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Options for a Protocol on Services under the UN Framework Convention on International Tax Cooperation

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Abstract

The negotiations for a United Nations Framework Convention on International Tax Cooperation (UNFCITC) include an early protocol on 'taxation of income derived from the provision of cross-border services in an increasingly digitalized and globalized economy'. This paper analyses the importance of this issue, the history of the problem, and possible solutions.

Keywords: tax, cross-border services, UN convention

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The *Intergovernmental Group of Twenty-Four on International Monetary Affairs and Development (G-24*) coordinates the position of developing countries on monetary and development issues in the deliberations and decisions of the Bretton Woods Institutions (BWI). In particular, the G-24 focuses on issues on the agendas of the International Monetary and Financial Committee (IMFC) and the Development Committee (DC) as well as in other relevant international fora.

Contents

Table of Contents

Figures

Tables

1. Executive Summary

Services have played an increasingly important economic role from the 1970s due to digitalisation, which has also driven rapid growth in their cross-border delivery especially since the 1990s. Digitalisation has facilitated depersonalised and even automated remote delivery, while also enabling close engagement with customers. This has driven globalisation, in an intertwined process that has generated super-profits for multinational enterprises (MNEs) from access to worldwide markets and the consequent economies of scale and scope as well as network effects.

The enormous growth of cross-border services driven by digitalisation has enabled nonresidents to derive significant profits from sales in a country with little or no physical presence, revealing basic defects in the orthodoxy of the international tax system.

1.1 Rethinking international tax

Every country has the sovereign right to tax income from activities taking place within its borders. The concerns about 'double taxation' result from the additional and conflicting claim by some states to tax their residents on worldwide income. Capital-exporting countries, the home countries of MNEs, have pressed for tax treaties that are designed to restrict the host country's right to tax income derived by nonresidents from activities within its jurisdiction. A new approach to tax cooperation should focus on better coordination of territorial taxation.

The international tax system has become dominated by an orthodoxy formulated through the Organisation for Economic Cooperation and Development (OECD) since the dissolution of the United Nations (UN) Fiscal Commission in 1954. The OECD prioritised taxing rights based on residence, especially by restricting taxation of the business income of nonresidents at source unless it is attributable to a physical fixed base. In reality double taxation can be, and usually is, adequately prevented unilaterally; the proper function of tax treaties is to facilitate cooperation and coordination by tax authorities. This could now be ensured through the proposed UNFCITC, obviating the need for treaties restricting states' taxing rights. Coordination should be ensured through agreed guidelines and procedures to ensure that tax is paid where genuine economic activities take place.

1.2 Cross-Border Services

Generally, income from services is taxed where they are performed. Traditionally this was likely to be at least partly at the client's location, since services entail close contact so the services provider would need to visit the client. Digitalisation has enabled remote and even cross-border delivery, while paradoxically also facilitating close contact with customers, including systematic collection of data and contributions of content from clients. The restrictions on taxation at source have enabled extensive tax avoidance, as MNEs exploited the concept of residence to shift profits to affiliates resident in jurisdictions where the income is low-taxed. This has undermined international corporate taxation, with a disproportionate impact on tax revenues of poorer countries.

Developing countries have long tried to resist these restrictions on their taxing rights. The UN model convention of 1980 allowed tax on income from independent personal services exceeding an agreed threshold. It also provided that the delivery of services by personnel for more than six months should constitute taxable presence, and that the taxable income could be determined by apportioning the total

income of the enterprise. These provisions became dormant due to the domination of the OECD orthodoxy, but they remain in the UN model, and are included in a large number of treaties, especially those of developing countries.

Instead, developing countries sought to protect their tax base by taxing nonresidents on income derived at source, through withholding taxes (WTs) on payments for services. OECD members opposed these taxes, and became increasingly reluctant to accept treaties allowing them, at the same time that there was a rapid expansion of the cross-border delivery of services in which they had net surpluses. The UN Tax Committee (UNTC) formalised the option of WTs on gross income from services by including in its model convention article 12A on fees for technical services, and an additional article 12B extending to automated digital services, while both are now covered by article 12AA extending to all services.

With the emergence of highly digitalised MNEs many countries, including some OECD members, have resorted to digital services taxes (DSTs). These apply a flat rate to gross revenues, like WTs, but most have only a restricted scope, targeting mainly online advertising and platform-based intermediation services. DSTs are considered discriminatory by the US, which threatens retaliatory trade sanctions. Negotiations under the G20/OECD project on base erosion and profit shifting (BEPS) finally resulted in agreement on a new taxing right based on sales, Amount A, aiming to replace DSTs. It would be implemented through a proposed multilateral convention (MLC) that provides a methodology for allocating rights to tax the net global income of an MNE to all countries where it has sales above a defined threshold, with detailed rules for adjusting its global consolidated financial accounts, and sourcing rules for revenue from sales (including platform-based services, and exploitation of user data). However, it would apply only to a small share of the 'residual' profits of around 100 of the largest and most profitable firms. Also, the text has not been finalised, and its adoption would require ratification by the US, which would be very difficult.

1.3 Options for the Protocol

This experience shows that two options are available for the Protocol: (i) to allow WTs on gross revenues at source, and/or (ii) a right to tax a share of MNEs' net global income based on sales.

WTs are easy to administer and have therefore been favoured by developing countries. However, taxes on gross revenues are unrelated to profitability and hence regressive: a single rate would burden low-margin and smaller businesses more than highly profitable established giants, while varied rates targeting different businesses would be hard to administer.

As regards scope, our estimates indicate that the activities covered by DSTs account for only about 13% of all global cross-border services revenues. The broader category of automated digital services would include these as well as others, e.g financial and telecommunications services and software licensing, an additional 22% reaching 35% in total. Also digitally deliverable, but not usually automated, are professional, technical and managerial services, which account for some 25%. A further 30% of cross-border services provided by nonresidents are considered not digitally deliverable, while around 10% comprise charges for the use of intellectual property rights.

Hence, cross-border services cover a wide range, only a small part of which is covered by DSTs. OECD countries are unlikely to abandon their justifiable opposition to broad source taxes on gross revenues, so a general agreement on scope and a rate or rates seems unlikely. Yet leaving these to be agreed bilaterally would be no advance on the current situation with model treaty provisions that leave the rate to be

agreed. However, a WT combined with a net income method could be a viable approach to implementation.

Taxation of net income is particularly appropriate if the aim is to cover all or a wide range of services. Furthermore, it is not practicable or justifiable to distinguish services income from other sales revenue, particularly from intellectual property rights. The scope of Amount A was not limited to services, but extended to all active business income. Services are now closely imbricated in all economic activities and, while there are many MNEs primarily or wholly providing services, there are also many that integrate services into manufacturing, mining and agribusiness. Services such as research and development (R&D), logistics, marketing and advertising are essential for all businesses. When they are performed in-house within an MNE corporate group they make a disproportionate contribution to its overall profitability. There is therefore a strong case for a broad right to tax net income where sales take place, as for Amount A. This would also obviate the need to define economic presence in terms of activities, so a simple quantitative revenue threshold would suffice, also following Amount A, although the size of thresholds could be reconsidered.

Two methods are available for determining the net income. A simplified version would allow taxation at source of a specified share of income determined by applying each MNE's overall profit rate (either for all its business or the relevant segment) to the revenues from that country, included as an option in UN model article 12B. The other could build on the detailed standards formulated for Amount A of Pillar One, for determining the tax-adjusted consolidated global income, as well as for sourcing sales revenues, to allocate rights to tax based on sales in each country. This is more complex and would require cooperation and coordination between states adopting it, especially for its implementation. However, a coordinated system of administration would do much to boost corporate tax revenues overall, and provide much greater certainty and predictability for both MNEs and tax administrations than the present disjointed and conflictual system.

1.4 Implementation

Implementation should be by the adoption of a common approach by group of willing states, backed by common rules and procedures for coordination to prevent and resolve disputes. The alternative approaches could be combined into a single measure, as options in the Protocol. For example, the Simplified method could be a safe harbour for MNEs unwilling to provide the fuller data for the Comprehensive method. Also, a tax on gross revenue could be combined as an alternative to a net income method. The rate would need to be sufficiently high to provide an adequate incentive for high-margin businesses to accept the net income calculation, or the availability of the option could be linked to size and profitability thresholds.

2. Digitalisation, Globalisation and the Rise of Services

Services involve a wide range of activities, and are not a distinct or homogenous economic sector. Their rapid growth must be seen as reflecting a general transformation of economic activities, described as 'servicification' (Nayyar et al., 2021), which some identified early as a transition to a post-industrial, knowledge-based economy (Touraine, 1971; Bell, 1973). They have become increasingly important since

the 1970s, growing as a share of gross domestic product (GDP) to 66% by value-added worldwide in 2024, although with a wide disparity between 72% for high-income and 42% for low-income countries.[3]

They have also increasingly become deliverable across borders due to continuous improvements in communications powered by digitalisation, which has also fuelled the expansion of new services and changes in business models. This process dates back to the 1960s with the rise of information and communications technology (ICT) which transformed analogue into digitised systems, and greatly facilitated international communications, first by telephony and then through the internet. This led to the digitalisation of transactions and the emergence of both bespoke and mass-market business software, including word processing and other office programs, as well as payments systems, documents exchange and electronic mail. The first major business software program was the airline reservation system developed by IBM for American Airlines in the early 1960s, which was licensed to other airlines around the world (Campbell-Kelly, 2003).[4] The global market for business software, now generally delivered as a service and increasingly from the cloud, is currently estimated at over half a trillion dollars and forecast to double by 2030 (Grand View Research, 2025).

Digitalisation has therefore been a major driver shaping globalisation, and they remain intertwined. This dual process also powered the growth of cross-border services, which accelerated sharply from the 1990s as the internet was transformed into the world wide web. The ability for a person or entity resident in one jurisdiction to provide services to customers in other countries around the world with little or no physical contact has posed a fundamental challenge to international tax principles.

Services were traditionally personal and face to face transactions, often involving continuous relationships. Digitalisation has resulted in depersonalisation, as many services became deliverable at a distance, and even automatically if supply is also digitalised.[5] Paradoxically, however, digitalisation has also enabled a close and continuous contact with customers, as well as the collection of data on potential customers and their targeting for sales. All these features greatly enhance profitability, based on continuous and reliable revenues through licensing and subscriptions to potentially hundreds of millions of customers around the world, described as ‘scale without mass’ (OECD, 2018).

Services are defined by UNCTAD as ‘digitally deliverable’ if they ‘can be delivered over information and communication technologies (ICT) networks’ (UNCTAD, 2023, p. 2), including document delivery, audio and visual telecommunications and e-mail. This greatly facilitates cross-border delivery, defined as services supplied by a resident of one country to customers located in another. Data on the cross-border supply of digitally deliverable services are considered to ‘provide reasonable estimates for digitally delivered trade’,[6] since international delivery today inevitably involves some form of digitalised

[3] World Development Indicators, Table 4.2. https://wdi.worldbank.org/table/4.2.

[4] Taxation of payments for the use of such systems later became problematic under tax treaties, because the services are automated, hence may fall outside the definition of ‘technical services’, although in some cases it was held that they involved the provision of technical assistance, so could be taxed as royalties: see e.g. the ruling of the Argentinian Tax Appeal Tribunal in Austral Líneas Aéreas (2009).

[5] For example, customer services provided by a chatbot.

[6] See IMF/OECD/UNCTAD/WTO 2023, p.6, p.13 and Figure 1.2. We use the methodology and classifications in this Handbook, applied to the OECD International Trade in Services (ITIS) database https://data-explorer.oecd.org ; the Graphs also use World Development Indicators for GDP and country groups. Imports are payments to nonresidents; digitally deliverable indicates that they can be delivered with no local presence. For further details see Appendix on Methodology.

communication. The concept of trade in services covers all transactions between residents of different countries, including sales in a country to non-residents, but to analyse the international tax issues we focus on cross-border trade, defined as sales by non-residents.[7] However, we include categories of services for which there are specific provisions in existing tax treaty models, such as international transport, and payments for the use of intellectual property rights (IPRs).[8]

There remain significant categories of services that are not considered digitally deliverable because they require some local presence, such as construction, agriculture, natural resource extraction, maintenance and repair, processing and assembly of goods owned by others, international transportation, and artistic services. However, digitally deliverable services are often dependent on, and facilitate or provide inputs to, activities (including services) which are themselves locally provided. For example, retail sales to consumers can be made remotely by digital means, even when delivery of the goods or the service remains local. Similarly, for business activities that take place in a physical location, such as construction and natural resources extraction, important inputs of professional and technical services can be delivered with little or no local presence. Indeed, a significant element of the growth of digitally deliverable cross-border services entails a hollowing out of the value involved in the locally delivered element.

For example, tourism is regarded as an important category of services exports, particularly valuable to many developing countries. However, this consists of spending by non-residents within a country, which is not cross-border. A major component of this local spending will be for hotel accommodation. Yet, a large proportion of these local hotels will themselves be making cross-border payments to nonresident international hotel chains for management services and franchising fees, and also in recent years to online booking platforms. The growth since the 1990s of international hotel chains has been due almost entirely to providing management services and franchising, the revenue from which has proved more reliable and less risky than that from actually providing accommodation (ILO, 2015, Study 2, p. 56; Cunill, 2006; Šušić, 2009). Yet this income may not be taxable in the country from which it derives, while the payments are deductible from the taxable profits of the locally owned hotels.

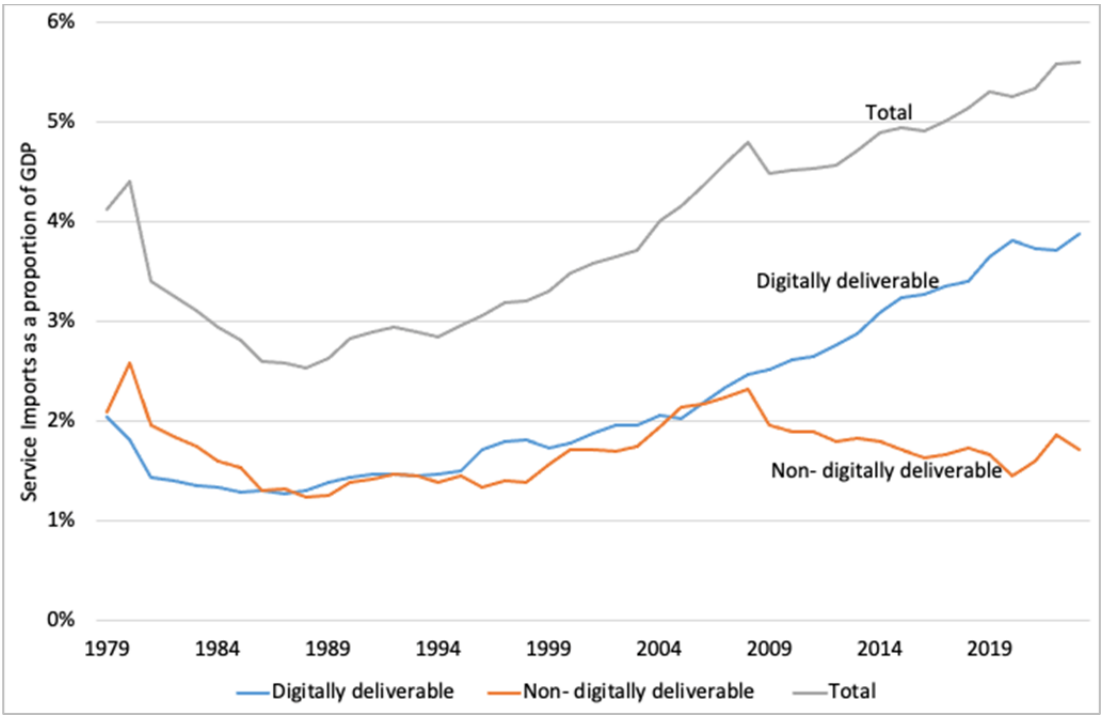
Digitalisation has also transformed many transactions that previously entailed a sale of physical goods, or services involving physical contact between the provider and the customer. This has further expanded services that are digitally deliverable, including advertising, gambling, financial, information and entertainment services, now extending also to many others, such as telemedicine, healthcare and 3D printing (which delivers manufacturing as a service). Artificial intelligence (AI) will further expand the

[7] For further details see Methodological Appendix, where we also discuss limitations of the data. The World Trade Organisation (WTO) has formulated four 'modes' for trade in services for the purposes of its General Agreement on Trade in Services: only mode 1 is supply by a resident of one country to a customer in another; mode 2 is consumption abroad (e.g. tourism); mode 3 is through a commercial presence of the services supplier (through a branch or local affiliate), and mode 4 is through the presence of natural persons (e.g. employees). We include only data under modes 1 and 4. We therefore exclude Travel (e.g. tourism), since these are services consumed in a country by a nonresident so the income is taxable by the country of consumption and unaffected by tax treaties. We include data reported under mode 4, although some may be taxable at source, even under a treaty if it includes article 5.3.b of the UN model; however, this would depend on the ability of the tax authority to verify local presence of personnel for the requisite days, which makes this provision difficult to apply in practice. One aim of the protocol should be to make this more effective.

[8] Income from the sale or licensing of IPRs may be taxable under the royalties provision in tax treaties, but this has been controversial, see further below.

scope of digitalisation to many services requiring professional knowledge and skill. Digital delivery of digitalised services can be automated in response to a customer request, so that the source of supply can be in the 'cloud'.

Figure 1. Cross- border Services Imports as a proportion of GDP



Source: Elaborated by authors, based on World Development Indicators and the OECD ITIS database. Excludes Mode 2 travel.

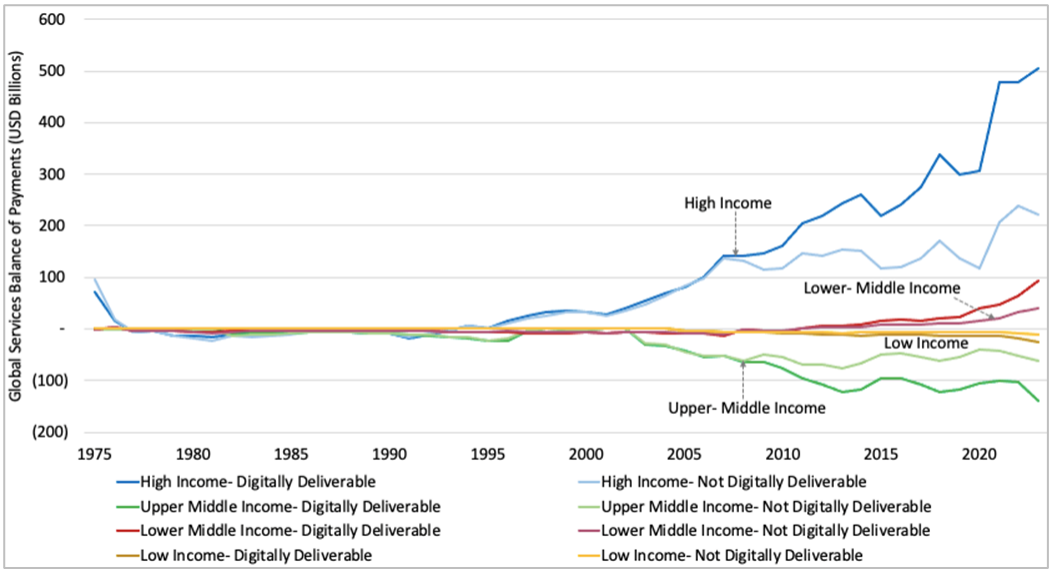
Figure 1 shows that the significant rise, especially since the 1990s, of payments to nonresidents for services imports (in relation to GDP) has been largely due to the growth of services that are digitally deliverable, while the provision by non-residents of services that require some local presence have flatlined overall.[9]

While services trade has become increasingly important for all countries, there has been a growing imbalance between developed and developing countries, and even upper-middle-income countries have experienced a net deficit (Figure 2).[10] The net surplus of high-income countries, led by the US, has been particularly marked for digitally deliverable services. This has resulted in tax revenue losses for net importing countries, due to the priority given to residence-based taxation, especially in the OECD tax treaty model (Amaro, Grondona & Picciotto, 2024).

[9] The broad sectoral data may also mask changes in the composition of sectors such as construction, which may include some digitally deliverable services such as engineering and design, although these should be reported as architectural, engineering and other technical services.

[10] The large and expanding net surplus of high-income countries is clear in the data; the other income groups are more affected by the inclusion of outliers, and these effects have changed over time, so a more fine-grained analysis, both for countries and specific services, would be needed for a more detailed evaluation.

Figure 2. Balance of Cross-Border Services Payments by Mode of Delivery and Income Group

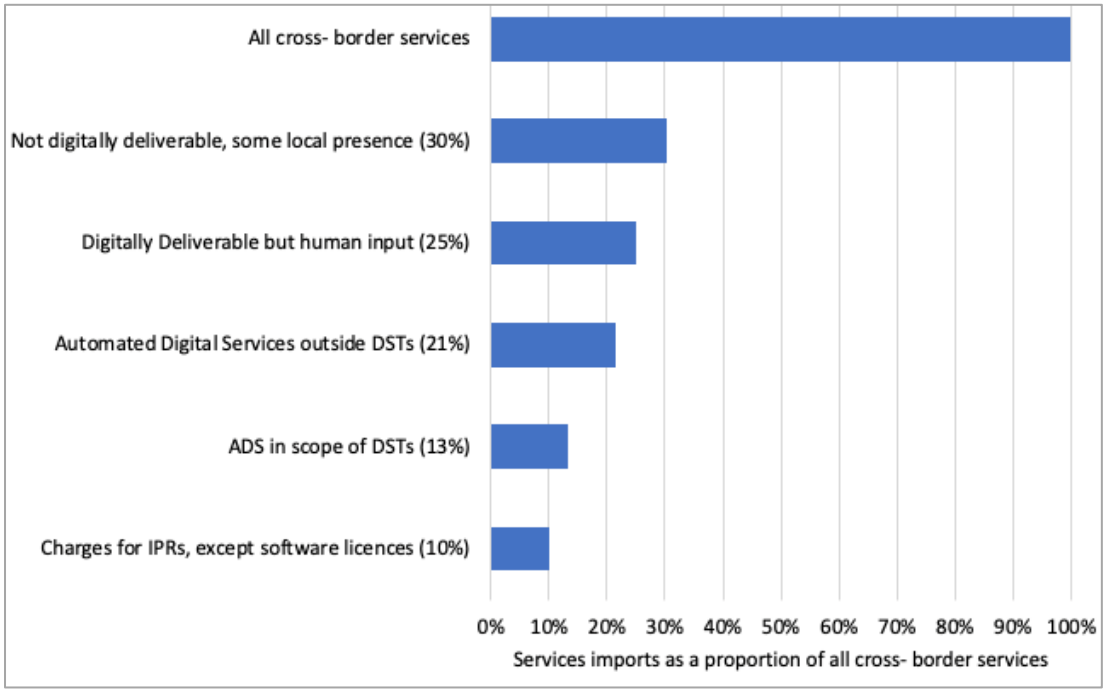


Source: created by authors, based on World Development Indicators and the OECD ITIS database. Excludes Mode 2 travel.

For this analysis, we have attempted to provide a breakdown into the main categories relevant for tax purposes. The increasing digital deliverability from the 1970s particularly transformed the wide category of business services, including engineering, technical, managerial, research and development (R&D), consulting and professional services. Payments for such services are generally deductible from the customer's business profits, so erode the source tax base. Developing countries attempted to stem these losses through withholding taxes on fees for technical services (FTS), but these were resisted by OECD countries. The process of digitalisation then made it increasingly possible to automate the supply as well as delivery of such services, which became termed automated digital services (ADS), such as financial and telecommunications services and software licensing. However, it is only a narrower share of these that have been targeted by the digital services taxes (DSTs) adopted by some countries in recent years: online advertising, platform-based intermediation, and audio-visual services such as streaming. The full range of automated digital services also extends to insurance, pension and financial services, telecommunications, licensing of software, and news agency services, that have not generally been within scope of DSTs. In addition, there are charges for the use of intellectual property rights that are considered services (and are digitally deliverable) but can be taxed as royalties. Fuller details of our methodology for constructing this categorisation and applying it to the available data are given in the Appendix.

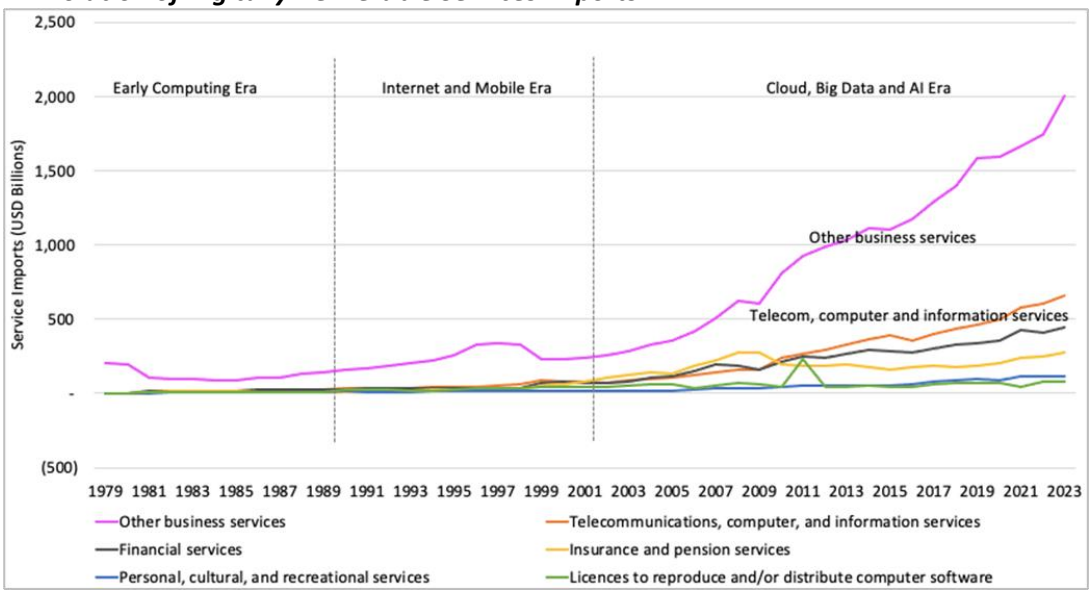
Our analysis indicates that the highly digitalised activities usually covered by DSTs account for only some 13% of all cross-border services revenues. The broader category of automated digital services extends to an additional 22% (35% in total). Also digitally deliverable, but not usually automated, are professional, technical and managerial services, which account for some 25%. Some 30% of cross-border services provided by nonresidents are considered not digitally deliverable, while around 10% comprise charges for the use of intellectual property rights (Figure 3).

Figure 3. Cross-border Services Imports by Mode of Delivery, 2023



Source: created by authors, based on OECD ITIS and BaTIS datasets, and analysis of the scope of DSTs.

Figure 4. Evolution of Digitally Deliverable Services Imports

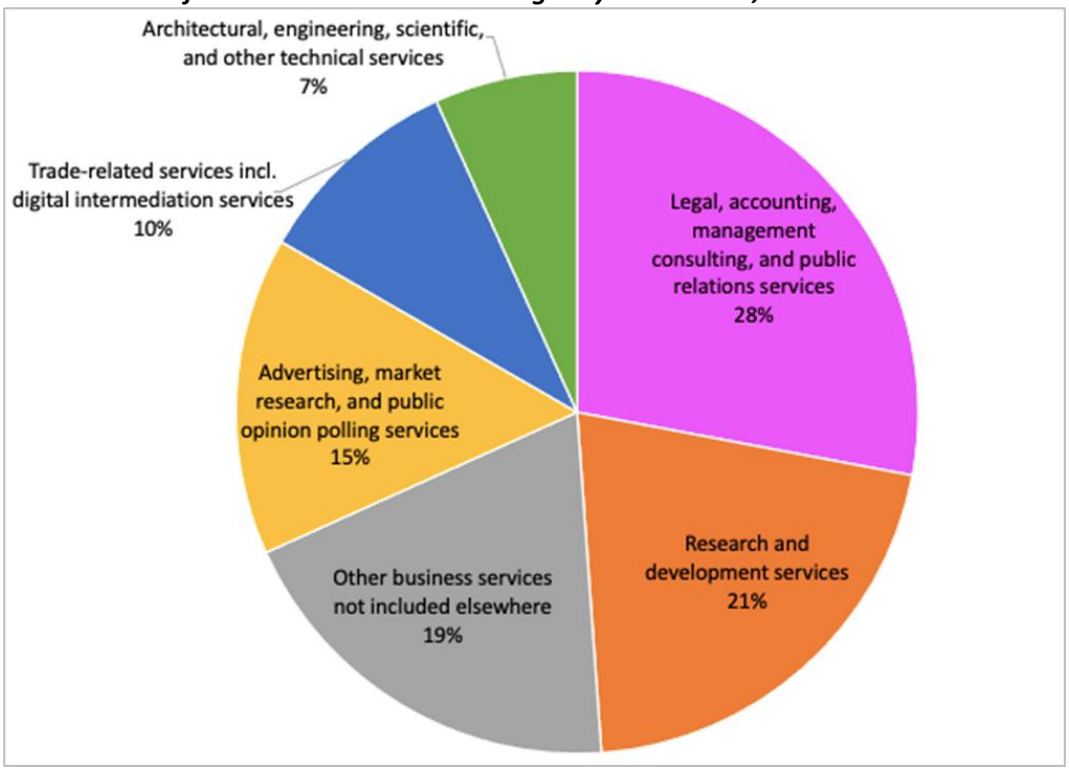


Source: Elaborated by authors, based on World Development Indicators and the OECD ITIS database.

In sum, the data show that digitalisation has been a major driver of the enormously increased importance of services, and the rapid growth of their cross-border provision. This dates back well before the rise of the digital economy was seen as a major challenge for international tax rules by the OECD.

This can be seen in Figure 4, which shows the evolution of digitally deliverable services across three distinct periods: the initial development of ICT (1960s to 1980s), the internet and mobile era (1990s) and the more exponential growth with the emergence of big data, the cloud and now AI (2000s to present). This also clearly shows that growth has been most pronounced for the segments of 'other business services' covering technical, managerial, research and development (R&D), consulting and professional services, although these business-to-business (B2B) services are not generally considered highly digitalised, like platform-based services mainly aimed at consumers. A breakdown of this important segment is given in Figure 5.

Figure 5. Breakdown of 'Other Business Services' Digitally Deliverable, 2023



Source: Elaborated by authors, based on World Development Indicators and the OECD ITIS database.

This long and continued expansion of cross-border services increasingly posed a challenge to the orthodoxy on international tax, but one which was hard to comprehend from the perspective of the OECD. Some consideration was given in 1998-2003 to the implications for international tax rules of the emergence of e-commerce, by both the OECD and the UNTC. Although the OECD at that time considered possible reforms, some far-reaching, it concluded that no changes were needed. In fact, the recommendations adopted rejected the possibility of extending the tax nexus to include digital presence (see OECD, 2015, pp. 153-162). Discussions in the UNTC made little headway, due to divergent perspectives among its members. A decade later, after a period of rapid transformation in the global economy and growth in cross-border services driven by digitalisation, both organisations returned to the issue with a new urgency. This will be discussed in the next section, beginning with an account of how the

dysfunctionality of the international tax orthodoxy became increasingly evident with the rise of cross-border services.

3.Cross Border Services and the Disruption of the OECD Orthodoxy

The growth of cross-border services, driven by digitalisation and globalisation, has disrupted the orthodoxy on international tax dominated by the OECD. Countries generally tax income from services based on the place of performance (Miller, 2012, p. 248; Miller, 2015). This became increasingly difficult to determine as the growth of cross-border services separated the services provider from the customer. Both the country from which the services are provided and that where the services are delivered have legitimate claims to tax the income.

All states assert their power and right to tax income from activities where they take place (at source).[11] The concerns about 'double taxation' result from the additional and conflicting claim by some states to tax their residents on worldwide income. It is these countries that have pressed for relief from such double taxation, through tax treaties that restrict the host country's right to tax income derived by nonresidents from activities within its jurisdiction.

In reality double taxation is largely prevented unilaterally through unilateral measures, since countries generally balance consideration of tax revenue with encouraging investment. Many capital-exporting countries tax on a territorial basis (exemption of foreign income), and those claiming to tax their residents on foreign income generally allow a unilateral credit for equivalent foreign taxes on that income. Furthermore, international business has mainly taken the form of foreign direct investment (FDI) by MNEs, which have the freedom to create subsidiaries wherever they wish, either to do business locally or to manage assets through 'holding companies' that can route finance and other inputs to their operating affiliates. Although some countries which assert a right to tax the worldwide income of their residents extend this to include the income of their 'controlled foreign corporations' (CFCs), this has generally been limited to their 'passive' rather than active business income.[12]

Nevertheless, states that are mainly capital importing have been persuaded to accept treaties limiting their sovereign tax rights by questionable claims that this would encourage inward investment. The rationale for this is weak in relation to business income, since granting tax exemptions to non-residents *discourages* them from inward investment that could create a taxable presence, and gives foreign suppliers unfair advantages over local businesses and investment to create jobs. This has become very evident in an era of globalisation and easy cross-border access to markets, particularly for the supply of services.

The main useful function of tax treaties is to provide a framework for cooperation and coordination between tax authorities (Dagan, 2000; Dagan, 2017). This could now be ensured through the proposed UN Framework Convention, obviating the need for treaties restricting states' taxing rights. Coordination should be ensured through agreed standards, guidelines and procedures to ensure that tax is paid where

[11] For example, the US taxes non-residents on income 'effectively connected' with the conduct of a trade or business in the US; India's income tax applies to all income 'deemed to accrue or arise in India … directly or indirectly, through or from any business connection in India'.

[12] Taxation of CFC income was initially contested, but accepted by the OECD as compatible with treaties on the basis that it is targeted at the 'participation' income of intermediary holding companies: see Commentary to the OECD model convention, article 1 para. 81; article 7 para. 14.

genuine economic activities take place, which is also an objective of the Framework Convention. This would return the international tax system to basic principles that have been understood from the start, but have become distorted by the imbalanced perspective of capital-exporting countries which came to dominate the orthodoxy.

3.1 The Restriction of Source Taxation

The international tax system originated a century ago, when international business was financed mainly through portfolio investment (loans and bonds). For financial investors' passive income (dividends, interest, rents), the conflicting claims to tax at residence and source were dealt with by agreements restricting the source country's 'withholding tax' (WT) to a rate agreed bilaterally (which could be zero). It was accepted by all that active business income should be taxed where the activities generating it take place. Productive activities at that time were essentially physical, so location was defined through the concept of a fixed base, or 'permanent establishment' (PE). Hence, tax treaties allowed source taxation of the active business income of nonresident enterprises, but only if it was attributable to a PE.

For enterprises with PEs in more than one country, the foundational report by four prominent economists for the League of Nations in 1923 recommended that rights to tax the business profits should be allocated between states based on criteria such as the value of sales, physical assets, salaries and establishment expenses, and 'credits' arising in each country.[13] This principle of 'fractional apportionment' was accepted by the League of Nations, became article 7.4 in the model conventions, and remains in the UN model, although the OECD deleted it in 2010.[14] Hence, treaties based on either the pre-2010 OECD or the current UN model allow the allocation of MNE income for tax purposes by apportionment.[15]

Since the collapse of the UN Fiscal Commission in 1954 (Teo, 2023), setting standards in international tax has been dominated by the OECD, aiming to encourage foreign direct investment by MNEs. Since its first model treaty in 1963, the OECD has prioritised taxing rights based on residence, and advocated for tax treaties restricting tax at source to prevent double taxation.

The OECD model gave the rights to tax international services to the country of residence of the services provider, e.g. for international transport. For business and personal services, which traditionally were provided mainly by individuals and entailed some direct contact with the client, article 14 of the OECD model of 1963 restricted taxation in the country where they were delivered unless it was through a 'fixed base'. As cross-border services began to expand and were provided by enterprises, the OECD treated

[13] League of Nations (1923): Addendum, 'Allocation of earnings where the whole of the economic stages are not conducted within one area'. This pointed out that in 'modern highly integrated industries, all stages of production, from the extraction of raw material or the growth of produce to the manufactures resulting therefrom and the final sale may take place in the hands of a single corporation'. The Addendum has been overlooked in discussions by commentators, who have largely focused on the report's theoretical justifications for residence or source taxation, which mainly concern passive income.

[14] The term 'enterprise' was and remains ambiguous, but can refer to the activities of an MNE corporate group as a whole. Since 2000 it has been defined in the OECD model as 'the carrying on of any business'. This was done as part of the OECD decision to omit Article 14 and treat services as taxable under Articles 5 and 7, whether performed by a legal entity or a natural person. Since the UN Committee decided to retain Article 14, this definition of 'enterprise' was not included in the UN model.

[15] Although article 7(4) applies to PEs, it is widely accepted that a subsidiary can be treated as a PE: see Le Gall (2007); Avi-Yonah and Tinhaga (2014).

these profits as 'business income', so that taxation at source required a PE; article 14 was omitted from the OECD model in 2000. Hence, during the period of increasing digital deliverability and hence expansion of cross-border services, the OECD model treaty restricted rights to tax this income in the country where they were performed unless the provider had a fixed base or a PE.

The model developed by the UNTC attempted more balance, and included stronger rights to tax at source (see Table 1, below). The first UN model treaty of 1980 allowed source taxation if the payment derived from a resident of that state exceeded an agreed threshold amount (article 14). This provision was only implemented in a very small number of treaties, and regrettably was later omitted. Hence, the 'fixed base' requirement has generally been applied, though its interpretation has been a source of frequent controversy, since the provider frequently delivers the services at premises owned by the customer.

The UN model also included a provision for a 'services PE' in article 5.3.b, providing for source taxation for services provided by an enterprise through employees or other personnel, if the activities continue for six months. This still remains (the period is now defined as 183 days), and is included in around 900 bilateral treaties. However, the meaning of the provision is unclear. At the UNTC meeting in 2013 it was pointed out that the wording requires only that the activities continue for the specified period, not the presence of personnel, either for the minimum period, or indeed at all. Nevertheless, it was agreed to maintain the 'traditional' interpretation that some physical presence of individuals was needed, although some pointed out that digitalisation made this problematic, and the Committee agreed that the issue should be revisited (United Nations, 2013, para. 16). This has not yet taken place, even though many developing countries have argued for a new principle of 'significant economic presence' (SEP), and some have enacted this in domestic law.

As it stands, the UN model, and the many treaties based on it, allow source taxation of services delivered by personnel for 183 days. Furthermore, it includes a methodology for sharing the net income through fractional apportionment, in article 7.4. In practice, however, these provisions have not been used, due mainly to lack of an agreed methodology for apportionment, and the practical difficulty for tax administrations of identifying delivery through personnel.

Table 1. Comparison of OECD and UN Model Provisions on Source Taxation

OECD Model	UN Model
A non-resident can only be taxed on business income attributable to a PE, conceived as a 'fixed place of business', defined by criteria of physical presence (article 5, to which some modifications were made in phase 1 of the BEPS process).	A PE includes furnishing of services through employees or other personnel if the activities continue within the country for a specified period (art. 5.3.b). A PE is deemed if an insurance enterprise collects premiums or insures risks in the country through a person, other than re-insurance (art. 5.6, replaced by art. 12C in 2025) to allow a WT on insurance premiums, including re-insurance, in the state in which they arise at an agreed rate. New art.5A (2025): A PE includes income from the exploration or exploitation of natural resources if the activities continue within the country for at least 30 days.
Income from personal services of an independent character attributable to a 'fixed base' in a country could be taxed in the country (art. 14); this was dropped in 2000, since when all income from services is taxable only as business income.	Income from professional or other services of an independent character can be taxed by the state where it derives, if it is attributable to a fixed base, or to a stay of 183 days or more in the year (art. 14).
Royalties for the use of or the right to use copyright, patents, trademarks and information concerning industrial, commercial or scientific experience are taxable only in the state of residence of the beneficial owner, unless they arise from a right or property effectively connected with a PE of their beneficial owner in the state (art. 12).	Allows a WT on royalties in the state where they arise, at an agreed rate (art. 12); royalty definition expanded to include payments for software, including payments for software that do not relate to the use of copyright in the software (2025 revision).
No provision for a WT on fees for services	Developing countries have generally insisted on a WT on fees for technical services (sometimes under art. 12); a standard article was agreed in 2017 (art. 12A), but technical services were defined to require specialized knowledge, skill or expertise; an additional article (12B) was agreed in 2021 allowing a WT on payments for automated digital services, defined as requiring 'minimal' human involvement. New art.12AA (2025) replaces art.12A (technical services) and art. 14 (independent personal services). Applies to payments for any service based on an agreed percentage rate. Specific art.8. 12B, 12C and rules on dependent personal services take precedence.
Profits of an enterprise from the operation of ships or aircraft in international traffic are taxable only in its state of residence (art. 8)	Old Alternative A of art. 8 (now Alternative B) identical to the OECD. New Alternative A incorporates old Alternative B with source taxation alternative and expands taxing rights: allows maritime shipping and air transport profits to be taxed by the source state based on an agreed percentage rate or on a net basis at the domestic tax rate reduced by 50% (2025 revision).
Any other income is taxable only in the state of residence (article 21.1).	Income not dealt with in other articles may also be taxed by the state where it arises; however, arguments by MNEs have been accepted by many national courts that this does not apply to business income since it is 'dealt with' in articles 5 and 7.

Source: Created by the authors

3.2 Developing Countries' Defence of the Source Tax Base

Developing countries have been particularly concerned to defend the erosion of the source tax base resulting from payments to non-residents for business services, which are deductible from the customer's business income. Due to the practical difficulties of taxing the net income of non-residents with little or no physical presence, they have resorted to applying a WT to the payments from customers. However, the model conventions did not provide for this, as WTs on gross revenues were only considered appropriate for passive income, since it has no associated expenses.

Some argued that income from technical services such as consultancy could come under article 12 on royalties, which can be taxed at source under the UN model, and refers to 'information concerning industrial, commercial or scientific experience'. Brazil succeeded in persuading almost all its treaty partners to accept this, although only through specific protocols.[16] Other countries modified the wording of article 12 to include specific reference to technical services, or negotiated a specific provision to allow a WT at a specified rate. However, the scope of these ad hoc provisions varies, and remains unclear and problematic. The term 'technical' may be formulated or interpreted to require a transfer of technical knowledge or information,[17] and it may not extend to professional services (e.g. legal services). Since they generally do not clarify their relationship to article 14 that covers 'independent personal services' there can be an overlap, and article 14 (which usually requires existence of a 'fixed base') may be held to prevail (*Translink Uganda*, 2024).

International Centre for Tax and Development (ICTD). This covers treaties signed and in force prior to 15 March 2023 by 118 countries, comprising low- and middle-income countries, all countries in Africa and all members of the Intergovernmental Group of 24.

Some OECD countries accepted such provisions in early treaties, while restricting the rate, but they became reluctant to do so as their services exports became increasingly important in the 2000s. A model treaty provision on fees for technical services was eventually formalised by the inclusion of article 12A in the UN model in 2017 (Falcão and Michel, 2018). However, this has been opposed by most OECD countries, and aspirant members of the OECD (e.g. Argentina, Colombia, Brazil) have been required to accept treaties without such a provision. A large majority of developing country treaties in force in 2023 do not include an article allowing a WT on fees for technical services (Table 2). The increased insistence by OECD countries on excluding WTs on services in tax treaties has resulted in substantial tax revenue losses for countries that have accepted such treaties (Amaro, Grondona & Picciotto, 2024).

[16] Schoueri and Silva, 2012, p. 188. When this could not be agreed, Brazil argued that it could introduce such a WT under the UN model's article 21 which allows source taxation of Other Income 'not dealt with' elsewhere, but this was met with the argument that it was business income, dealt with under article 7.
[17] For example, in the India-US of 1989, see *Crocs Inc.* (2025).

Table 2. Developing Country Treaty Provisions on Fees for Technical Services

WT rate	Count	% of total
0%	1,472	73.93%
5%	24	1.21%
7%	1	0.05%
7.5%	26	1.31%
8%	9	0.45%
9%	1	0.05%
10%	242	12.15%
11%	2	0.10%
12%	12	0.60%
12.5%	7	0.35%
14%	2	0.10%
15%	67	3.37%
20%	21	1.05%
30%	2	0.10%
No limit	2	0.10%
No data	101	5.07%
Total	**1,991**	**100.00%**

Source: Data retrieved from Tax Treaties Explorer [Online database] https://www.treaties.tax[18]

Furthermore, with increasing digitalisation, MNE tax advisers argued that 'technical and professional' services did not include those rendered with no direct human contribution. This was accepted by the courts in key countries,[19] and also adopted in the Commentary to the UN model's article 12A. Thus, even a treaty with a provision such as article 12A does not allow taxation of services supplied digitally, such as online advertising or financial services. Hence, the UNTC developed an additional model article 12B to cover 'automated digital services' in 2021. The scope of both will now be covered by a single broad article 12AA in the revised UN model of 2025 covering all services.[20]

Another restriction of taxing rights in tax treaties emerged with the rising importance of computer programs and the enormous increase in licensing of business software. This is essentially a business service, the cross-border provision of which causes significant tax losses for the market countries, since deduction of such costs by business users reduces their taxable business profits. However, software licensing also entails the exploitation of intellectual property rights (IPRs). Computer programs became protected as copyright in most countries in the 1990s,[21] so such payments could be treated as royalties

[18] This database covers treaties signed and in force prior to 15 March 2023 by 118 countries, comprising low- and middle- income countries, all countries of Africa and all members of the Intergovernmental Group of 24.

[19] See *Right Florist* 2013, rejecting the application of a WT on payments by a business in India to Google and Facebook for digital advertising.

[20] The broad article 12AA consolidates all services articles (12A, 12B and 14), but does not include the 'net income' option provided in article 12B para. 3. Article 12B is retained in the model and where applicable takes precedence, as it is more specific.

[21] From 1995, all members of the World Trade Organisation became obliged to give computer programs automatic copyright protection as literary works, by s.10 of the Agreement on Trade Related Property Rights (TRIPs).

under Article 12 of the model treaties, which covers 'the use of, or the right to use, copyright', as well as other IPRs. The OECD model specifies residence taxation of royalties, but some OECD countries reserve the right to tax them at source.[22] However, the OECD restricted this in 1992, by amending its interpretation of this article to specify that it does not apply to payments for rights to run or operate a computer program or distribute copies, only to the more extensive rights to modify it. Furthermore, it ruled that a complete transfer of all rights goes beyond use rights, so constitutes a sale, also outside the scope of article 12.[23]

This restrictive interpretation was unfortunately imported into the UN model, which does allow source tax on royalties, by inclusion in its Commentary in 1997 of these paragraphs of the OECD Commentary as 'relevant' to its interpretation. This led to the acceptance of this interpretation by courts even in developing countries, restricting their right to tax payments for the use of software.[24] After long debates, the UNTC eventually amended the Commentary to its treaty model to include alternative interpretations in 2021, and further in 2023. However, existing treaties are still likely to be interpreted according to the OECD's Commentary. Thus, the OECD's interpretation of article 12 in 1992 blocked source taxation of income from the international licensing of software and other IPRs, since it was treated as business income and subject to the PE requirement.

The profits from international licensing of software expanded exponentially from the 2000s. Restrictions on source taxation of this income damage all countries, due to MNE tax avoidance structures based on transferring ownership of IPRs to route much of this income through tax havens, ensuring low or no taxation. Attempts by MNE home countries to staunch the losses while respecting the OECD orthodoxy, through arcane rules on 'cost sharing', were easily foiled by MNE tax advisers. This has been a major source of the problem later described as 'base erosion and profit shifting' (BEPS). Yet, tax experts from OECD countries have continued to defend the restrictive interpretation and block source taxation of income from licensing IPRs.

4. Crisis of the OECD Paradigm and Attempts at Reform

Digitalisation and globalisation fatally undermined the OECD orthodoxy restricting taxation at source, as MNEs became increasingly able to access markets around the world with minimal physical presence. Furthermore, they were able to exploit the concept of residence to shift profits to affiliates resident in jurisdictions where the income is low-taxed, undermining the tax base of OECD members as well.

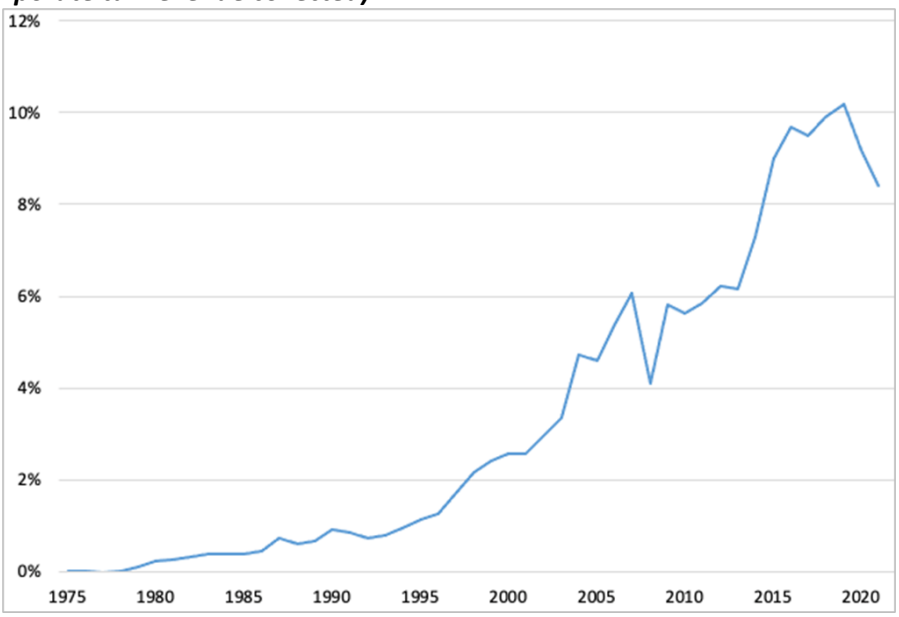
These techniques were also encouraged by the OECD's reformulation of the issue of the allocation of the business income of an enterprise, promulgated in the OECD Transfer Pricing Guidelines in 1995. Instead of treating MNEs in accordance with the economic reality that they operate as unitary enterprises under common direction and control, they enshrined the fiction that affiliates within an MNE corporate group should be treated as if they were independent entities dealing with each other at 'arm's length'. This gave

[22] Australia, Chile, Korea, Mexico, New Zealand, Poland, Portugal, the Slovak Republic, Slovenia and Turkey; Canada, Greece, Italy and the Czech Republic maintain such reservations.
[23] See Commentary to Article 12 of the OECD model, paras. 12-14.
[24] Many legal challenges were made in India, resulting in a large number of court decisions, until the Supreme Court finally ruled against the tax authorities in *Engineering Analysis,* 2021, despite a reservation by India to the interpretation in the OECD Commentary; this strongly influenced the Kenya High Court, which followed suit in *Seven Seas,* 2021.

free rein to tax advisers to create complex corporate structures exploiting loopholes in the tax treaty network to siphon off profits and attribute them to affiliates in countries where these profits are low-taxed. Key to these techniques is the ability to create entities to provide services and licence IPRs that could be treated as resident in countries where the income would be low-taxed, such as the notorious 'double Irish Dutch sandwich', exploited by many MNEs providing digitalised services (Sandell, 2012; Curtis, 2021).

The scale of this international avoidance of corporate tax climbed steeply particularly since the 1990s (see Figure 6). Consequently, the tax treaty system's aim of preventing double taxation had resulted in what was described as double non-taxation, or 'stateless income' (Kleinbard, 2011).

Figure 6. Global Corporate Tax Revenue Loss due to Profit Shifting to Tax Haven (% of global corporate tax revenue collected)



Source: EU Tax Observatory (2023), Global Tax Evasion Report, Fig. 2, p.9.

4.1 The OECD/G20 Project on Base Erosion and Profit Shifting (BEPS)

The fiscal crises in many states, particularly following the great financial crash of 2007-9, finally resulted in unprecedented efforts to reform the system. In 2013 the G20 leaders backed the OECD project on base erosion and profit shifting (BEPS), with a mandate to ensure that MNEs could be taxed 'where economic activities occur and value is created' (G20, 2013).[25] This was a call to return to basic principles, but the OECD's Action Plan rejected any reconsideration of the allocation of taxing rights, and consisted of various patches to repair cracks in the system, greatly adding to its complexity.[26] Although the implications of the

[25] For an insider's account of the BEPS process see Saint-Amans, 2023.

[26] Thus, the work on the PE modified its definition but did not address the requirement of physical presence; the work on the allocation of MNE income excluded any reconsideration of the arm's length principle, apparently to the regret of the main US negotiator on this issue (Finley, 2025). No less than three Action points dealt with transfer pricing, but the only outcome was extensive rewriting of the Transfer Pricing Guidelines, making them

digital economy was the top priority, and did require a fundamental reconsideration of the basic principles of international tax, the Action 1 report in the first package of measures issued in 2015 produced only an analysis of the problem, and requested a further five years to develop a solution.

The diagnosis in this report was nevertheless potentially far-reaching, as it pointed out that digitalisation had affected the whole economy, so the issue could not be ring-fenced. The failure to make any progress on the issue of digitalisation led to a surprising development. Many countries, including OECD members, moved to introduce digital services taxes (DSTs), which apply a flat rate to gross revenues like WTs, although generally targeted at a limited range of services delivered through digital platforms, mainly to consumers. Unsurprisingly, this angered the US, which regarded them as aimed at the mainly US-based digital giants, and announced retaliatory trade sanctions.[27]

The move to DSTs created greater pressure on the negotiators in the second phase of the BEPS process. A further 'interim' report delivered in 2018 again explained that digitalisation had affected the whole economy, exposing the fundamental flaws of the two basic principles of international tax: the PE concept as the nexus for taxation and the arm's length principle for allocation of profits (OECD, 2018, p. 168). These of course have long been the bedrock of the OECD orthodoxy.

A year later a public consultation document outlined three proposals, all for new taxing rights for source countries (OECD, 2019). The first (understood to be from the UK) focused on the importance of 'user contributions', hence it was limited to digitalized activities; the second (reflecting US concerns) highlighted the importance of 'marketing intangibles', and aimed at counteracting the targeting of US-based highly digitalized MNEs by including European brand-name giants. The third, submitted by the G24 developing countries, proposed the adoption of a SEP test for taxable nexus, with the necessary corollary of attribution of net profit on a formulaic basis (G-24, 2019). The first two proposals reflected the conflicts among leading OECD members, but the G24 proposal was balanced and comprehensive. It paved the way to the 'two pillar solution' announced with much fanfare in 2021.

The proposal for Amount A of Pillar 1 adopted the G24's approach, and was described by the OECD's Secretary-General as 'revolutionary in its concept' (OECD, 2022, p. 5). It would tax MNEs as unitary enterprises, applying a new tax nexus specifying a quantitative threshold of sales, and apportioning rights to tax their global profits based on each country's share of the MNE's third party sales revenues. The draft multilateral convention (MLC) formulated for the implementation of Amount A under Pillar 1 also included the detailed technical standards needed for implementing formulary apportionment: a definition of MNEs' global consolidated accounts adjusted for tax purposes, and sourcing rules for sales revenue (OECD, 2023). However, instead of the comprehensive solution envisaged by the G24, this would apply only to fewer than 100 of the largest and most profitable multinationals; even for those it would apply only to 25% of their 'residual' profits (those exceeding 10% of revenues). This makes Amount A very complex, and would leave in place the current convoluted and ineffective rules on 'transfer pricing' for all other purposes.[28] The concept is transformative, but its proposed implementation would only add a new

even more complex, obscure and subjective, as shown in detail by two prominent participants in the process: Andrus and Collier, 2017.

[27] Office of the US Trade Representative, Digital Services Taxes webpage https://ustr.gov/issue-areas/enforcement/section-301-investigations/section-301-digital-services-taxes.

[28] For an economic analysis see Barake and Le Pouhaer, 2023.

regime layered onto existing rules. This both makes Amount A itself very complex, and would leave in place the current dysfunctional system for all other purposes. The final version has not yet been agreed, and its adoption is very unlikely, as it would require ratification by the US.

In parallel, the UNTC continued its work on strengthening rights to source taxation in its model convention. This focused on strengthening the provisions for WTs in its model treaty, as outlined in section 2.1 above. This reflected the needs of developing countries to find practical solutions that are easy to administer and defend the right to tax at source, where activities take place.

Hence, the OECD-led BEPS process resulted in the formulation of a new approach, which would allocate rights to tax the net global profits of MNEs, although to be applied only with limited scope. In contrast, the UNTC has focused on strengthening source country WTs on gross revenues.

4.2 Measures Introduced or Proposed

The preceding analysis shows that two broad approaches have been used to resolve the difficulties of taxation of cross-border services: tax at source on gross revenues, or taxation of net income based on some form of apportionment. The measures that have been proposed, and even introduced by some states are categorised in Table 3, and are analysed in this section.

There are three related issues: the tax base, its scope and the rate. WTs apply to the gross revenues from particular specified transactions and stipulate a flat rate, while taxes aimed at a broader range of services generally define a taxable presence or tax nexus and provide a method for determining the net income which can be taxed at the standard corporate tax rate. Variations in the design of measures blur these categories to some extent.

4.2.1 Gross-Basis Approach

The most practical short-term solution is to apply WTs on the gross amount of payments. Taxes based on revenue or turnover are easy to administer, especially for cross-border sales as a requirement to withhold and remit the tax can be placed on either or both the financial intermediaries or the person making the payment. WTs are a practical protection for source countries, especially in relation to payments for business services that are deductible from the customer's business income, so directly undermining their tax base. Hence, they are sometimes applied to payments made by a resident regardless of where the service is performed. They can be targeted particularly at highly profitable activities, and bring in sorely-needed revenue, especially for poor countries. The issue of scope is usually dealt with by specifying the transactions or payments to which they apply.

Consequently, a variety of taxes or levies have emerged, particularly affecting telecommunications and digitalised transactions (ITU, 2025). A number of countries in Africa have introduced levies on digital financial transactions,[29] and even on social media use.

Taxes on transactions fall outside the scope of tax treaties, which only cover taxes on income and capital. However, applied to non-residents they may be regarded as trade restrictions if considered discriminatory. In 1998 the World Trade Organisation established a comprehensive work programme to

[29] See the ICTD's DFS TaxMap, https://digitalfinancialservices.tax/dfs-map/

examine all trade-related issues arising from electronic commerce, including fiscal implications.[30] This work is continuing, but it does not seem to include discussion of DSTs, which have been enacted by around 30 countries, although some have now withdrawn them (Canada, India).

Table 3. Typology of Measures

Tax Base	Scope/Coverage	Form	Examples
Gross revenue	Digitalised services, e.g. advertising, intermediation platforms, gambling, streaming	DSTs	In force in around 27 countries
		SEP + deemed income	Kenya (2025), Nigeria (2025)
	All services producing local revenues	Withholding tax	UN model article 12AA
Net income	Local services revenues	Fractional apportionment (MNE's global profit rate x fraction of local sales revenues)	UN model art. 12B.3 India consultation 2019 Nigeria 2025
	25% of MNE's global 'residual' profits	Apportionment by share of global sales revenue	Draft Amount A MLC
	MNE's global profits	Apportionment by factors reflecting supply and demand	G24 proposal 2019

Source: Created by the authors.

The draft multilateral convention (MLC) for Amount A released in 2023 provided for the removal of existing measures falling within its definition of DSTs once the MLC is in force.31 It is now accepted that the MLC is extremely unlikely to be implemented, and the US is demanding withdrawal of DSTs as part of the new trade disputes.

Some countries have recast their measures on digitalised services as a tax on income rather than on transactions,[32] by introducing a new taxable nexus of 'SEP'. This brings them within the scope of tax treaties rather than trade agreements. While this may avoid retaliation through trade sanctions, it means that they cannot be applied to residents of countries for which there is a tax treaty containing the usual PE requirement. Definitions of SEP generally specify a particular range of digitalised activities or modes of delivery, sometimes combined with a quantitative threshold. The definitional scope may focus on highly digitalised services, for example Colombia, Kenya and Pakistan,[33] or may be formulated more broadly to

[30] See https://www.wto.org/english/tratop_e/ecom_e/wkprog_e.htm.

[31] OECD (2023) article 38 and Annex A, which lists Austria, France, India, Italy, Spain, Tunisia, Türkiye and the UK. In addition, once implemented, a party would be denied an allocation of taxing rights under the convention if it adopts a 'relevant similar measure', as specified in article 39.

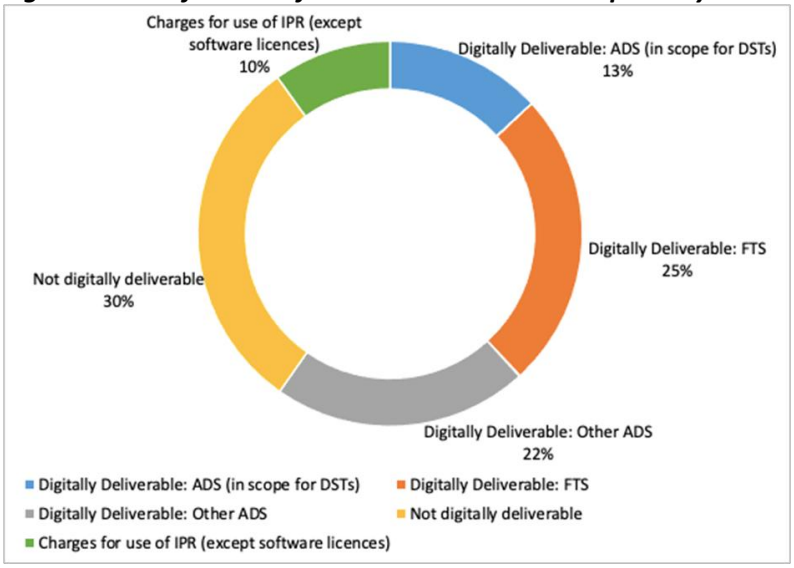
[32] This line is far from clear: for example, the UK's DST was described in the government's Policy Paper as 'a 2% tax on the revenues of search engines, social media services and online marketplaces which derive value from UK users', and is collected from affiliates of the corporate groups that derive such revenues (HMRC, 2020); it is nonetheless essentially a transaction tax that functions economically as a tariff (Devereux, 2025), and is not regarded as within scope of tax treaties.

[33] Colombia's Reforma Tributaria (Ley 2277 of 2022), art. 57 defined a SEP as deliberate and systematic interaction with users (deemed if there are >300k users or prices in pesos) and revenues above a specified minimum (around

include potentially all profit-generating activity, notably India and Nigeria,[34] although in practice the scope has been more limited.

The formulation of a DST as a tax on income raises the question of how to determine the net income in relation to the gross revenues. This can be done by specifying a percentage of the gross revenues as the 'deemed' net income, to which the appropriate tax rate is applied. However, since the rate is generally unrelated to profitability, this method is essentially a WT on the gross income at a fraction of the rate applicable to net income. It is possible to specify various 'deemed profit' rates for different types of business. However, this raises categorisation issues: for example, architectural or engineering design services for a construction project. This deemed profit approach also remains unrelated to the profitability of the firm itself. However, a specified rate for deemed profit can be combined with a net income method, discussed in s. 3.2.2 below.

Figure 7. Classification of Cross-border Services Imports by Mode of Delivery, 2023



Source: created by authors, based on World Development Indicators and the OECD ITIS database.

$250k), or specified digitalised activities such as online advertising, streaming, platform intermediation services and monetising or handling data from users. Under Kenya's Tax Laws Amendment Act 2024 s. 5, a special SEP tax applies to a nonresident's income from services through a digital marketplace with users in Kenya; this replaced a DST which the US said would preclude negotiations on proposed trade and investment agreements. Pakistan has extended its definition of a PE to include 'virtual business presence in Pakistan including any business where transactions are conducted through internet or any other electronic medium, with or without having any physical presence' (Finance Act 2023 s.7).

[34] India's Finance Act 2018 amplified the scope of Explanation 2A to section 9(1)(i) of the Income Tax Act, which taxes all income arising from a 'business connection' in India, to include the SEP of a nonresident, defined as transactions 'in respect of any goods, services or property' above a defined threshold, or interactions with a specified minimum number of users (specified in 2021 as INR 20m (c. $250k) and 300k users). Nigeria introduced the SEP in 2019 (defined in 2020), which has been re-enacted with revisions in its new Tax Act 2025. Under s.17(9) a nonresident is taxable on income attributable to a SEP, defined as any activity involving electronic or wireless transmissions to Nigeria, including 'electronic commerce, application store, high frequency trading, electronic data storage, online adverts, participative network platform, online payments, supply of user data, search engines, digital content services, online gaming, cloud computing, online teaching services'.

Most DSTs and similar taxes on gross revenues from digitalised activities have targeted a specific range of highly digitalised services: online advertising, access to digital content or streaming, intermediation services or e-commerce, and monetisation of user data.[35] These activities are mainly aimed at individual consumers, which are the highly visible part of the digitalised economy and can be highly profitable, particularly due to their global reach and features such as 'network effects', resulting in the domination of a few well-known 'digital giants'. Indeed, the measures introduced, especially by OECD members in Europe, have generally specified relatively high revenue thresholds, both global (€750m in EU countries) and national. Consequently, it seems from the available evidence that they have been paid by very few MNEs: in 2021, 37 in France, 49 in Italy and 18 in the UK (Borders et al., 2023, p. 14).[36] This targeting has fuelled the US accusations that they are discriminatory, although there is some evidence that they will also affect other digital giants, e.g. from China (Taxwatch, 2025).

These taxes have resulted in significant tax revenues. However, as shown by the data presented in section 1 and Figure 7, these account for only a small share of services that are digitally deliverable, and 13% of all cross-border delivery. They do not apply to the wide range of business services, payments for which have eroded the source tax base. Some of these revenues may be subject to WTs applied by many developing countries, e.g. on fees for technical and professional services. However, as explained in section 2.1 above, these are not accepted by the OECD, and OECD countries have aimed to restrict them through tax treaties. Furthermore, their scope has been reduced by two restrictive interpretations: (i) that 'technical' services require human intervention, and (ii) that payments for the use of IPRs are not royalties within the meaning of article 12 in tax treaties. Both these categories would be covered by the recent changes to the UN model: the inclusion of automated digital services in article 12B, and the alternative interpretation of article 12 in relation to the use of software. However, these changes have not yet been included in actual treaties in force, and the policy of OECD countries is to reject them.[37]

4.2.2 Net Income Approach

Taxation of net income requires both a definition of taxable presence (tax nexus) and a methodology for determining the net income. As regards the nexus, the concern has been to extend beyond the physical concept of a PE particularly in response to digitalisation. This has resulted in the formulation of the concept of SEP, discussed in the previous section. Countries defining the SEP with a focus on highly digitalised activities have used a 'deemed income' method for the tax base, which in effect is based on gross revenues, as explained above.

A wider nexus provision is needed if the scope extends to all services. It should cover all income derived by a nonresident from services delivered to a customer in the country regardless of whether the provider has a PE. For these purposes the easiest and simplest to apply is a quantitative threshold. Such a provision

[35] See Digital Services Taxes Global Tracker: https://www.vatcalc.com/global/digital-services-taxes-dst-global-tracker/.

[36] For the UK see also National Audit Office (2022), which also reports that in the first year 90% of the tax was paid by five MNEs.

[37] The Oman-Tanzania treaty signed in December 2024 includes a provision based on article 12A, with a rate of 2%; this is the rate applied by Tanzania on transactions 'carried out through the internet or an electronic means including an electronic service or transaction conducted in the digital marketplace regardless of the manner in which such transaction is carried out' (Finance Act 2022, s. 59(a)).

was included in the UN model convention of 1980 in relation to independent professional services. A quantitative threshold has also been specified in the MLC for Amount A. It was also envisaged for the wide definition of SEP proposed by India in 2019.

India also proposed a simplified approach for determining the net income of an SEP, for unilateral introduction and intended to ensure compatibility with tax treaties that include article 7.4 (India, 2019). This would apply the MNE's global profit rate to a fraction of local sales revenues determined by a 3-factor formula. A similar approach was adopted as an option in the UN model's article 12B on automated digital services, specifying the fraction as 30% of the simplified net income calculation. This method could be applied even unilaterally, and could be regarded as compatible with treaties based on the UN model, as argued by India's consultation paper of 2019. Nigeria has introduced a variant of this in its Tax Act 2025, which now provides for the profits attributable to a PE or SEP of a nonresident to be ascertained by 'applying the profit margin of the non-resident person to the total income generated from Nigeria' (s.17(7)). This is combined with a gross method, by specifying that the amount payable shall not be less than any applicable WT, or 4% of the income from Nigeria (s.17(8)).

A more comprehensive and detailed methodology was developed in the MLC for Amount A. This provides technical standards for apportionment of the MNE's global net income, and its allocation to countries according to sales revenue. It includes (i) adjustments to MNEs' global consolidated financial accounts for tax purposes, (ii) a tax nexus based on sales volume, (iii) sourcing rules for sales. Importantly, these rules deal with the sourcing of income from services based on sales (OECD, 2023, article 7). This is important for a comprehensive provision, since payments made from the country may either overstate or understate the true value of sales. Defining sales revenues on an internationally agreed basis is needed to ensure that the allocation is generally acceptable. The other key issue of course is specifying the share of total net income allocated to sales. Under Amount A, it was proposed to be 25% of the 'residual' income. However, this was criticised as too low by developing countries (ATAF, 2021), and applying it only to the 'residual' profit resulted in excessive complexity.

5. Options for the Protocol

The analysis in this paper shows that the problem of taxation of services goes to the heart of the international tax system, and poses a fundamental challenge to the orthodox views formulated by the OECD. As Philip Baker has suggested, 'it may very well be that the dominant position of the OECD is now not only anachronistic but also counterproductive to the effective development of international tax', and the wider perspective opened up by negotiations for the UN Framework Convention may provide an opportunity to rethink that dominant orthodoxy which carries the 'baggage of history' (Baker, 2023, p.61). However this also requires a constructive engagement with the process and a willingness to rethink by many who have made considerable intellectual investments in that orthodoxy.

Fortunately, an alternative and more appropriate perspective has long been available, and has been kept alive especially by developing countries. Furthermore, the recent unprecedented reform efforts, focussing on the implications of digitalisation, have produced the basic building blocks that could enable this alternative to be adopted. The long history of attempts to resolve this issue outlined in this paper shows that two approaches are possible for a protocol on taxing cross-border services.

5.1 The Gross Basis Approach

This approach has been adopted especially by developing countries to protect the source tax base. It is easy to apply through WTs, and can be adopted unilaterally. WTs have the main advantage of being easy to administer, and hence have been favoured by tax administrations especially in developing countries, and more recently by others in the form of DSTs. Their main disadvantage is that they are unrelated to profitability. Applied to imports they function as a tariff, and as taxes on turnover they have been criticised for being more regressive than value added tax, due to their 'cascading' effects (Pomp et al, 2023). Since they do not relate to the profitability of the firm concerned, they disadvantage newcomers, so protecting incumbents and entrenching oligopoly. Services are highly variegated and have very different profit margins: while some can be automated so have very high marginal profit rates, others are highly labour intensive, and these differences are likely to intensify with the introduction of artificial intelligence. Differential rates would create administrative difficulties and avoidance opportunities, and locking them in through international agreement would lose flexibility to adapt to experience and changing circumstances. WTs on business income are rejected in principle by OECD members, for valid reasons, and are not allowed under treaties based on the OECD model.

The introduction of DSTs by OECD members has exploited legal ambiguities, but at the cost of legitimising their treatment as trade barriers. There may still be some support for harmonisation of DSTs, as some commentators have suggested (Chowdhary, Maina and Omole, 2024). However, DSTs have been denounced as discriminatory by the US, and such a proposal would exacerbate trade conflicts. Furthermore, DSTs apply to only a small share of digitally deliverable services, and only 13% of all cross-border services according to our estimates.

The category of automated digital services would be wider, especially if it included charges for the use of IPRs. However, even this would not include the much wider range of business services that have become digitally deliverable cross-border.

A protocol enabling a WT on a wider range, or even all services, begs the question of the rate. A single general rate for all services would be both difficult to agree and hard to justify economically. A compromise agreement might be reached on a relatively low general rate, perhaps 3-5%. However, this would be low for many highly profitable services, yet a significant burden for low-margin businesses. Agreed rates could be specified for different types of business,[38] but this would add complexity and likely make it harder to achieve consensus. The problem could simply be avoided by leaving the rate or rates to be agreed bilaterally. This would be no solution but an admission of failure.

WTs on a broader range of services would conflict with the vast majority of tax treaties, as can be seen from Table 2: only 21% of the around 1991 treaties with developing countries allow a WT on fees for technical services, and they do not cover the increasingly important category of automated digital services. More fundamentally, the allocation of taxing rights by agreement between residence and source has only ever been appropriate for passive income. It has always been accepted that the rights to tax the active income of MNEs should be apportioned according to where they have real activities, but this was defined a century ago in terms of physical production. Digitalisation has enabled close relations between

[38] A report for the Indian government recently proposed a range between 5% (e.g. for equipment supply), 10% (e.g. engineering/infrastructure services), 20% (general) and 30% (ADS): NITI-Aayog (2025).

production and consumption, which requires a new approach to the allocation of rights to tax business income.

WTs remain a practical solution, and should not be abandoned by developing countries. However, they can validly be criticised as a blunt instrument, since they are unrelated to profitability, either of the business line or the firm concerned. They have been a practical short-term remedy to help staunch tax losses at source, but do not seem to provide a firm foundation for a comprehensive or durable solution.

5.2 Taxation of MNE Net Income

The second approach is net income taxation. Reaching agreement on this would undoubtedly be a challenge, but it could provide a comprehensive and sustainable solution.

Taxation of net income is particularly appropriate if the aim is to cover all services, or even a wide range. Indeed, it is not practicable or justifiable to distinguish services income from revenue from other intangibles, such as charges for the use of intellectual property rights. The scope of Amount A was not limited to services, but extended to all active business income. Services are now closely imbricated in all economic activities and, while there are many MNEs primarily or wholly providing services, there are also many that integrate services into manufacturing, mining and agribusiness. Services such as R&D, logistics, marketing and advertising are essential for all businesses. When they are performed in-house within an MNE corporate group they make a disproportionate contribution to its overall profitability.

There is therefore a strong case for a broad tax on net income based on sales, as for Amount A. This would also obviate the need to define economic presence in terms of activities, so a simple quantitative threshold would suffice. This was adopted for Amount A of Pillar One, as well as in the first UN model in 1980 for independent professional services. A quantitative threshold is practical, because it is easy to apply. The size of both the global and country revenue thresholds would need to be agreed, bearing in mind that administering a tax on net income or profits entails costs for both tax administrations and businesses, which are not justified if the revenues are episodic or remain low.

Sharing rights to tax active business income from sales in a country resulting from activities taking place elsewhere necessarily requires a methodology for apportioning the total net income. This was recognised in the report of the four Economists in 1923, and reflected in provisions of the model convention. Two methods have been formulated for the determination of net income.

5.2.1 A Simplified Method

One is the unilateral method proposed by India in 2019, and recently adopted by Nigeria, which was included as an option in the UN model's article 12B. This would start from the revenues derived from the jurisdiction itself. The net income is determined by applying to these gross revenues the overall global profit margin of the MNE concerned, derived from its consolidated financial accounts. This method is relatively easy to apply, even unilaterally, since it can use data available to the tax authority. Its simplicity also involves a loss of accuracy. Notably, it assumes that the payments made from the jurisdiction represent the gross revenues properly attributable to the country, with no role for sourcing rules; and that the MNE's overall profit rate on all its global activities can appropriately be applied to the revenues from that country.

This method was adopted in the UN model article 12B as an alternative to the WT on gross income from automated digital services, at the option of the MNE concerned. It applies the country's standard tax rate to 30% of the amount resulting from applying its global profit rate on automated digital business to the gross revenues from that business in the country concerned. The attractiveness of this option obviously depends on how high the WT rate on gross revenues is set, especially if the MNE can choose between a gross revenue and net income approach.[39] Unless agreement could be reached on a sufficiently high WT rate, e.g. 15-20%, the net income option would only be attractive to MNEs with less profitable activities.

5.2.2 A Comprehensive Method

The second net income method could be based on the methodology developed in the BEPS process for Amount A of Pillar One. This starts from the MNE's global consolidated financial accounts, which are adjusted for tax purposes using a specified methodology. Then a specified share of the total tax-adjusted net income is apportioned among countries in proportion to the revenue from sales in each country. The Amount A proposal would apply to only around 100 of the largest and most profitable MNEs, due to its high profitability and revenue thresholds, but in the Services protocol the methodology could be applied to all MNEs within scope of the sales threshold. Also, Amount A allocates to sales only 25% of the 'residual' profits, which is low and introduces unnecessary complexity.

This apportionment approach avoids the difficulty of deciding where services are 'performed', by granting a right to tax a specified share of the total net income based on sales (the consumption factor), leaving the rest to be taxed based on the location of the provider (the production factor). The draft convention developed for Amount A therefore includes rules for determining the source for sales, based on the default principle of the place where the services are used.

Importantly, these sourcing rules deal with problematic issues, especially relating to sales revenues for platform-based services, and user data. Online platforms use software applications provided to users most often for no payment, while income is generated from intermediation or sales of advertising. Under the Amount A rules, income from the intermediation of the sale of tangible goods, digital content or services that are not location-specific is split 50:50 between the location of the seller and that of the purchaser; but for location-specific services between the location of the purchaser and that where the service is performed. Similarly, they allocate the income from international transportation services: for cargo 50:50 between the origin and destination countries, but for passengers to the place of arrival.

The platform provider is also able to gather extensive data on users, including their geographical location and movements, and their spending habits and preferences. Users also make valuable contributions of content, including customer reviews, and uploaded pictures, videos and text. Such data can be monetised either by selling or licensing rights to it, or by selling targeted advertising online. The Amount A rules allocate the right to tax income from the licensing, sale or other alienation of user data to the country where the user associated with the data is located. Income from online advertising is attributed to the country of location of the viewer (normally the user). Hence, these sourcing rules recognise the importance of platform users for the allocation of taxing rights.

[39] In Nigeria's recent legislation the tax payable by applying the WT is the minimum (Tax Act 2025, s. 17(7)).

The key issue to be agreed on would be the share of total net profits to be allocated based on sales. This should be a share of the total and not the 'residual' profit, an unnecessary concept that made Amount A exceedingly complex. The G-24 paper of 2019 made the case for an apportionment of taxing rights balancing supply-side (production) and demand-side (consumption) factors, since both are essential for the generation and realisation of profits. There are also practical arguments for allocating a substantial share based on sales. First, consumers are relatively immobile; even digital purchases can be placed via geolocation. Secondly, taxing profits based on sales does not deter inward investment. Indeed, these reasons have been put forward to argue for taxing corporate profits entirely based on sales, through a destination-based cash-flow tax (Devereux et al., 2021). Nevertheless, it is clear from the debates and negotiations over rights to tax cross-border services, including those for Amount A, that there is strong support for substantial rights to tax based on supply-side production factors. A minimum share for taxation by the sales country might be 30%, as in article 12B of the UN model, though a good case could be made for 50%.

This leaves open the question of allocation of rights to tax the remaining profits. Since the protocol aims to provide a right to tax a share of net income based on sales, it does not need to specify the allocation of the remaining taxing rights. This raises important issues which need a separate evaluation. However, if this net income option is pursued in the negotiations for the UN services protocol, there should be more detailed discussion of this aspect.

5.3 Implementation

Implementation should be by the adoption of a common approach by a group of willing states, through either a political commitment or a more binding agreement on the general principles. However, this should be backed by common rules and procedures for coordination to prevent and resolve disputes. This method succeeded in getting lift-off for the global minimum tax under BEPS Pillar 2. The Protocol should not be designed, like Amount A, so that it could only be adopted through a multilateral convention that would need to be accepted and ratified by a critical mass of states, which would doom it to failure. Any revisions to existing tax treaties that are considered necessary could be provided in a Fast Track Instrument, like that formulated by the UN Tax Committee in 2025.

Whatever approach or method is used, adoption would need some renegotiation of treaties and revisions of the texts or their interpretation. This is much less of a constraint on developing countries, since many have few tax treaties, and both the UN model and their actual treaties include stronger protections of source taxing rights, including a provision for apportionment of income. Nevertheless, they need to be joined by a significant number of OECD members to ensure a viable and stable solution.

While the adoption of WTs appears to be compatible with the formal structure of the model treaties, it would directly conflict with a substantial number of actual treaties, particularly those based on the OECD model. Only a small minority of existing treaties allow a WT on fees for technical services, and they do not cover automated digital services (see Table 2 above). It would exacerbate rather than resolve the tensions between residence and source at the heart of international tax conflicts.

The net income approach could be implemented by adaptations and new interpretations of existing tax treaties, at least those based on the UN model, which already include a provision for apportionment of business income. Significant revisions would be needed to much of the 'soft law' that has entrenched the orthodox interpretations, dominated by the OECD. This should include revisions to the Commentary of

the UN model convention, and a major rewriting of the Guidelines that enshrine the arm's length principles for transfer pricing.[40]

The Simplified approach would have simpler model rules, and would be easier to implement. In particular, it could be applied based on information available to tax administrations. The Comprehensive approach would need more detailed common rules. They could be based on those already agreed for Amount A, although these could and should be simplified. Implementation would be more difficult for this approach, due to its need for more information from the MNE concerned. Information requirements may be hard to enforce against a non-resident, although they could be made a condition for market access (as is done for destination-based VAT). Tax administrations could also assess the tax liability based on rebuttable estimations of deemed income, allowing the MNE to submit the data needed for a complete calculation.

These approaches could be combined into a single measure, as options in the Protocol. For example, the Simplified method could be included as a safe harbour for MNEs unwilling to provide the fuller data needed for application of the Comprehensive method. It is also possible to provide for a tax on gross revenue as an alternative to the net income approach. The rate would need to be sufficiently high to provide an adequate incentive for high-margin businesses to accept the net income calculation, or the availability of the option could be linked to size and profitability thresholds.

6. Conclusions

This analysis shows that the net income approach is the only long-term solution to the conflict over taxation of cross-border services, which separate the location of the services provider and the customer. OECD members have valid criticisms against taxes on gross business income, although some have resorted to narrowly targeted DSTs. The conflicts caused by these led to agreement on Amount A which would replace them. This experience should encourage many of these countries to engage seriously with the negotiations on the Services protocol.

The net income approach could provide a basis for agreement among a wider group of countries, whether developed or developing. The extent of such support would also affect whether adoption of this approach should be on the more modest Simplified method, or the more ambitious Comprehensive method. The Protocol could also combine the two, and perhaps also include a gross WT option as a backup, as outlined above.

It has long been understood that where an enterprise generates profits from active business in several countries, the rights to tax should be apportioned based on factors reflecting where those activities take place. This principle was stated as an objective for the G20/OECD project on base erosion and profit shifting (BEPS), and again in the Secretary-General's report on the UN Framework Convention. The challenge has been to devise a suitable methodology. Much of this work has now been accomplished by the technical work done under the Inclusive Framework, though it could be further refined and simplified.

What is now needed is a new political impetus, that could be provided by the balanced and inclusive forum created for these negotiations for the Services protocol.

[40] This is discussed in more detail in Picciotto, Ahmed et al., 2023, p. 8.

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Appendix

Data Sources

Historically, computations of the balance of trade focused on commodities, though some pointed to non-commodity 'invisible' items in the balance of payments (Viner, 1937/1965). Government balance of payments statistics from the latter part of the nineteenth century, notably in the UK and the US, began to refer to 'trade in goods and services', to clarify the distinction between payments for elements such as insurance and transportation from values of the commodities themselves (Badger, 1951). However, due to problems of measurement, the non-commodity elements continued to be considered as invisibles, together with investment flows. This persisted with the international efforts to develop some uniformity in countries' reporting, first through the League of Nations from 1922, and then the International Monetary Fund (IMF), which released the first edition of its Balance of Payments (BoP) Manual in 1948.

It was only with the increased economic importance of services and of their international delivery, together with the growing deficits in trade in goods of the US and other developed countries, that the conceptualisation of 'trade in services' emerged. This was central to the wider processes of liberalisation in the European Single Market and internationally, leading to the creation of the World Trade Organisation and its General Agreement on Trade in Services (GATS) (Drake and Nicolaidis, 1992). The OECD and Eurostat led the efforts in the late 1990s to extensively break down services transactions by type. Drawing on country experiences in collecting international services trade data, these efforts led to publication of the Manual on Statistics of International Trade in Services (MSITS) which was designed to complement compilation and reporting of the BOP Manual (United Nations et al, 2002). The MSITS introduced an Extended Balance of Payments Services classification (EBOPS) which is aligned to the IMF's BOP Manual and breaks down the service sector categories into main categories and sub-categories (IMF, 2025). There have remained significant difficulties of measurement, and gathering data from foreign exchange transactions has been largely replaced by survey methodologies.

Table 4. Comparison of the OECD BaTIS and ITIS datasets.

Description	BaTIS dataset	ITIS dataset
Economies covered	202	44: 37 OECD, 7 non- OECD
Time period	19 years: 2005 to 2023	Varying lengths from 1961 to 2024
Data classification	Reported data Adjusted and/ or imputed data Full 'balanced' data	Only reported data
Service categories	12 main categories 14 level one subcategories	12 main categories 31 level one subcategories 40 level two subcategories 20 level three subcategories 13 level four subcategories
GATS modes	1,2 & 4	1,2 & 4

Source: Created by the authors, based on BaTIS and ITIS datasets.

We use data from the OECD-WTO Balanced Trade in Services (BaTIS) and OECD International Trade in Services (ITIS) datasets, which are consistent with the EBOPS and BOP Manual and disaggregate services trade data by reporting economy. Table 4 summarizes the key differences between the BaTIS and ITIS datasets while Table 5 lists the BaTIS/ ITIS service categories and sub- categories.

Table 5. BaTIS and ITIS classification of services

BaTIS main service category	ITIS level one/ level two sub- categories*
Manufacturing services on physical inputs owned by others	Goods for processing in reporting economy Goods for processing abroad
Maintenance and repair services n.i.e.	
Travel	Travel Business: Acquisition of goods and services by border, seasonal and other short- term workers; Other* Travel Personal: Health- related; Education- related; Other*
Transport	Sea transport: Passenger; Freight; Other than passenger and freight* Air transport: Passenger; Freight; Other than passenger and freight* Other modes of transport: Space; Rail; Inland waterway; Pipeline; Electricity transmission; Other supporting and auxiliary transport services* Postal and courier services
Construction	Construction abroad Construction in the reporting economy
Insurance and pension services	Direct insurance: Life; Freight; Other* Reinsurance Auxiliary insurance services Pension and standardized guarantee services: Pension services; Standardized guarantee services*
Financial services	Financial services explicitly charged Financial intermediation services indirectly measured
Charges for the use of intellectual property	Franchises and trademarks licensing fees Licences for use of outcomes in research and development Licences to reproduce/ distribute computer software Licences to reproduce/ distribute audio-visual and related products: Licences to reproduce/ distribute audio-visual products; Other*
Telecommunications, computer, and information services	Telecommunication services Computer services: Computer software: software originals; Computer services other than software* Information services: News agency services; Information services other than news agency services*
Other business services	Research & development: Work undertaken on a systematic basis to increase the stock of knowledge; Other* Professional & management consulting: Legal, accounting, management consulting & PR services; Advertising, market research, public opinion polling services* Technical, trade- related & other business services: Architectural, engineering, scientific, other technical services; Waste treatment and de-pollution, agricultural and mining services; Operating leasing services; Trade- related services; Other business services n.i.e.*

Table 5. BaTIS and ITIS classification of services (Contd.)

BaTIS main service category	ITIS level one/ level two sub- categories*
Personal, cultural, and recreational (PC&R) services	Audio-visual and related services: Audio- visual services; Artistic related services* PC&R services other than audio- visual: Health; Education; Heritage and recreational; Other personal services*
Government goods and services n.i.e.	Embassies and consulates Military units and agencies Govt goods and services other than embassies, consulates, military units, and agencies

Source: Created by the authors, based on BaTIS and ITIS datasets. ITIS level two sub-categories indicated by the asterisk (*). n.i.e- not included elsewhere.

Classification of Digitally Deliverable Cross-Border Services

We use the descriptions and definitions in the IMF et al 2023 *Handbook on Measuring Digital Trade*, in conjunction with the classifications in the EBOPS/ BaTIS/ ITIS datasets, to identify those likely to be digitally deliverable across borders.

Cross-border services are defined in accordance with mode 1 of the WTO's GATS, as provided by a resident of one country to customers in another country. Given that services may be delivered through either or both digital and non-digital means, the methodology recognises the difficulty in estimating the value of elements that are actually delivered digitally. Hence, it defines digitally deliverable services as those that could be delivered to some extent digitally.

We have excluded data in the Travel services category (classified under GATS mode 2- consumption abroad) since it covers expenditure by non-residents during visits to the country, hence is not cross-border. However, we do classify as cross-border the payments reported under mode 4 (delivery through the presence of natural persons), although some could be taxable at source under a treaty including article 5.3.b of the UN model. This provision has been difficult to apply in practice as it depends on the ability of the tax authority to verify the local presence of personnel for the requisite days, and the payments are properly considered cross-border.

As can be seen in Table 4, the ITIS dataset is more detailed, and includes data in subcategories, although it covers fewer countries. We use its more fine-grained data to derive approximate ratios of digitally deliverable and non-digitally deliverable services from 1979 (the first year in which ITIS sub-category data is reported) to 2023 (the most recent year for which complete data is available). To model this, Table 6 applies the Handbook classification of digitally deliverable and non- digitally deliverable services to the 2023 aggregate reported ITIS data to determine approximate ratios of digitally deliverable and non-digitally deliverable services.

Table 6. Ratios of digitally deliverable and non- digitally deliverable services based on 2023 data

BaTIS/ ITIS Service category/ sub-category	Aggregate ITIS reported total	Digitally deliverable	Non digitally deliverable	Digitally deliverable (% of total)	Non digitally deliverable (% of total)
Manufacturing services on physical inputs owned by others	100,467		100,467		2.50%
Maintenance and repair services n.i.e.	65,207		65,207		1.62%
International Transport	903,281		903,281		22.50%
Construction	43,658		43,658		1.09%
Insurance and pension services	181,598	181,598		4.52%	
Financial services	297,998	297,998		7.42%	
Charges for the use of intellectual property	453,051	397,994		9.91%	
Licences to reproduce and/or distribute computer software*	55,057	55,057		1.37%	
Telecommunications, computer, and information services	441,993	441,993		11.01%	
Other business services	1,392,309	1,337,695		33.32%	
Waste treatment and de-pollution, agricultural and mining services*	12,100		12,100		0.30%
Operating leasing services*	42,515		42,515		1.06%
Personal, cultural, and recreational (PC&R) services	91,814				
PC&R Audio- visual services*	76,567	76,567		1.91%	
PC&R: Health, education, heritage, and recreational services*	162	162		0.00%	
PC&R: Other personal services *	1,710		15,084		0.38%
Government goods and services n.i.e.	42,751		42,751		1.07%
Total	4,014,126	2,789,064	1,225,062	69.48%	30.52%
As a % of total		69.48%	30.52%		

Source: Created by the authors, based on BaTIS and ITIS datasets. Sub-categories are indicated by the asterisk (*) and do not form part of 'Aggregated ITIS reported total.' n.i.e- not included elsewhere.

The approximate ratios computed using the ITIS dataset are then extrapolated to global services imports and exports data to determine the proportion of digitally deliverable and non-digitally deliverable global services trade (Table 7).

Table 7. Digitally deliverable and non- digitally deliverable global services trade, 2023

Description	Unit: USD Billions/ %	Digitally deliverable (69.48%)	Not digitally deliverable (30.52%)
Global service imports net of travel	5,982		
Global GDP current	106,971		
Global service as a proportion of GDP (%)	5.59%	3.89%	1.71%
BOP- High-income countries	729	506	222
BOP- Upper middle-income countries	(200)	(139)	(61)
BOP- Lower middle-income countries	123	94	41
BOP- Low-income countries	(36)	(25)	(11)

Source: Created by the authors, based on BaTIS and ITIS datasets.

Scope of Digital Service Taxes (DSTs) and Automated Digital Services (ADS)

We start by reviewing the activities classified as falling in scope of DSTs by the countries that have enacted DST measures.[41]

Based on this, and our examination of DSTs in some key countries, we consider that five ITIS sub-categories potentially fall into the scope of DSTs (Table 8). Global estimates are determined using ITIS ratios of each qualifying digitally deliverable service to the total digitally deliverable estimate. On this basis, the global value of services imports within the scope of DSTs can be estimated to be USD 807 billion, which is 13.18% of the total cross border services value for the year. This does not indicate the volume covered by DSTs that are actually in force, but the amounts in the BaTIS/ITIS data for the categories that we consider are covered by most existing DSTs.

[41] See Digital Services Taxes Global Tracker: https://www.vatcalc.com/global/digital-services-taxes-dst-global-tracker/

Table 8. Automated digital services in scope for DSTs

ITIS service sub- categories	Examples
Audio-visual services	Software downloads, cloud computing services, streaming media e.g., Spotify or Netflix, online gaming, digital communication services, datasets traded as products
Trade- related services (including digital intermediation services)	Commissions on goods and service transactions payable to merchants, brokers, dealers, auctioneers & commission agents. Digital intermediation services e.g., Amazon, Airbnb, Uber platforms
Advertising, market research, public opinion polling services	Provided by content creators on "free online platforms" like Instagram, Facebook, and Twitter
Computer services other than software	Cloud computing services, streaming media, web hosting, online gaming, digital communication services, datasets
Information services other than news agency services	Sale of copyrights related to books and manuscripts, data, and databases; web hosting services for information, images, video, or other content that can be stored e.g., Yahoo, Gmail; subscription services to digitized versions of newspapers/ magazines

Source: Created by the authors, based on BaTIS and ITIS datasets and the BPM7.

As a cross-check we applied this methodology to UK reported ITIS data and compared it against the actual DST revenue realised by HMRC, with a tax rate of 2% (Table 9).

Table 9. UK- Comparison of estimated and actual DST revenue

Period	DST Revenue Estimate (GBP Millions)	HMRC- DST Revenue Realised (GBP Millions)	Variance (GBP Millions)
April 2020- March 2021	324.64	380	55
April 2021- March 2022	367.58	567	199
April 2022- March 2023	433.90	678	244

Source: Created by the authors, based on BaTIS & ITIS datasets and HMRC revenue data.

As can be seen the outcomes are comparable, although the actual revenues realised have been higher than suggested by our analysis. This may be due to under-reporting or under-estimation in the data collected for trade purposes and compiled in the ITIS dataset. The UK's DST has a relatively broad scope compared with other countries.

In addition to services likely to be within the scope of DSTs, we identified six ITIS sub-categories that potentially come into the wider category of ADS as they are likely to be provided with minimal human intervention (Table 10). These additional ADS are estimated to be USD 1,315billion in 2023, which is 21.47% of the total cross border services value.

Table 10. Other automated digital services (excluding DSTs)

BaTIS/ ITIS service sub- categories	Examples
Insurance and pension services (ALL)	Core insurance service of risk management: direct insurance, reinsurance, auxiliary insurance services, pension, and standardized guarantee services
Financial services (ALL)	Financial services explicitly charged: Credit rating services, liquidity provision and transformation, underwriting, safekeeping, record-keeping, and payment services Financial intermediation services indirectly measured: Difference between reference rate and the interest rate actually paid to depositors
Licences to reproduce/ distribute computer software	Two-stage process: production of the original (output is the original itself over which legal or de facto ownership can be established by copyright, patent, or secrecy) and production and use of copies of the original (payments made by the licensee to the owner may be described as fees, commissions, or royalties)
Telecommunication services	Broadcast or transmission of sound, images, data, or other information by telephone, electronic mail, facsimile etc. Includes business network services, teleconferencing, mobile telecommunications services, internet backbone services, and online internet access services. Excludes the value of the information transported, installation services for telephone network equipment and database services.
Computer software	Software downloads, including antivirus software
News agency services	Provision of news, photographs, and feature articles to the media

Source: Created by the authors, based on BaTIS & ITIS datasets as well as the BPM6 & BPM7.

Charges for the Use of Intellectual Property Rights (IPRs)

As can be seen from Table 10, we have classified payments for licences to reproduce or distribute computer software as digitally deliverable ADS, since they are considered as services revenue and not royalties under tax treaties. However, the remaining items classified as charges for the use of intellectual property in ITIS (Table 11) are more likely to fall within the auspices of Article 12 as royalties, so we have classified them separately, although they are considered to be digitally deliverable services. These charges for the use of intellectual property under four ITIS sub-categories (Table 11) are estimated at USD 609billion in 2023, that is, 9.94% of the total cross border services value.

Table 11. Excluded charges for the use of intellectual property

ITIS service sub- categories	Examples
Franchises and trademarks licensing fees	Franchises, trademarks, brand names
Licences for use of outcomes in research and development	Patents, copyrights, industrial processes and designs, trade secrets
Licences to reproduce/ distribute audio-visual products	Copyrights on books and manuscripts, cinematographic works, sound recordings, rights for live performances, television, cable, satellite broadcast
Licences to reproduce/ distribute other than audio-visual products	

Source: Created by the authors, based on BaTIS & ITIS datasets as well as the BPM6 & BPM7.

Services within the Scope of WTs on Fees for Technical Services (FTS)

Seven ITIS sub-categories which are business and professional services, are considered to require human contribution in their supply, although digitally deliverable, and fall in scope of source taxes on fees for professional and technical services FTS (Table 12). In 2023, digitally deliverable FTS is estimated at USD 1,536billion, that is, 25.08% of the total cross border services value.

Table 12. Digitally deliverable fees for technical services

ITIS service sub- categories	Examples
Research and development	Incl. natural sciences, engineering, technology, medical and health sciences, social sciences, humanities, interdisciplinary research, and development services
Legal, accounting, management consulting and public relations services	Digital outputs replacing physical files, consulting services provided through videoconferences or other digitized means
Architectural, engineering, scientific, other technical services	Building design; design, development and utilization of machines, materials, instruments, structures, processes, and systems; surveying, cartography, product testing, certification, technical inspection
Other business services not included elsewhere	Investigative services, translation & interpretation, publishing, real estate, employment services that may charge a premium e.g., LinkedIn
PC&R services: Health services	Provided by hospitals, doctors, nurses, and paramedical and similar personnel, as well as laboratory and similar services whether rendered remotely (e.g., telehealth) or onsite
PC&R services: Education services	Correspondence courses and education via television or the internet (e-learning), as well as by teachers and so forth who supply services directly in host economies
PC&R services: Heritage and recreational services	Includes those associated with sporting, gambling, and recreational activities, including fee-based versions of social networking platforms

Source: Created by the authors, based on BaTIS & ITIS datasets as well as the BPM6 & BPM7.

Services not digitally deliverable

Services classified as 'non- digitally deliverable' are generally considered to require some physical presence. Nine BaTIS/ ITIS categories and sub-categories make up the non-digitally deliverable services (Table 13). In 2023, non- digitally deliverable services were estimated at USD 1,857billion, that is, 30.32% of the total cross border services.

Although it is assumed that non-digitally deliverable services may also include a small share of digitally delivered transactions, recent surveys show that a considerable proportion of these services are in fact delivered digitally (IMF et al., 2023, p. 78-9, surveys by Canada and the UK). However, unbundling of the digitally deliverable service components, such as architectural design services under construction services, is challenging in practice. The Handbook acknowledges that further research is required to reassess and possibly expand the list of digitally deliverable services. While disruptions like COVID-19 boosted digitalization and increased the delivery of services through computer networks, non-digitally deliverable services like transport and accommodation dropped.

Government goods and services which cover services provided by government bodies are also excluded from digitally deliverable services. The Handbook assumes that data on digital trade transactions by government entities is not readily accessible.

Table 13. Non- digitally deliverable services

BaTIS/ ITIS service sub-categories	Examples
Waste treatment and de-pollution, agricultural and mining services	Waste treatment and depollution: Recycling, sewerage, sewage treatment and septic tank cleaning services, waste collection and disposal, remediation, sanitation Agricultural services: Services incidental to agriculture, forestry, fishing e.g., veterinary services Mining services: Services incidental to mining and oil and gas extraction
Operating leasing services	Leasing or rental services of specified produced assets, such as buildings or equipment
Artistic services	Fees to actors, directors, producers involved with theatrical and musical productions, sporting events, circuses excl. employee remuneration
PC&R services- Other personal services	Services associated with museums and other cultural activities, including fees and prizes of athletes
Manufacturing services on physical inputs owned by others (ALL)	Goods for processing in reporting economy & goods for processing abroad: Gold and oil refining, liquefaction of natural gas, assembly of clothing and electronics, assembly, labeling, and packing. No transfer of ownership
Maintenance and repair services (ALL)	Major and minor repairs- including repair and maintenance on ships, aircraft, and other transport equipment
Transport (ALL)	Sea, air, other modes of transport (space, rail, road, inland waterway, pipeline, electricity transmission, other supporting and auxiliary transport services), postal and courier services
Construction (ALL)	Construction abroad and construction in the reporting economy: Creation, renovation, repair, or extension, related installation and assembly work, site preparation, general construction, specialized services like painting, plumbing, and demolition, management of construction projects
Government goods and services (ALL)	Embassies and consulates, military units and agencies, other government goods and services: Office, staff and dependent goods and services, including supplies, vehicles, repairs, electricity, and rental of premises

Source: Created by the authors, based on BaTIS & ITIS datasets and the BPM7.

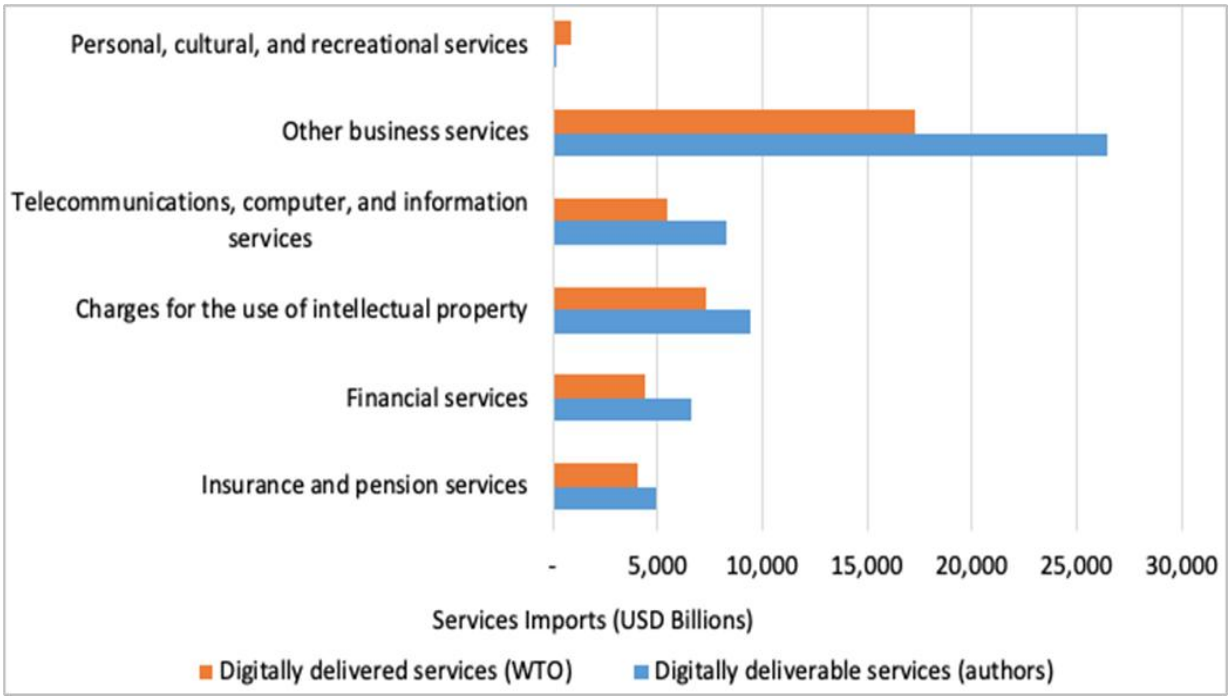
Limitations of the Data

The BaTIS dataset is the only source for bilateral payments disaggregated by country. Because only a minority of countries report full or partial information, statistical techniques, such as time series with estimates and gravity models, are used to create the full 'balanced' trade dataset. This means that the balanced dataset could under- or over-estimate actual payments for imports.

In addition, we recognize the difficulty in directly estimating digitally delivered services and only provide upper bound estimates of digitally deliverable services. However, we note that the WTO provides estimates of digitally delivered services for over 200 economies from 2005 to 2024, based on the Handbook definitions. While the underlying methodology appears similar to ours, as expected, WTO's estimates of digitally delivered services are lower than our estimates of digitally deliverable services (see graph 6). However, the WTO does not disclose the basis used to produce the estimates for digitally delivered services.

Comparing digitally delivered to digitally deliverable services by sector (Figure 8), 'other business services', whose growth is most pronounced, accounted for the largest variance in absolute terms (USD 4.2bn), while personal, cultural, and recreational services accounted for the largest percentage variance (30%). In view of the speed of digitalisation, especially with the emergence of artificial intelligence, any distinction between digitally deliverable and digitally delivered is undoubtedly eroding rapidly.

Figure 8. Comparison of Digitally Deliverable Vs Digitally Delivered Estimates by Service Sector, 2005 to 2023



Source: created by authors, based on World Development Indicators, OECD ITIS database and WTO digitally delivered services trade dataset.