreover, it is relatively easy for tax administrations to implement and enforce, because the taxpayers are located within their territories and subject to their coercive powers.

For all other cases, grouped under the category of “other supplies” (which includes digital supplies), a residual rule applies: the jurisdiction in which the customer has his or her habitual residence is granted taxing rights over the transactions in services and intangibles. In this situation the place of consumption is defined on the assumption that private consumers tend to use what they buy in the country where they reside. Choosing residence as the destination criterion will not invariably ensure that taxation takes place at the actual place of consumption; nevertheless, as Arthur Cockfield, Walter Hellerstein and Marie Lamensch remind us, assigning taxing rights to the country of residence is economically meaningful. Sometimes it is more sensible to give taxing rights to the country where the consumer lives than to the country where consumption physically occurs. In the case of supplies of digital goods—which pose the greatest challenges to the system—suppliers would face innumerable practical difficulties in applying a “real-consumption test,” and the country in which the customer happens to be located at the moment of consumption may have no connection with the supply itself, as when a French customer downloads a film from an Italian supplier while sitting in an airport in Spain¹⁹.

Once the customer’s habitual residence has been adopted as the means of implementing the destination principle for online supplies, the question that arises is how to identify it. In such cases the interaction and communication between the parties to the transactions are often limited, so that there is a shortage of reliable information—given the very short time in which these automated, mass digital supplies are carried out—for properly discharging tax-settlement obligations. Indeed, this key issue has remained largely unresolved since the Ottawa Framework debates²⁰.

According to the International VAT Guidelines, governments are encouraged to be reasonable, pragmatic and flexible, allowing suppliers to rely, as far as possible, on information they routinely collect from their

¹⁹ Cockfield, Arthur, Walter Hellerstein, and Marie Lamensch. *Taxing Global Digital Commerce*. 2nd ed. e-book, 2020.

²⁰ Or Ottawa Structure.

customers in the normal course of business, provided that such information offers reasonably reliable evidence of the customers' habitual residence. The Guidelines note that the information available may vary with the type of business or product involved and with the supplier's relationship with the customer, and that "indicators" of habitual residence may include data gathered during order processing, whether supplied by the customers themselves (address, country, bank details, credit-card information, telephone number, etc.) or gathered elsewhere (IP-address tracking, trading history, language).

It should be pointed out that several of those indicators, mentioned in the official document, were once considered by the Technology TAG under the Ottawa Framework to be unreliable, overly difficult—or even sensitive—for suppliers to process. We shall return briefly to that point in the next section, but for now the next piece of guidance concerns the collection method to be employed. In the digital-supply context, tax collection can in practice be exceedingly complex and burdensome both for suppliers—who often have to meet obligations in multiple jurisdictions where they have no commercial presence—and for tax administrations, which must administer and/or police those obligations.

On this issue the International VAT Guidelines conclude that, in the present state of the art, the most effective and efficient approach to ensuring proper VAT collection on cross-border supplies between businesses and consumers is to require the non-resident supplier to register and account for VAT in the taxing jurisdiction. The Guidelines come with recommendations that States adopt measures to encourage and facilitate compliance by non-resident suppliers, including the creation of simplified registration and compliance mechanisms.

In short, the VAT Guidelines advance two general rules for applying the destination principle to B2C transactions in intangibles and services. The first is direct, intuitive and easy to apply: determining the place of taxation for B2C supplies that require personal delivery is simply where the supply is physically performed. The second uses a method that is straightforward and economically relevant but much harder to implement for the remaining ("other") B2C supplies: it designates the customer's habitual residence as the criterion. In both cases the recommended collection method is supplier registration, coupled with the development of simplified schemes for registration and remittance and with intensified international cooperation for exchanging information.

B. A necessary step back: findings of the expert groups in the post-Ottawa debates

As already noted, the International VAT Guidelines largely consolidate the work previously carried out under the Ottawa Framework. Subsidiary bodies²¹ of the OECD's Committee on Fiscal Affairs (CFA) were assigned to study and develop specific aspects of the report presented at the Ottawa Conference. Working Party 9, devoted to consumption taxes, therefore created a dedicated work programme to analyse the taxation of electronic trade in intangibles, and its sub-group on indirect taxation of e-commerce sought to produce guidance on the practical application of the place-of-consumption principle, the identification of taxpayer and consumer, and the analysis of tax-collection mechanisms, information access and administrative simplification.

The work drew on debates conducted by two Technical Advisory Groups (TAGs) composed of government, industry and academic representatives. The Consumption Tax TAG dealt with policy and administrative questions related to identifying the place of taxation and the status of the parties to transactions, as well as the mechanisms for collecting the tax; in practice it served principally as a forum for identifying the chief concerns and priorities of businesses²². The Technology TAG focused on technological issues—including feasibility, reliability, cost, effectiveness and commercial reasonableness—needed to address the options raised by the first group. Although both TAGs furnished extensive advice to Working Party 9, and although the Ottawa Report emphasised the importance of business participation in setting standards, they had no decision-making powers²³.

Two sets of implementation guidelines for the original Ottawa report were issued by Working Party 9²⁴ in 2001 and 2003. In 2003 the CFA also released a report on automating consumption-tax collection mechanisms²⁵,

²¹ More specifically, five Technical Advisory Groups—on Business Profits, Income Characterisation, Consumption Tax, Technology, and Professional Data Assessment—comprising representatives of both member- and non-member governments as well as private-sector stakeholders were set up to supply input for the final deliberations.

²² Lamensch, Marie. *European Value Added Tax in the Digital Era: A Critical Analysis and Proposals for Reform*. IBFD Doctoral Series 36. Amsterdam: IBFD, 2015, 63.

²³ Marie Lamensch, moreover, remarks that in practice the WP9 reports were sometimes found to deviate significantly from the suggestions put forward in the Technical Advisory Group reports—for example, by omitting any reference to digital certificates as a technological tool potentially capable of helping determine the location and status of purchasers of services or intangible goods. Lamensch, Marie. *European Value Added Tax in the Digital Era: A Critical Analysis and Proposals for Reform*. IBFD Doctoral Series 36. Amsterdam: IBFD, 2015.

²⁴ OECD. *Technology Technical Advisory Group Report*. Paris, 2001.

²⁵ OECD. *Automating Consumption Tax Collection Mechanisms*.

and the OECD Centre for Tax Policy and Administration subsequently published additional guidance, notably three papers in its E-Commerce Consumption-Tax Guidance Series²⁶.

In short, as regards the practical application of the destination principle, the reports concluded that, for B2C transactions—the focus of the present article—taxation should be linked to the place where the consumer has his or her usual residence, a criterion later adopted by the VAT Guidelines. Once that criterion was established, the central discussion became which criteria or information traders could use to identify the status of their customers (taxable persons or final consumers) and their location. In the online-supply context, the debates acknowledged that information enabling identification of the purchaser had to be available and processable by suppliers almost instantaneously.

The Consumption Tax TAG observed in its 2000 report that companies could not verify information provided by customers through external data sources, because such sources either did not exist or were not available in real time²⁷. Moreover, any delay in completing a transaction that imposed substantial costs outside the normal course of business would likely hamper the growth of e-commerce and conflict with Ottawa's principles of simplicity and efficiency²⁸. The Technology TAG likewise noted that cross-checking customer data was rarely carried out, since customers expect immediate delivery and are reluctant to provide excessive personal information; it was accepted that governments would have to handle the tension between the need to identify purchasers and the protection of personal data²⁹.

The 2001 Working Party 9 report, dealing with the delicate³⁰ question of locating private customers, concluded that self-identification is the most direct method but insufficient to satisfy tax administrations, so other elements were needed to verify the information given by consumers. Various data-matching options were examined, such as credit-card information and IP-address geolocation, and were rejected as inadequate or flawed. The Technology TAG had concluded that credit-card data are imprecise proof of jurisdiction or residence³¹ and that IP addresses are limited in reliability and

DAFFE/CFA(2003)43/ANN5. Paris, 2003.

²⁶ OECD. *Electronic Commerce—Commentary on the Place of Consumption for Business-to-Business Supplies (Business Presence)*. Paris, 2003; OECD. *Electronic Commerce—Simplified Registration Guidance*. Paris, 2003; OECD. *Facilitating Collection of Consumption Taxes on Business-to-Consumer Cross-Border E-Commerce*. Paris, 2003.

²⁷ OECD. *Consumption Tax Technical Advisory Group Report*. Paris, 2000, 37.

²⁸ OECD. *Consumption Tax Technical Advisory Group Report*. Paris, 2000, 4.

²⁹ OECD. *Technology Technical Advisory Group Report*. Paris, 2001.

³⁰ It is delicate, because that identification will determine which rules apply and where the VAT must be remitted.

³¹ OECD. *Technology Technical Advisory Group Report*. Paris, 2001, 28.

vulnerable to manipulation³²; Working Party 9 therefore explicitly ruled out credit-card data and IP tracking “even as interim ‘less-than-perfect’ criteria” in its 2001 report.

That report indeed found no immediate answer to the difficulties of identifying and locating private consumers and recommended a practical, pragmatic short-term approach while waiting for technologies that would permit more automated verification. Working Party 9 placed considerable hope in digital certificates as a medium-term option, stating that probably only long-term technological advances would adequately determine the location of a “virtual” consumer in the digital age, and it expressly left open the possibility of revisiting, in the medium and long term, the practical criteria for applying the destination principle to B2C transactions.

Two years later, the 2003 Working Party 9 report, issued in the light of the E-Commerce Consumption-Tax Guidance Series, concluded that both the status and the jurisdiction of customers should be based on the customer’s self-identification, supported by a series of other criteria, including payment information, software-based geolocation, the nature of the supply and digital certificates. These guidelines, at least in part, ran counter to the 2001 Working Party 9 report, which had rejected some of those indicators.

As for tax-collection mechanisms, the Technology TAG evaluated five models: self-assessment (reverse charge), which makes the customer declare and pay the VAT due; registration, whereby the supplier registers in the destination jurisdiction and fulfils the relevant obligations to charge and remit tax; withholding by the supplier with transfer to the destination jurisdiction, where the supplier collects the tax in its own jurisdiction but at the rate applicable in the customer’s jurisdiction, and the tax authority then transfers the tax to the customer’s jurisdiction; a trusted third party or clearing-house model, broadly similar to the preceding option but with a third party rather than the tax authority responsible for collecting the tax and transferring it to the destination jurisdiction; and a hybrid approach that combines elements of withholding-and-transfer and the clearing-house model.

³² The Technology TAG noted that although IP addresses have potential—because they are an essential component of every Internet access point—they suffer from limitations such as worldwide single access points for AOL users and corporate aggregators, the use of anonymizers, susceptibility to spoofing, and potentially prohibitive implementation costs. In addition, the business representatives on the TAG expressed marked reluctance toward such systems, citing a lack of commercial need, limited utility, and the prospect that new IP-address architectures could emerge, requiring different tracking systems, incurring implementation expense, and possibly disrupting services if results proved inconclusive. The Technology TAG also stressed growing consumer sensitivity regarding personal privacy and data protection, and pointed out that companies are generally unwilling to request more customer information than they need for commercial purposes. OECD. *Technology Technical Advisory Group Report*. Paris, 2001, 13.

Regarding the reverse-charge option, the Technology TAG concluded that it is viable for B2B transactions but less practicable for B2C transactions, chiefly because consumers have no incentive to comply—they cannot deduct input VAT—and because of the very large number of potential taxpayers to audit³³. The principal limitation of the supplier-registration option is the competent State’s lack of jurisdiction over a non-resident taxpayer. Further difficulties include identifying and locating the customer and the compliance cost of meeting diverse obligations in every taxing State³⁴. The TAG therefore suggested that countries simplify their processes for registration and compliance, which would facilitate voluntary compliance by suppliers.

The withholding-and-transfer model is technologically feasible, but politically problematic, because it depends on governments trusting one another sufficiently to conclude agreements allowing mutual tax collection³⁵. The trusted-party model raises issues of efficiency—namely administrative and compliance costs—and questions about how those costs would be shared among the parties involved in the transaction or in collecting the tax that yields revenue to each State³⁶. Finally, the hybrid approach, combining aspects of withholding-and-transfer and clearing-house models, presents the same difficulties but is appealing from a technological standpoint³⁷.

At the time, the Consumption Tax TAG concluded that the first model, in which the purchaser collects the tax, is best suited to B2B operations but unworkable for B2C transactions³⁸. For B2C, the feasible solution, given the state of the art, is supplier registration, accompanied by administrative simplification by tax administrations in respect of the obligations non-resident suppliers must meet. Those conclusions were taken up in Working Party 9’s reports.

In sum, the Ottawa Framework and the implementation guidelines provide a clear answer to where online supplies should be taxed—and at destination—and make short- and long-term recommendations on how that jurisdictional rule should be carried out. For B2C transactions, OECD reports assign registration and remittance duties to the supplier in the destination

³³ OECD. *Technology Technical Advisory Group Report*. Paris, 2001, 7.

³⁴ OECD. *Technology Technical Advisory Group Report*. Paris, 2001, 8.

³⁵ OECD. *Technology Technical Advisory Group Report*. Paris, 2001, 8. Interestingly, the European Mini One-Stop Shop (MOSS) regime—recently expanded into the One-Stop Shop (OSS)—is effectively a kind of “withholding-and-transfer” tax, because the supplier remits the VAT in its own jurisdiction (at source) but charges it at the rate applicable in the customer’s country (see chapter 3 for further discussion).

³⁶ OECD. *Technology Technical Advisory Group Report*. Paris, 2001, 9.

³⁷ OECD. *Technology Technical Advisory Group Report*. Paris, 2001, 9.

³⁸ However, the Consumption TAG stressed that this option should remain open should technological advances make self-assessment feasible for B2C transactions as well. For the time being, though, the customer-collection model is still completely off the table.

State but give no definitive guidance on how to identify the jurisdiction of consumption. A short-term solution—verified self-identification—is proposed, with a number of implementation options analysed in later guidance, yet without any entirely satisfactory, definitive outcome regarding how suppliers should proceed or which criteria they should use, sometimes even reaching contradictory conclusions, for example on whether credit-card data and geolocation are suitable indicators.

Throughout those reports, however, it is made clear that such unsatisfactory approaches should be replaced in the medium and long term when technology-based solutions become available—digital certificates or other means suitable for automating identification and/or collection. As the Technology TAG aptly noted, policy and practice are symbiotic and must be developed simultaneously; devising policy without understanding the requisite technology can lead to rules that cannot be put into practice.

C. A step forward: insights from BEPS Action 1’s Final Report and from the OECD report on the role of digital platforms in VAT collection

As we saw in the preceding sections, adopting the international VAT guidelines for cross-border supplies of services and intangibles is the outcome of a continuous effort extending for more than a decade (officially launched at the Ottawa Conference). In recent years, after the Guidelines had been drafted, similar discussions took shape inside another parallel project also led by the OECD. This is the BEPS project³⁹, whose Action 1 set out to address the “tax challenges of the digital economy,” with one part devoted specifically to VAT systems. (A brief aside: Action 1 is the only BEPS action that considers VAT questions; the others deal with issues of direct taxation.) The final report on Action 1 (dated 2015⁴⁰) refers extensively to the International VAT Guidelines but proposes no additional guidance.

At that point, however, it went beyond the debates conducted in the Guidelines by introducing possible options for charging and applying VAT to distance supplies of low-value tangible goods. This subject has not yet been covered by the International VAT Guidelines, but it is currently attracting considerable attention from states. At present most jurisdictions exempt low-value imports because they believe that the cost of collecting tax on those imports would exceed the revenue obtained. Yet with the rise of cross-border B2C operations, made possible by advances in information and communication technologies, that premise has been challenged. Concerns

³⁹ “Base erosion and profit shifting,” which in loose translation means the erosion of the tax base and the shifting of profits.

⁴⁰ OECD. *Addressing the Tax Challenges of the Digital Economy*. Action 1—2015 Final Report. OECD/G20 Base Erosion and Profit Shifting Project. Paris: OECD Publishing, 2015.

about competitive advantages enjoyed by non-resident businesses in such a scenario have also become part of the international debate.

For that reason the matter received attention in the BEPS Action 1 Final Report. More precisely, Annex C of the report analyses six options for implementing consumption taxation on cross-border trade in tangible goods. The challenge differs from that posed by intangibles because tangible goods actually cross physical frontiers—unlike services and intangibles—a peculiarity that enables the possible liability of third parties involved in moving those goods. The six possibilities raised in the document are: (i) collection by customs⁴¹; (ii) collection by the customer (consumer)⁴²; (iii) collection by the seller⁴³; (iv) collection by the carrier/intermediary⁴⁴; (v) collection by the digital-commerce platform⁴⁵; and (vi) collection by the financial intermediary⁴⁶.

Although distance trading in tangible goods—whose VAT guidelines are still being developed—is not our main focus, this brief reference to the Action 1 report is meant to highlight the fact that, for the first time, analysing a potential role for e-commerce platforms in tax collection within digital trade was pointed to as a possible path. This change of course is justified by the recognition of the overwhelming dominance of such intermediaries in worldwide electronic commerce: it is estimated that sixty-five per cent of cross-border digital trade is conducted through the four largest e-commerce platforms⁴⁷.

It is therefore no surprise that OECD Working Party 9 (WP9), dedicated

⁴¹ The report concluded, however, that collection by customs would not be a sustainable option, given the volume of parcels to be processed.

⁴² It finds that, although this option has the advantage of relieving suppliers—and the related compliance costs—of the obligation, its main weaknesses are the low level of voluntary compliance by individual consumers and the higher administrative cost of monitoring a large number of taxpayers. This conclusion mirrors that reached in the 2001 Technology TAG Report (see previous section).

⁴³ This is the option adopted by the VAT Guidelines for transactions in services and/or intangibles. The report concludes that the option increases the compliance burden on non-resident suppliers, but that this negative impact could be mitigated by developing simplified registration schemes. Nevertheless, the model carries significant non-compliance risks, and international cooperation would be required to safeguard revenue.

⁴⁴ Regarding intermediary collection, the report concluded that postal operators probably do not have adequate systems to collect the VAT due on the goods they deliver.

⁴⁵ As for e-commerce platforms, the report suggests that they may have access to most of the information necessary for VAT collection. However, assigning tax liability to them would require domestic legislative changes.

⁴⁶ The report also concludes that financial intermediaries do not have access to most of the relevant information, which could necessitate dramatic—and doubtfully efficient—changes to existing processes.

⁴⁷ These platforms would be Amazon, Alibaba/AliExpress, eBay, and Wish (International Post Corporation, *Cross-Border E-Commerce Shopper Survey*, 2020, 12–13).

to advancing the debate on indirect taxation of transactions in intangibles, released, in March 2019, a report on the role of digital platforms in collecting VAT on digital-commerce transactions⁴⁸. The focus is the part platforms can play in VAT collection. Two approaches are examined in that report: “full liability” and “joint and several liability”.

Under full liability (analysed in Chapter 2 of the report), the digital platform would become wholly and exclusively responsible for calculating, charging and remitting the VAT due on the online sales it facilitates. Under joint and several liability (analysed in Chapter 4), platforms would be subject to due-diligence duties and active supervision of the suppliers they host, and would have to block them in specific situations on pain of becoming jointly liable for any VAT ultimately unpaid. In every case the tax continues to be collected according to the B2C procedure of simplified registration of the taxpayer—in this instance the platforms—in the countries where the consumers reside, together with all the inherent difficulties and costs of identifying those destination jurisdictions.

More recently, in 2021, the OECD, in partnership with the World Bank Group, the Inter-American Development Bank and the Inter-American Center of Tax Administrations, issued the report “VAT Digital Toolkit for Latin America and the Caribbean,”⁴⁹ which lists points that tax administrations in Latin American and Caribbean countries need to consider when adapting their indirect-tax systems to digital trade in line with the International VAT Guidelines. In essence, the guidance laid down in the 2015 document is reiterated, but great emphasis is placed on making e-commerce platforms liable, echoing the points raised in the 2019 report on the role of platforms in VAT collection. Yet once more nothing new is proposed regarding other potential collection methods.

Hence the most recent suggestions are limited to pointing to the possibility of concentrating tax liability in agents—digital platforms—that exercise a certain degree of control over a large share of commercial transactions conducted in the digital environment. In other words, even though new paths are being sketched out for international normative guidelines that would address more suitably the challenges posed by economic digitalisation to VAT systems, in the final analysis only the liable actors have been switched; an outdated, largely manual tax-collection methodology is still being proposed to face an inherently technological digital reality.

⁴⁸ OECD. *An Introduction to Online Platforms and Their Role in the Digital Transformation*. Paris: OECD Publishing, 2019.

⁴⁹ OECD, World Bank Group, CIAT, and IDB. *VAT Digital Toolkit for Latin America and the Caribbean*. Paris, 2021.

CONCLUSION:
THE WAY FORWARD AND THE “CENTRALITY” OF TECHNOLOGY

The brief account given in the preceding section sought to bring to light the main directions taken by the international debates—led chiefly by the OECD—on how to (re)structure VAT systems in response to the challenges posed by electronic trade in intangibles. We focused on the standards devised for applying the destination principle to B2C transactions. In short, the short-term suggestions contained in OECD reports dating from 2001 remain⁵⁰, twenty years later, those regarded as most consistent with the current “state of the art.”

Accordingly, the VAT Guidelines designate the customer’s habitual residence as the criterion for determining the jurisdiction entitled to collect tax in B2C transactions. To identify the consumer’s status and thus the type of transaction (B2B or B2C), “verified self-identification” is proposed—that is, reliance on the customer’s own declarations combined with cross-checking against data from other sources (such as credit-card information, IP address, and so forth). Finally, registration of suppliers in the jurisdictions where their customers are located is recommended as the method of tax collection. In view of the high compliance cost of such a regime, tax administrations are advised to devise simplified registration and collection mechanisms.

More recently, great attention has been paid to e-commerce platforms, whose central role in today’s digital marketplace has been recognised. Thus, new architectures have been proposed in which responsibility for tax obligations (declaration and collection) is assigned to these actors. Yet even here, the international standard would still have customer identification (status) and the collection method handled through verified self-identification and registration in the competent State, with all the attendant difficulties.

This trajectory is largely incompatible with the reality of vast volumes of automated transactions. As the Technology TAG pointed out as early as 2001, many of the data sources suggested for verifying customers’ declarations either do not exist or are unavailable at the speed and scale at which transactions are carried out. Suppliers and/or e-commerce platforms are therefore often required to perform ad-hoc or even manual checks wholly out of step with the accelerated, high-volume environment in which we operate.

It therefore seems time to focus on the long-term solution mooted by Working Party 9 in its 2001 report: studying the feasibility of technological tools capable of meeting the challenges that economic digitalisation—and,

⁵⁰ We refer to the 2001 Working Party 9 (WP9) Report, which gave concrete shape to many of the points raised by the Technology TAG. See section “B” above.

more specifically, e-commerce in intangibles—poses to VAT systems⁵¹. In this sense, it is worth examining, among other things, a technological tool that would allow implementation of an automated VAT withholding and collection system. We refer to blockchain technology.

We highlight this technology for two interconnected reasons. First, in theory it would make it more feasible to implement the “split-payment” mechanism (automatic withholding and remittance of tax) that studies commissioned by the European Union⁵² raised some years ago but which stalled because the cost-benefit calculus was unfavourable at the time—blockchain was not then on the agenda, so the idea of realising it through smart contracts was not considered. Second, one of the bottlenecks for introducing split payments, even with smart-contract development, was the absence of official tokenised monetary values. This could be solved by introducing so-called CBDCs (Central Bank Digital Currencies), genuine official cryptocurrencies issued generally by countries. And that seems imminent: according to a 2020 report by the Bank for International Settlements (BIS), 80 % of the world’s central banks were studying issuing such digital money⁵³.

In this connection it is worth mentioning that, in November 2018, the European Parliament’s Special Committee on Financial Crime, Tax Evasion and Tax Avoidance published a draft report on measures to combat VAT fraud. Based on available VAT-collection figures, the report estimated the total amount of VAT lost across the Union in 2016 at €147.1 billion, much of it due to fraud (mainly cross-border), evasion and avoidance⁵⁴. Significantly, the Committee asked the European Commission to analyse a proposal to put cross-border transactional data on a blockchain and use a secure digital currency that could only be used for VAT payments.

Although there has not yet been a definitive, official EU response to that request⁵⁵, the reasoning that inspired the proposal deserves attention. The

⁵¹ And we are not alone in this perception. Marie Lamensch argues for the need to shift the focus of study on this topic in her doctoral thesis. See: Lamensch, Marie. *European Value Added Tax in the Digital Era: A Critical Analysis and Proposals for Reform*. IBFD Doctoral Series 36. Amsterdam: IBFD, 2015.

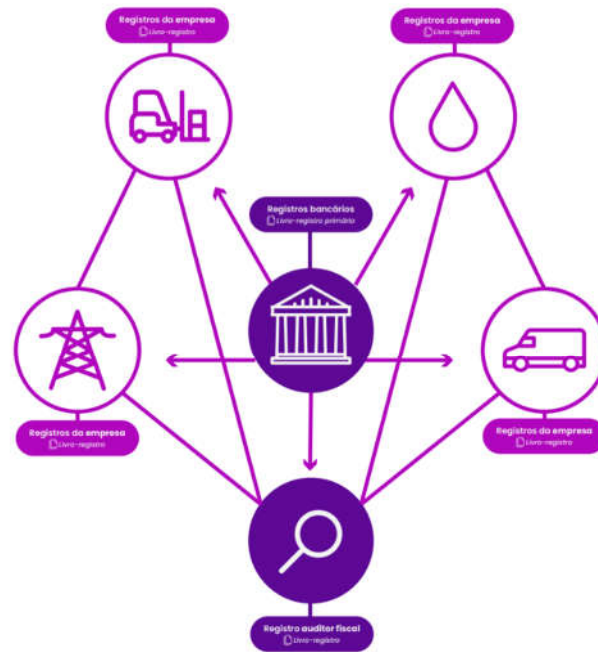
⁵² European Parliament. *Analysis of the Impact of the Split-Payment Mechanism as an Alternative VAT Collection Method: Final Report*. Brussels, 2017.

⁵³ Bank for International Settlements. *Rise of the Central Bank Digital Currencies: Drivers, Approaches and Technologies*. BIS Working Papers no. 880. Monetary and Economic Department, 2020.

⁵⁴ Other factors cited include bankruptcies, financial insolvencies, and calculation errors.

⁵⁵ It should also be noted that, in December 2019, the European Commission held a series of lectures and discussions on the use of blockchains for tax-collection purposes. The event is available at https://ec.europa.eu/taxation_customs/events/vat-digital-age_en, accessed 20 March 2020. Further reading on the subject: Uhdre, Dayana de Carvalho. “Blockchain e Compliance Tributário by Design: Tendências para uma Administração Fiscal

current collection structure for consumption tax is centralised. Tax is collected at each stage of the consumption chain (producer–distributor, distributor–retailer, retailer–consumer). Under the present arrangement, each economic agent keeps its own transaction records, and these separate records are communicated individually to the tax authorities. Visually, this is our current reality:



Fonte: PWC. VAT and Blockchain ITX Forum, April 2018

There are multiple separate records for related operations. Because collection of consumption tax is spread along the chain, every participant pays tax on its outgoing sales but must credit the amounts already paid in earlier stages. Thus, for example, the tax that the producer pays when selling to the distributor must be deducted from the amount the distributor owes when selling to the retailer. Accurate bookkeeping—especially of invoices, which document the transactions—is therefore crucial.

In this set-up, private, centralised ledgers facilitate fraud and manipulation; likewise, tax audits must be conducted for each set of records and each agent. To check the regularity of the entire chain, the authorities must audit every company involved—a manifestly inefficient, costly and fragile system.

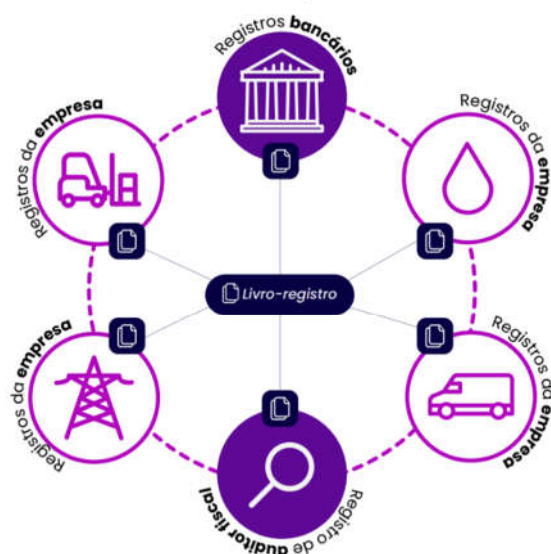
Hence the suggestion to use a blockchain to keep those same records in a decentralised yet shared manner, visible to all participants in the economic chain—and, above all, to the relevant tax authority or authorities. In a second

4.0.” *Revista de Direito e as Novas Tecnologias*, no. 10 (Jan.–Mar. 2021).

step, smart contracts could be used so that, at the moment each taxable transaction takes place, the amounts due would automatically be transferred to the public coffers via a specific cryptocurrency for that purpose⁵⁶ or a token representing the legal tender⁵⁷.

In short, blockchain—particularly via smart-contract applications—appears one of the most promising means of improving collection efficiency, reducing audit (administrative) and compliance (taxpayer) costs, increasing transparency and curbing fraud. In a word, it makes the long-envisaged dream of compliance by design technologically feasible.

These advantages are possible because the distributed ledger inherent in blockchains confers immutability: once data are validated and recorded on the network (simultaneously across all nodes), duplicating or altering those data becomes extremely difficult. Moreover, having multiple concurrent copies of transactions enables traceability of the records, of those who made them and of the participants in the transactions. Visually, here is the streamlined version of the same chain depicted earlier:



Fonte: PWC. VAT and Blockchain ITX Forum, April 2018.

Achieving this state of affairs nevertheless requires meeting certain pre-conditions for adopting blockchain in tax collection and overcoming technology-intrinsic obstacles. Pre-conditions include, among others, (i) the existence of digital identities, (ii) electronic invoices and standardised digital

⁵⁶ This is the proposal put forward by the European Parliament's Special Committee on Financial Crimes, Tax Evasion and Tax Avoidance to the European Commission.

⁵⁷ It relates to projects involving CBDCs (Central Bank Digital Currencies), which, in brief, are official digital currencies issued directly by the central banks of the countries concerned.

bookkeeping systems, (iii) a favourable regulatory environment, and (iv) tokenised legal-tender money or a token dedicated to tax remittance, so that smart contracts can operate. Obstacles intrinsic to blockchain that affect its adoption include (i) scalability, (ii) interoperability between existing ledger systems and blockchain registration, as well as between blockchain records and the transfer of funds from economic agents to public coffers, (iii) development and implementation costs, (iv) tokenisation costs and feasibility, and (v) establishing parameters for those tokens, among others.

Despite the numerous challenges, overcoming them and realising blockchain's latent promises would inaugurate a new paradigm in the taxpayer–tax-authority relationship. In the case of e-commerce in intangibles, tax collection by suppliers and/or platforms—currently based, according to OECD reports, on encouraging voluntary compliance through simplified registration in destination jurisdictions—would become mandatory and automatic through code execution (smart contracts). Compliance by design, once a distant dream, would become a tangible reality aligned with what is expected of a Fiscal Administration in Society 4.0. This is the path States must follow; just as technology poses challenges, it can also deliver solutions and greater efficiency to tax administrations.

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