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The challenges of consumption taxation in Brazil's digital economy

Desafios da tributação do consumo da economia digital no Brasil

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Abstract

This article supports that consumption taxation in Brazil, in addition to general challenges imposed on all countries by the digital economy, faces specific problems arising from historical particularities: limited tax credits, a hybrid model mixing the origin and destination principles, conflicts of jurisdiction, and a narrowing tax base for services. It is claimed that all these problems have been worsened by the digital economy, thus jeopardizing efficiency and efficacy of the taxation on new business models.

Keywords: Consumption Taxation; Digital Economy; Brazilian Tax System.

Resumo

O artigo defende que a tributação do consumo no Brasil, além dos desafios gerais impostos a todos os países pela economia digital, enfrenta problemas específicos decorrentes de suas peculiaridades históricas: creditamento limitado, híbrido do princípio da origem e do destino, conflitos de competências e estreitamento da base tributável de serviços. Sustenta-se que todos esses problemas foram agravados pela economia digital, prejudicando a eficiência e a eficácia na tributação dos novos modelos de negócios.

Palavras-chave: Tributação do Consumo; Economia Digital; Sistema Tributário Brasileiro.

1 Introduction

The growth of the digital economy is imposing significant challenges on the tax systems of countries on all bases: mainly income and consumption, but also ownership and payroll. For consumption taxation, specific characteristics of digital businesses worsen many of these problems, especially their international scale with no physical presence, the fact that they are based on intangible assets, and the mobility of users and business units.

The possibility that digital businesses can achieve an international scale without any physical presence makes it difficult for tax bodies to be aware of economic transactions, especially if they occur entirely in the digital world. The rise of intangible assets has brought problems to those countries that impose different tax burdens on goods and services and that sometimes classify incorporeal property as a new category of property or some type of service (OECD, 2018, p. 24, 51-53).

User mobility, in its turn, allows users to buy goods and services anywhere in the world, as well as use them anywhere, which makes it complicated to both identify them and determine the place of consumption. The mobility of business units, on the other hand, has enabled the scattering of companies around the world across global value chains, which has allowed multinational enterprises to reduce their tax burden with the eroding taxes on consumption (OECD, 2015, p. 65).

In order to solve the challenges brought by digital businesses to consumption taxation, the Organization for Economic Cooperation and Development (OECD) has prepared a number of tax policy recommendations, targeted to member and non-member countries, focused on a harmonized employment of the destination principle in their laws (Araujo, 2021, p. 84-116).

These characteristics evidently also impact the Brazilian tax system, as the country is part of the global economic structure. This paper supports that consumption taxation in Brazil, in addition to the general challenges imposed on all countries by the digital economy, faces specific problems arising from historical particularities: limited tax credits, a hybrid model mixing the origin and destination principles, conflicts of jurisdiction, and a narrowing tax base for services — all of which are worsened by digital economy. These problems significantly jeopardize efficiency and efficacy of the taxation on the new business models.

With the aim of aligning the Brazilian tax system with the rest of developed economies, as well as adopting OECD guidelines, Constitutional Amendment No. 132 was enacted on December 20, 2023, which replaces the five current taxes levied on the consumption by a "dual" value-added tax (VAT) and a Selective Tax to charge goods and services that have negative health and environmental externalities. This is a major undertaking, which took more than 30 years to complete, especially as it faced long-

established interests. The assessment of whether this tax reform resolves Brazil's general and specific challenges in taxing the digital economy will be made in a future paper.

The methodology employed in this study is essentially based on bibliographic research with a qualitative approach. The literature review considered publications by international bodies, legislative documents, academic papers, and court precedents associated with the topic in question. The research method used is a deductive method with the aid of historical research on the origins of the Brazilian tax system.

2 Construction and deconstruction of consumption taxation in brazil – a historical approach

The taxation on consumption and production in Brazil that was established under the 1988 Constitution and is kept to this date can be divided into five main taxes,[1] the jurisdictions over which are distributed among all three federal levels as follows: (i) Federal Union: Tax on Industrialized Products (IPI), Contribution to the Social Integration Program (PIS), and Contribution for Funding Social Security (COFINS); (ii) states and the Federal District: Tax on Operations Related to the Circulation of Goods and on the Provision of Interstate and Intermunicipal Transportation Services and of Communication Services (ICMS, i.e., the state VAT); and (iii) cities and the Federal District: Tax on Services of any nature (ISS).

There is a certain consensus among those who engage in studying this model, whether in Brazil or abroad, that it is urgent to adapt it to the challenges of a changing economy, particularly in the digital economy scenario.[2] In spite of the apparent clarity in the diagnosis, the practice proves that it is extremely difficult to implement concrete actions to solve the hindrances found, even when the international experience provides concrete models for solving them, since a considerable portion of these problems arises from changes introduced in the legal system over decades, which have ended up establishing themselves structurally (Varsano, 2000, p. 340). In this context,

1 We have only listed the main taxes levied on consumption and production in Brazil, aligning them to the ranking used in almost all texts reviewed. As to the Tax on Financial Transactions (IOF), although we acknowledge that it is assessed on the consumption of financial transactions (Macedo, 2018a, p. 176) and has potential conflicts with the ISS (Barreto, 2016), we have chosen to exclude it from the analysis in order to avoid expanding the scope of the study too much. We should further stress a minority stance that classifies PIS and COFINS as direct taxes (Macedo, 2018a, p. 176), but we will take the prevailing stance that they represent indirect taxes in two versions, a cumulative one and another one that is based on the added value calculated using the subtraction method (Varsano, 2014, p. 7-8).

2 An example of such opinion in Brazil can be found in the report from a Federal Senate working group set up to evaluate the functionality of the National Tax System (Brasil, 2017, p. 42). A similar foreign opinion can be found in the OECD biannual report *Going for Growth* that is focused on suggesting reforms for getting countries ready to face the challenges in connection with mega trends such as globalization and digitization (OECD, 2019, p. 100).

understanding the current challenges of the Brazilian tax law system requires us to revisit the foundations of this system and the historical-legislative path trodden so far.

Ever since the Proclamation of the Brazilian Republic, taxes on goods and services have been becoming important in the structure and tax burden of federal entities. In the early 1960s, in view of the growing government intervention in the economy and the insufficient tax collection to cover for that expenditure, awareness began to arise about the need to conduct structural reforms, including a tax reform that could assure an increase in tax revenues and the efficiency of tax collection authorities, encourage investments, simplify and rationalize taxes, put an end to the "cascading" assessment of consumption taxation, and divide the tax jurisdictions into all three levels of government (Rezende, 2012, p. 25; Varsano, 1996, p. 6-7).

The 1965 Tax Reform was regarded as bold and modern for the time, because it was one of the first ones in the world to establish noncumulative taxes: IPI and the Tax on Operations Related to the Circulation of Goods (ICM – the precursor of today's ICMS), but that pioneering activity led to the use of foreign models that would eventually be outdated.

Based on the 1948 French model of value-added taxation (and partly on the 1954 model), services in general were not included in the tax base for the ICM, but instead assigned to the municipal ISS tax, charged on a cumulative basis (except for services of communication and non-local transportation, assigned to a specific federal tax). Also, the concept of "physical credit" was used in the ICM and IPI taxes, allowing tax relief only for the inputs incorporated into the goods produced or otherwise consumed during the production process (Varsano, 2014, p. 10, 14).[3] Moreover, the ISS taxation was assigned only to the services shown on an exhaustive list, which led to the exemption of those not included in it.

As to the ICM division into interstate and export operations, it followed a recommendation made in the Neumark Report for the European Economic Community (EEC) for source taxation regarding trade between member states and destination-based taxation for other countries, which was referred to as restricted origin principle. In Brazil, that tax jurisdiction division was done in a particular manner and resulted in an arrangement that split the revenue from the tax on interstate transactions between the state of origin and the state of destination, favouring the poorer federal entities with a higher amount. As to foreign exports, instead of implementing the pure destination principle to exempt exported products in general, the exemption was granted only for industrialized products, while the rest would be taxed, in view of the resistance of state governments about letting go of the taxation on exported products, a tax jurisdiction that they had fully exercised before the 1965 Reform. As to the ISS tax, source taxation

3 Beginning with the French VAT in 1954, the criterion of "financial credit" was established, applied by virtually all countries in the world, whereby, as a rule, credit is granted for all taxed inputs (Varsano, 2014, p. 21).

was established as a rule, including exceptions that should be taxed at the destination (Varsano, 2000, p. 342; Varsano, 2014, p. 13-15).

Thus, Brazil's pioneering move caused the 1965 Tax Reform to introduce in its consumption taxation characteristics that moved away from those established in the valueadded taxes (VATs) implemented later. These characteristics are a separation of the consumption base between different taxes, the establishment of limited credits from tax paid at previous stages (ICMS and IPI with "physical credit" and cumulative ISS), ISS tax base narrowed to only the services shown on a descriptive list, the establishment of a hybrid model mixing the origin and destination principles, and tax levied on the exports of non-industrialized products.

In the years that followed, the need for reinforcing the funding sources caused cumulative social contributions to be reintroduced in the federal tax system: PIS, in 1970, and the Social Investment Fund (Finsocial), in 1982 (Oliveira, 2020, p. 79-81).

At the 1987-88 Constituent Assembly, there was an opportunity to align Brazil's consumption law system with international practices, since one of the proposals submitted to the constituents (IPEA-SEPLAN) made a correct diagnosis of the problem and proposed to replace the existing taxes with a broad base state VAT, which implemented financial credit and the destination principle. However, the prevailing political agreement was centred around transferring funds to the subnational entities and strengthening their independence to establish their main taxes, leaving aside major changes to the taxation structure resulting from the 1965 Reform (Varsano, 1987, p. 5–15; Varsano, 2000, p. 343). The main structural change was the fact that the bases for the old special taxes (fuels, electric power, minerals, communications, and non-local transports) were incorporated into the state ICM, thus creating the ICMS tax, which kept the limited tax credits and a hybrid model mixing the origin and destination principles and further expanded the taxation on exported products, including in its base some industrialized items regarded as "semi-finished".

In parallel to the tax law system, the Constituent Assembly included among the sources for funding social security a contribution on turnover, which covered the existing Finsocial, later transformed into the current COFINS. Along with the PIS tax, which was also preserved for funding the unemployment insurance program and salary bonuses (jointly with the Contribution to the Government Employee Fund – PASEP), cumulative levies were maintained in the legal system and would become more important in the subsequent years (Varsano, 1996, p. 15).

Another important characteristic of the tax law system that prevailed in the 1988 Constitution was an excessive number of provisions on the matter that were incorporated into the constitutional text. Such characteristic seems to be a result of the distrust several authors had that some agreements would not be implemented later, as well as to make it harder for those achievements to be reversed. That resulted in an

extremely rigid, inflexible text, which greatly makes any reform attempt hard, as well as virtually turns any tax matter into a constitutional matter, subject to discussions at the Brazilian Supreme Court (STF) (Araujo; Silva, 2018, p. 181-182).

In the post-1988 era[4], the only one of the above-described problems that has been solved is the taxation of exports using the ICMS tax, first due to Supplementary Law No. 87/1996 (Kandir Act), a change that was later incorporated into the Constitution in 2003. To stress the strength of the resistance in connection with historical factors, even though in a distant past, we should just remind that, to this date, the movement for a return of the taxation of primary and semi-finished product exports using the ICMS tax remains robust (e.g., Constitution Amendment Bills (PECs) numbered 8/2015, 36/2017, 35/2019, 90/2019, and 201/2019, at the Chamber of Deputies). The other problems have been aggravated.

Cumulative taxation has increased due to the growing importance of PIS and COFINS, which on top of keeping their cumulative versions have introduced noncumulative modalities based on "physical credit." The limited credit for inputs in the ICMS tax has been partially solved for capital goods (with use of the credit by instalments), but a full credit grant regarding consumable goods and supplies and the acquisition of electric power and communication services has been constantly postponed (the last postponement being for 2033).

An attempt has been made to minimize this issue by granting special tax regimes to important exporting industries, such as the chemical industry, the field of oil and natural gas, as well as agroindustry. Nevertheless, this has ended up only solving particular obstacles for a few companies, which constantly need to exert political pressure to attain a renewal of their benefits, and, on top of excluding several industries, it has greatly increased the level of complexity of the tax system (Rezende, 2012, p. 54-61).

The hybrid model mixing origin and destination principles has enabled various tax planning strategies, both lawful and unlawful, fostering a tax war among states (ICMS) and among cities (ISS) for attracting investments into their territories (Rezende, 2012, p. 49).

The separation of the consumption base into different taxes, one of them a cumulative one with low rates, levied on services in general (ISS), and another, non-cumulative one with higher rates, levied on goods and services of communication and non-local transportation (ICMS), has enabled an over-taxation of intermediate services and under-taxation of those rendered to the end consumer. The first one causes the intermediate services that comprise the cost of industrialized goods but do not generate any ICMS credit to be taxed, in practice, by both ISS and ICMS taxes. The second one

4 In this article, the analysis of the legislation is carried out without considering the publication of Constitutional Amendment nº 132, of December 20, 2023, which implemented the tax reform of consumption taxation in Brazil and still waits for regulation.

makes the system more regressive, as richer families generally dedicate a higher portion of their expenditure to services than poorer ones do.

Moreover, there have been many cases of conflicts of jurisdiction between states and cities as a result of doubts about the legal nature of these goods and services, with direct implications on which tax must be levied on them, as well as doubts about whether certain businesses are on the described list of the ISS tax, as discussed in detail in the following sections.

3 A weakening model in the face of the digital economy

The analyses shown in the previous section concerning the four primary problems of consumption taxation in Brazil that remain to this date: limited tax credits (ICMS, ISS, PIS, and COFINS), a hybrid model mixing origin and destination principles (ICMS and ISS), conflicts of jurisdiction (ICMS and ISS), and a narrowing tax base (ISS) – only considered the evolution of the economy in the last 30 years, without any special highlights to the digital economy. But, in fact, all these issues have worsened due to the challenges imposed by the new models of digital businesses, in particular those resulting from a possibility of international scale with no need for physical presence and the prevalence of intangible assets and services.

As to the limited tax credits, the capacity of a transnational presence of companies in the digital economy, often without any physical presence in the country of destination, causes any export tax on their goods and services to reduce the competitive edge of the exporting country. That is because its companies are compelled to cover higher costs that will not be borne either by the companies in other exporting countries or by those in the internal market of the importing nation that compete with them. The prevalence of intangible assets and services becomes relevant in Brazil to the cumulative nature of taxes that results from an over-taxation of the intermediate services used in the production chains, as mentioned above.

Additionally, a limitation of tax credits is against the principle of neutrality. It encourages companies to vertically integrate their functions and organize in a less efficient manner, which, besides making the Brazilian system move away from international recommendations for taxation of the digital economy, has special implications for digital businesses, which are characterized in that they spread their functions around the world looking for efficiency gains, even those that are key to the business, such as cloud computing and delivery services.

Some authors have been relativizing the importance of a non-cumulative basis for the business models of the digital economy, claiming that the production chain would be short and the value would be added in a cycle, with the largest portion added at the beginning of the process and quickly decreasing, which allegedly makes the effects of a

cascading levy irrelevant (Cavalcanti; Oliveira, 2020; Rezende, 2020, p. 12). Others have pondered that, in Brazil, it is better to live with cumulative taxes at low rates than with the imperfectly cumulative basis of our non-cumulative types (MACEDO, 2020).

Araujo (2021, p. 56-69), by analysing how several models of digital businesses change the production chain and generate revenues, concluded that a non-cumulative basis was still justified for digital businesses because they (i) generally are part of other production chains and (ii) have their functions spread across several countries in the world, and because (iii) some of them have very reduced profit margins.

Although the Brazilian literature lacks quantitative assessments on the efficiency of the national tax system, recent empirical researches have brought information about the harmful effects of a cumulative basis of tax on the Brazilian system. Only with regard to the situation of ISS, Gobetti (2020) has concluded that, out of the total sum of services subject to that tax in 2017, 68.03% corresponded to an intermediate consumption and investments, and only 29.13% to the end consumption by families, governments, and non-profit institutions. Considering the revenues from that tax, Macedo (2020) stresses that about 90% of the ISS amount collected comes from transactions across companies (with no reference to a specific year). In their turn, when attempting to measure the effects of a cumulative basis of all taxes on the economy, Domingues and Cardoso (2020, p. 6-10) have found that the impacts of eliminating the cumulative basis, jointly with a homogenization of the rates assessed on goods and services, would be positive and significant, increasing the GDP by around 4%, investments by approximately 16%, and exports by about 6%.

Thus, the theoretical and empirical evidence collected points out that the cumulative basis of tax is a problem of our legal system that is being made worse by the digital economy.

A combination of the origin and destination principles for ICMS and ISS makes room for tax planning as to reduce the taxes levied on digital goods and services. With the growing digital economy, these strategies can become more relevant since it is easy to set up a company that provides digital goods and services anywhere in the national territory, as it will not bear any cost with transportation of the products sold.

As to the conflicts of jurisdiction and a narrowing tax base for services, these problems have been aggravated by the digital economy and deserve a more detailed analysis. As already seen, intangible assets have classification problems for many countries that offer different tax burdens for goods and services. In Brazil, however, they have been imposing even more relevant tax consequences, to the extent that they lead to a discussion on which subnational entity has the tax jurisdiction to reach them (discussed in section 3.1) or even whether they are subject to some taxation by these entities (debated in section 3.2), as well as bring difficulties in defining the tax consequences of mixed contracts caused by digital businesses (evaluated in section 3.3).

3.1 Conflicts of jurisdiction (ICMS *V.* ISS)

In this section, the conflicts of jurisdiction will be analysed regarding the legal nature of the subject of digital businesses, resulting from a division into goods and services and into communication and transportation services, and other services, as well as their assignment to different federal entities.

The conflict of jurisdiction arising from a **division of the consumption tax base** into goods and services (ICMS-Goods *v.* ISS) is well illustrated in the long judicial discussion on software taxation at the STF.

It is possible to divide the debate at the Supreme Court on this matter into two larger fields of discussion. The first one analyses whether and to what extent software, as an incorporeal asset, can be classified as goods and, thus, ICMS taxable. The second one questions whether the licensing and assignment of the right to use software are services or not, and therefore whether the ISS tax is levied on them. Although these are sides of the same debate, they followed different caselaw paths that have just recently converged.

The STF's paradigmatic decision on the tax of subnational entities that must be levied on computer programs is from 1998, which concluded that off-the-shelf software, that is, serially produced and sold in retail in closed packages, should be taxed by the ICMS tax, and customized software, produced on demand or tailored to the customer, by the ISS tax (RE (Extraordinary Appeal) No. 176626/SP). The reason behind that decision was that incorporeal assets were not goods and, therefore, no ICMS tax should be levied on the right to use a computer program.

The evolution of technology, however, has been cruel to that division, because in a short time hard-copy off-the-shelf software programs have virtually ceased to exist, with programs beginning to be distributed directly on the Internet through an electronic data transfer (downloading). The states, in their turn, have not failed to use their ICMS to also tax serially produced programs distributed in that manner.

Already in 1998, a Mato Grosso State law ordered the assessment of ICMS on transactions with computer programs, even though through an electronic data transfer. Several devices of that law were the subject of a direct action for declaration of unconstitutionality in ADI (Action for Declaration of Unconstitutionality) No. 1945/MT. Following several interruptions, in 2010, more than ten years after the commencement of the lawsuit, it was declared, on a preliminary basis, that Mato Grosso state law was constitutional, and therefore the possibility of ICMS assessment on incorporeal assets was accepted. That ruling has been repeatedly used as an evolution of and supplement to RE 176626/SP, and it has been interpreted that, on serially produced software, acquired both physically and through an electronic data transfer, the ICMS tax is levied; on customized software, the ISS is levied.

Only in February 2021 a final judgment on the merits of the case was rendered, once again with a shift in the Court's guidance on the topic. ADI 1945/MT was tried jointly with ADI 5659/MG. The STF's full bench decided that ICMS cannot be assessed on the licensing or assignment of the right to use computer programs, because the ownership of the incorporeal asset is not transferred. Although the justice reporting on the matter was careful about the possibility that the matter would be pacified on that occasion, the other lawsuits at the STF were judged following the same direction (ADI 5958/DF and ADI 5576/SP), which revealed the intention of the other justices to put an end to that long discussion.

Another important judicial discussion on software taxation concerns the very concept of services, in particular whether the term itself, within the meaning used in the Federal Constitution, is limited to positive covenants, as traditionally understood in Civil Law, or is wider.

In RE 116121/SP, the STF changed its long-term understanding and began to consider that rentals of movable property were not services subject to taxation by ISS, because they did not constitute a positive covenant – that is, an obligation to do something – but rather an obligation to give something. The understanding was later solidified in Binding Precedent No. 31 of said Court. It abandoned the economic concept, then prevailing at the Court, that also included a transfer of immaterial goods and began to understand that the constitutional concept of service was the same as defined in the Brazilian Civil Code.

That ruling in practice left the rental of movable property free from both taxes: ICMS and ISS. It is evident that such understanding began to encourage those who conduct other economic activities, subject to ISS by then, to attempt to demonstrate that those did not entail positive covenants, as was the case with franchises, commercial leasing, health insurance plans, and licensing and assignment of the right to software use.

Even though there has been no formal review of the understanding on the taxation of rental of movable property, there is currently a trend for expanding the concept of service for tax purposes, away from a strictly civil notion. Although on other grounds, rulings have been rendered approving the assessment of the ISS tax on financial leasing transactions (RE 592905/SC), health insurance plans (RE 651703/PR), and corporate franchise agreements (RE 603136/RJ). On 6 December 2021, the STF judged RE 688223/PR and established the constitutionality of charging ISS on the licensing and assignment of the right to use software programs.

Thus, in the year 2021, the STF solved the two faces of the litigation over computer program taxation. The understanding chosen was that on these programs no ICMS tax is levied, because they are not goods (ADIs 1945/MT and 5659/MG); ISS is assessed on them, instead, because they are a service (RE 688223/PR).

It is important to stress that this long caselaw evolution has brought practical consequences for taxpayers, with lawmakers on a state level seeking to incorporate the STF's partial understandings into the ISS and ICMS laws, which has resulted in countless cases of an intention of double taxation, which ended up being taken to the courts.

Initially, Supplementary Law No. 116/2003, a federal law that defines which services can be taxed using ISS, provided that said tax would be levied on the preparation, licensing, and assignment of the right to use computer programs (item 1.05). Once a distinction was established between off-the-shelf and customized software in the above-described STF case law (RE 176626/SP and injunction in ADI 1945/MT), the states began to use ICMS to tax standardized programs, even though they could be adapted and distributed by any means.

As a reaction, and to make their jurisdiction over the digital economy clear, the cities managed to enact Supplementary Law No. 157/2016, which added to the ISS list three new subitems regarding software taxation, which covered cloud computing (item 1.03), program preparation (item 1.04), and streaming (item 1.09). Notwithstanding, the states insisted on their tax jurisdiction based on the STF's rulings on several legislative acts submitted for the Judiciary Branch's evaluation.

STF's recent rulings signal that the legislative dispute can also be pacified. Two of the legal arguments for the ruling in ADI 5659/MG point to a broader amplitude for choosing ISS to tax the bases of the digital economy. The first of them is one that reassures the role of a supplementary law to settle conflicts of jurisdiction, as provided in Article 146, I, of the Federal Constitution. That is, the decision of a lawmaker enacting the supplementary law to include a service in the descriptive list of Supplementary Law No. 116/2003 is an indication that the municipal tax must prevail in the dispute between the entities over the tax base of the digital economy, as long as the concept of service is not enlarged indiscriminately.

The second one states that ICMS can only be levied on property, whether corporeal or incorporeal, if there is a transfer of ownership, eliminating any intention of states to tax economic activities in cases where that does not occur. There will remain, however, many doubts about whether certain digital goods and services are on the ISS list or not, which is a matter that will be discussed in depth in the next section.

Another aspect to the fractioning of the consumption base that has been gaining ground lately in the tax debate over the digital economy is the **division of the service base** between states (non-local transports and communication, taxed by ICMS) and cities (other services, taxed by ISS).

In the case of **transportation services**, technology has provided a fast-paced growth of Uber-style sharing economy platforms. For that business model, the main revenue is the price of the ride, comprised of the intermediation fee owed to the platform and the compensation paid to the driver. In that case, in principle, there

would not be a conflict between ICMS-Transportation and ISS, because the former applies to intercity and interstate transports, and the latter only to those starting and finishing inside the same city.

The difficulty lies in the management of rides between neighbouring cities by the platform, since it is necessary to define, upon payment, which tax will be due. The issue, however, can find a solution in the very technology that supports this type of service, since the algorithm of the digital platform knows the places of departure and arrival before the service is complete.

In the scope of the ISS tax, the complexity lies in the fact that the intermediation fee payable to the platform is taxed at the location of the provider (origin principle), and the revenue of the application driver at the place of service provision (destination principle). Taxation at the origin makes room for tax planning and tax revenue concentration, and taxation at the destination gives rise to matters of efficiency and costs with compliance with the tax rules of 5,570 cities.

Currently, we have observed legislative changes seeking to enable the destination principle for ISS through nationwide electronic systems. That is so because the growing importance of the service base has increased the cities' interest in certain economic activities of great economic potential, which concentrated the tax revenue on a few cities where the companies' headquarters were located. That happened to services of health insurance plans and management of funds, consortia, and credit or debit cards, which began to be taxed at the destination under Supplementary Law No. 157/2016, with propositions under discussion at the Parliament that seek to do the same to application transportation services (e.g., Bill of Supplementary Law No. 521/2018 and its appendices, at the Chamber of Deputies).

These changes, however, also come loaded with controversies. The changes to Supplementary Law No. 157/2016 had their validity suspended at the STF (ADI 5835/DF), on the grounds that they expanded the conflicts of jurisdiction between federal units, were against the constitutional principle of legal security, and compromised regular economic activity. Supplementary Law No. 175/2020 has sought to correct these problems, but no final solution has yet been reached for this entanglement.

In **communication services**, the technological evolution has been allowing for activities similar to those performed by traditional telecommunication companies to be conducted using the Internet, which has been bringing perplexities into several fields of Law. It is the case with Voice Over IP (VoIP) calls (e.g., WhatsApp and Skype), which offer the same usefulness as the telephone calls offered by mobile phone companies, and video streaming (e.g., Netflix and Amazon Prime), which directly compete with free-to-air and cable television channels.

Since the cases of assessment of the ICMS-Communication tax were defined in Article 2, II, of the Kandir Act, the legal doctrine stresses that no communication

service is being rendered when someone uses it for providing a service (Schoueri; Galdino, 2018, p. 265). Brazil's General Telecommunications Act (Law No. 9472/1997) consolidated that difference by distinguishing the telecommunication service, which entails activities to ensure data transmission and reception (Article 60), from a valueadded service (VAS), which uses a telecommunication service as support and that cannot be confused with the former (Article 61).

Based on these concepts, the case law from the Superior Court of Justice (STJ), the highest-ranking court for judging matters without any constitutional repercussion, has been established in the direction that ICMS is not levied on the service provided by Internet connection providers, because this is a VAS (Precedent 334). The same occurs with Over-the-Top (OTT) services, those provided using the Internet, such as audio and video streaming, Internet protocol television (IPTV), voice and messaging services on the Internet, news websites, search engines, hosting applications, and others. Although some of them dispute the market with true communication services, they are VAS if provided on the Internet and, therefore, are not subject to the ICMS-Communication tax (Macedo, 2018b, p. 512-516). In both cases, the discussion then goes to checking whether they are included in the descriptive list of ISS, which will be done in the next section.

The evolution of technology, however, is constantly challenging the definitions that seem to be established. An example is the VoIP technology, which clearly falls under the definition of VAS, if offered in the traditional OTT modality, with two computers (or mobile devices with embedded software) exchanging messages and placing voice calls (e.g., WhatsApp and Skype). But it walks through a grey zone of legal classification if the voice call starts on one of these devices and is directed toward a common landline or mobile telephone, using an interconnection with the telephone carrier network. In these cases where service provisions are hybrid, some authors claim that they constitute a communication service (Santos, 2018, p. 707-708), while others assert that they are still a VAS, because they are dependent, but autonomous services controlled with separate cost centres (Faria, 2018, p. 598).

It is also important to distinguish two types of communication services used in digital business models: the Conditional Access Service (CAS) and the Multimedia Communication Service (MMCS), both being telecommunication services subject to the ICMS-Communication tax. The former corresponds to subscription television channels. The latter offers an ability to broadcast, issue, and receive multimedia information to subscribers in a certain area, even allowing for provision of Internet connection. Although it can provide an Internet connection service, the MMCS cannot be confused with a VAS, because it is a regulated business requiring a business permit (Macedo, 2018b, p. 511).

In this context, even though technology is bringing new outlines every day to the taxation conflicts between communication services and other services, the fact that

there is consolidated case law that the ICMS tax should not be levied on VAS (and that the ISS tax should, as long as the service is on the descriptive list, as we will see below) greatly reduces potential litigation between ICMS-Communication and ISS.

3.2 Narrowing tax base of services (ISS *V.* NO ISS LEVIED)

In the preceding sections, it was seen that the ISS tax is only levied on services not included in the scope of ICMS and that are on the descriptive list of Supplementary Law No. 116/2003. According to the STF's understanding in RE 784439/DF (General Repercussion theme 296), that list is exhaustive. That is, only the services on it are subject to the tax, though it accepts an extensive interpretation to cover services that, regardless of their name, are of the same essence as another one included in it (Barreto, 2016, p. 52). However, the limits of that extensive interpretation are shrouded in controversy and often give rise to oppositions made against the criteria employed in each case.

The Ottawa Taxation Framework Conditions considers that an effective and fair tax system is one that produces the right amount of tax at the proper time, while avoiding both double taxation and unintentional non-taxation (OECD, 2015, p. 20-21). It is viable that a certain economic activity is not taxed, provided that this release has been planned, as is the case, for example, when an exemption is granted.

By only applying the ISS tax to services expressly provided in a supplementary law, Brazil is putting in place a situation of intentional non-taxation under the Constitution: in case the service is not included in the descriptive list, it will not be taxed. The problem is that, with the evolving technology, services have arisen that create a doubt as to whether or not they are on the ISS list, causing frequent points of tension between the tax administration and the taxpayer. However, the fact that they are not included in the list of taxed activities is often a result of their innovative characteristics, rather than from any sort of planning by the lawmaker, especially because there is no reason why these economic activities are not taxed, while other similar ones are. There are, then, the cases of unintentional non-taxation.

The divergence surrounding the legal classification of the new services and business models is a source of new legal claims, which require: (i) legislative solutions, which call for coordinated efforts at the National Congress, so that the municipal tax bodies can add the new technology expressly to the ISS list, or (ii) a final court ruling rendered on the level of the higher courts.

The first solution is slow and hard to obtain. Because it entails an amendment to a federal supplementary law, it requires an absolute majority of both Deputies and Senators. The second one usually involves a sluggish and expensive process across the various levels of the Judiciary Branch. An example of that flow was the already mentioned inclusion of several services in the ISS list under Supplementary Law No. 157/2016 for the stated purpose of including new technologies that created

interpretation doubts regarding software taxation: cloud computing (item 1.03), program development (item 1.04), and streaming (item 1.09).

In the trials of ADIs 1945/MT and 5659/MG, the STF stressed the importance of Supplementary Law No. 116/2003 to settle conflicts of jurisdiction, as a result, there seems to be a trend for pacifying ISS payments on the services included in the descriptive list, as is the case with audio and video streaming. But a deeper analysis of a few business models, many of which the lawmaker enacting that supplementary law sought to add to the list, demonstrate that there is still room for challenges.

In this context, the STF's new stance will solve the claims of non-taxation on the use licensing of computer programs but will not take down the arguments that the descriptive list does not include items for commercial and technology transfer licenses, which are modalities provided in Articles 9 through 11 of Law No. 9609/1998 (Software Act), without any extensive interpretation being accepted in this case (GOMES, 2019, p. 24).

For cloud computing, although provided for in item 1.03, there are authors who claim that only the modalities of software as a service (SaaS) and infrastructure as a service (IaaS) are described in the supplementary law. The platform as a service (PaaS) type, however, because it is a secondary business that supports software development, is allegedly not covered under the item that only includes data processing, storage, and hosting (Lara *et al.*, 2018, p. 395-418).

For Internet connection providers, we have seen that the STJ ruled that the ICMS should not be levied. Nonetheless, the court also deemed that the ISS tax cannot be levied on that business, either, due to the lack of a legal provision (REsp (Special Appeal) 719635/RS). Since item 1.03 was introduced into the descriptive list, however, several cities began to regard it as sufficient to classify providers within the scope of ISS. That attitude has been the subject of new court disputes, as it is not an indisputable fact that the item is describing that business (Marques, 2018). That dispute remains unsolved.

Another case that arouses some controversy is the promotion of advertising on Internet pages, a crucial economic activity for digital business models, as it is one of their main sources of funding. Dias and Barbosa (2018, p. 145-146) have taught us that the previous ISS laws included advertising and advertising promotion as tax activities. However, when Supplementary Law No. 116/2003 was enacted, the item on advertising was vetoed because it was deemed far too generic and created a possibility that hard-copy media would be taxed, in disagreement with the immunity provided in the 1988 constitutional text.

Even without an existing specific item, municipal tax bodies kept on taxing that business under the list item for advertising and publicity. In their turn, states stood for applicability of the ICMS tax by claiming that any advertising insertion, including billboards, was a communication service (Dias; Barbosa, 2018, p. 149–151). Opposing

the tax bodies' arguments, several authors asserted that no communication service was being provided, because in advertising promotion there was no (i) service provision (positive covenant), but rather an obligation to grant a virtual space (obligation to give something), or (ii) communication, as there was no defined receiver. That allegedly should repel the ICMS-Communication tax on both arguments (Torres, 2018, p. 502-503) and ISS tax on the first argument (Barreto; Takano, 2019, p. 1.027).

To put an end to the dispute and assign the jurisdiction over advertising promotion to cities, Supplementary Law 157/2016 added the ISS list with item 17.25: 'Inserting texts, drawings, and other propaganda and advertising materials, in any medium (except in books, newspapers, journals, and the modalities of free-to-air radio and sound-and-image broadcasting).' The constitutionality of that item was challenged in ADI 6034/RJ, on the argument that an advertising insertion could not be detached from its promotion, a phenomenon that allegedly was in the field of application of the ICMS tax as it was a communication service. In March 2022, the suit was deemed groundless, with ISS taxation of the service being confirmed, grounded in the role of a supplementary law in settling conflicts of jurisdiction.

Finally, selling the digital file to be used for 3D printing is an economic activity that deserves further reflection on consumption taxation. It is evident that, in case that file is used for printing a product that is sold afterwards, the ICMS tax will be levied on that transaction, as well as the IPI tax in some situations. If the printed product is used for providing a service, it will be an embedded cost in the final price taxed with ISS. The doubt is around the transaction of sale of the digital file with a specification of the product to be printed.

Macedo (2018a, p. 187-192), although defending that the ISS tax should be levied on immaterial property, regards that, as this file will only be useful if printed, it must be taxed by the ICMS tax. He then uses a teleological interpretation on the taxation that this property would sustain if physically produced, similar to the one used by the STF to decide on operations of on-demand package manufacturing in ADI 4389/DF. On that occasion, the Court created a criterion regarding the end purpose of the graphic service: if it is part of a production process for goods, it must have the same tax treatment and be subject to ICMS; otherwise, it is a service subject to ISS. That ruling caused the definition of the descriptive list in the ISS law to be changed in Supplementary Law No. 157/2016, incorporating the end purpose criterion in the item that addresses graphic services (13.05).

On the other hand, Luz (2020, p. 485-491) divides 3D print files into two categories: (i) assigned under a use license and (ii) prepared on demand, depending on whether the model developer owns the intellectual property rights to the drawing or not. For the former case, he concludes that it is possible to use item 1.05 of the ISS list (licensing or assignment of the right to use computer programs), based on an extensive

interpretation. For the latter, he defends its inclusion in item 23 (programming and visual communication, industrial design, and similar services). Thus, to the author, taxation would follow the municipal tax in both cases. The end purpose criterion is ruled out on the argument that, unlike what happened for graphic services, the lawmakers enacting the supplementary law did not change the text of item 23 of the descriptive list, providing an ISS exemption to the industrial drawings to be used in the production process (Luz, 2020, p. 490).

The diverging stances of these two authors signal the discomfort about using ISS to tax an input used in the production process of property that, in their turn, will be taxed with another tax: ICMS, in the case of goods, or once again with ISS, if it is a service (e.g., a dentist purchasing braces model, printing it, and using it for a dental treatment). This is in essence a matter that predates the very rise of the digital economy.

As it seems, the understanding followed by the STF in ADIs 1945/MT and 5659/MG should account for an important landmark in the solution of this issue, accepting ICMS assessment only when there is a transfer of ownership of the file prepared on demand. As to ISS assessment, the use of an extensive interpretation for item 1.05 is questionable in the case of files assigned under a use license, as defended by Luz (2020, p. 487-488), since a digital file is materially different from a computer program (Macedo, 2018a, p. 191). For files prepared on demand without any transfer of ownership, on the other hand, we deemed it reasonable to tax them using the ISS tax under item 23 of the list.

The countless examples discussed above demonstrate that, although the recent case law of the STF can solve a few conflicting situations, the narrowing of the ISS service base has yet great potential for judicial litigation.

3.3 Taxation of mixed contracts

The preceding sections pointed out conflicts of jurisdiction regarding the legal nature of the objects of the digital economy, arising from a division of the consumption base between federal entities on different levels based on the dichotomies between goods and services as well as between communication services and general services, in addition to disputes on the possibility that some digital services can be taxed due to the narrowing of the ISS base in view of its exhaustive descriptive list.

On top of these situations, even in cases where it is possible to see which tax is levied on a transaction, this taxation model imposes high compliance costs on the several digital business models, which generally involve mixed contracts and complex operations that, in their turn, result in multiple tax classifications. We should take the Internet of Things (IoT) as an example.

Lara (2018, p. 117) stresses that the technology allowing for machine-to-machine communication, in fact, entails a number of operations, such as a communication

service, sale of goods, cloud computing, and others, which requires a case-by-case analysis in order to determine which taxes should apply. The author mentions the example of a farmer who buys a tractor with an in-built crop management application and separately contracts with a telecommunication carrier for Internet connection. In that case, the telecommunication service hired will be subject to ICMS. The price of the tractor, however, will involve the sale of the machinery jointly with an SaaS-based cloud computing service, with a right to use the program for a period, at the end of which, the subscription must be renewed. In that case, it is necessary to split the price of the tractor as to tax the goods part with ICMS and the software with ISS (Lara, 2018, 118-119) The lack of a clear provision in the contract separating both situations naturally makes room for disputes between the state and municipal tax bodies on the manner of allocation of the price paid between the goods and the service (Schoueri; Galdino, 2018, p. 257).[5]

Another good example of the complexities of a mixed contract is seen in the work of Ferreira and Nobrega (2020, p. 109-113). The authors analyse the business model of a company that manages its flower export logistic chain through containers controlled by temperature sensors integrated through an IoT solution to a blockchain network, and all participants in the network can check in real time the log of each stage of the operation. To specify the taxation of the transaction, they divide it into four different businesses: consulting, system development, IoT supply, and cloud computing.

In the consulting service relating to the construction of the blockchain network, they show that there are tax rate and regime differences for ISS and PIS/COFINS, depending on its classification as computing consulting or not. In the case of system development, they stress that there are three applicable items on the ISS list (1.01, 1.02, and 1.04) that can lead to notifications from municipal tax bodies due to a classification error, even if the tax rates are the same. For IoT, they bring aspects of the division in terms of communication services and added value as already discussed above. And, for cloud computing, they claim that, if the Brazilian branch pays its foreign headquarters, as copyrights, a license for the rights to distribute the software in Brazil, the transaction is not subject to ISS because that taxation is not provided on the descriptive list for a distribution license (Ferreira; Nobrega, 2020, p. 109-113).

These two examples demonstrate the potential difficulties with mixed contracts in the modern businesses of the digital economy and are sufficient to illustrate the levels of complexity that they bring into consumption taxation.

5 Confirming the huge potential for conflicts on the matter, in February 2022, the São Paulo State tax administration ruled that 'in a situation where the software is sold jointly with the equipment (hardware) as an integral part of the goods sold, the ICMS tax must be assessed on the total sum of the transaction.' (Response to Tax Consultation No. 24762/2021). Such understanding is against the position indicated in the legal doctrine mentioned and defended in this article and will possibly be taken to the courts.

4 Conclusion

The digital economy, on top of introducing in Brazil the challenges for consumption taxation that it imposes on the other countries in the world, makes the structural problems of the Brazilian tax system worse: limited tax credits, a hybrid model mixing the origin and destination principles, jurisdiction conflicts, and a narrowing tax base for services. Together, these elements expand and deepen the challenges that the Brazilian tax system faces in the context of a digitising economy.

The examples collected from the legal doctrine and case law show that, despite advances from recent rulings of the STF on the matter, many conflicts, gaps, and inconsistencies remain in the taxation of digital goods and transactions.

Although these structural problems were not created by the new digital business models, their ascension has ended up making them worse: it has exposed taxpayers to countless court disputes and put a significant portion of tax revenues in check.

With the enactment of a tax reform that aims to align the Brazilian tax system with the OECD guidelines on the matter, it is important to deepen studies to verify whether the changes made have brought local solutions for the problems identified that are consonant with the international experience, as well as adequate to the national particularities and the structural challenges that have, for decades now, been calling for an effective tax reform.

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