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ABSTRACT

Taxation of cross-border services has been identified as a high priority issue in the United Nations (UN) negotiations to establish a new global framework for tax. This paper analyses the defects of international tax rules as applied to services, and their exploitation by multinational enterprises (MNEs), focusing on the impact on developing countries. Services have become increasingly important for economic development, but international tax rules favouring delivery by non-residents act as a disincentive to the growth of local services providers, particularly disadvantaging developing countries which are mainly hosts to MNEs. We analyse the restrictions on source taxation of services in tax treaties, particularly those based on the model of the Organisation of Economic Co-operation and Development (OECD), and show that their spread has been accompanied by a widening deficit in services trade of developing countries, while the weakening of their attempts to protect their tax base through withholding taxes has resulted in increasing losses of tax revenue. The paper combines detailed qualitative analyses of tax treaties with quantitative estimates of their effects on trade and tax revenues for services of five developing countries: Argentina, Brazil, Colombia, Kenya and Nigeria. Our analysis suggests that a new approach is needed for taxation of services, breaking with the residence-source dichotomy, and adopting formulary apportionment. This could be based on the standards agreed in the Two Pillar Solution of the OECD/Group of Twenty (G20) project on base erosion and profit shifting (BEPS) and developed now through the UN.

La taxation des services transfrontaliers est considérée comme une question hautement prioritaire dans les négociations en cours entre les pays membres des Nations Unies visant à établir un nouveau cadre fiscal mondial. Le présent document analyse les problèmes liés aux règles fiscales internationales en matière de services et comment les entreprises multinationales en tirent parti, en mettant l'accent sur l'impact qui en résulte sur les pays en développement. Les services revêtent une importance toujours plus grande pour le développement économique, mais les règles fiscales internationales, qui favorisent la prestation de services par des non-résidents ont un effet dissuasif sur la croissance des prestataires de services locaux, en particulier dans les pays en développement dans lesquels les entreprises multinationales sont majoritaires. Il dresse un état des lieux des restrictions à l'imposition à la source des services dans les conventions fiscales, notamment celles fondées sur le modèle de l'Organisation de coopération et de développement économiques (OCDE), et montre que leur extension s'est accompagnée d'un déficit croissant dans le commerce des services des pays en développement, l'affaiblissement de leurs tentatives de protéger leur base fiscale par des retenues à la source s'étant, par ailleurs, traduite par des pertes croissantes de recettes fiscales. Le document combine des analyses qualitatives détaillées des conventions fiscales avec des estimations quantitatives de leurs effets sur le commerce des services et les recettes fiscales qui en découlent dans cinq pays en développement : l'Argentine, le Brésil, la Colombie, le Kenya et le Nigeria. Il prône pour une nouvelle approche en ce qui concerne l'imposition des services qui ne serait plus centrée sur le paradigme résidence-source, mais sur la méthode de répartition par formule. Cette nouvelle approche pourrait s'appuyer sur les règles définies dans la Solution reposant sur deux piliers convenue par le Cadre inclusif OCDE/G20 sur l'érosion de la base d'imposition et le transfert de bénéfices (BEPS) qui font actuellement l'objet de discussions au sein des Nations unies.

La tributación de los servicios transfronterizos ha sido identificada como un tema de alta prioridad en las negociaciones de las Naciones Unidas (ONU) para establecer un nuevo marco fiscal global. Este documento analiza los defectos de las normas fiscales internacionales aplicadas a los servicios y su explotación por parte de las empresas *multinacionales (EMN), centrándose en el impacto en los países en desarrollo. Los servicios se han vuelto cada vez más importantes para el desarrollo económico, pero las normas fiscales internacionales que favorecen la prestación por parte de no residentes actúan como un desincentivo para el crecimiento de los proveedores de servicios locales, desfavoreciendo especialmente a los países en desarrollo, que son los que más acogen a empresas multinacionales. Analizamos las restricciones a la tributación en origen de los servicios en los tratados fiscales, en particular los basados en el modelo de la Organización para la Cooperación y el Desarrollo Económico (OCDE), y demostramos que su difusión ha ido acompañada de un creciente déficit en el comercio de servicios de los países en desarrollo, mientras que el debilitamiento de sus intentos de proteger su base tributaria mediante retenciones en origen ha dado lugar a una creciente pérdida de ingresos fiscales. El documento combina análisis cualitativos detallados de los tratados fiscales con estimaciones cuantitativas de sus efectos sobre el comercio y los ingresos fiscales de los servicios de cinco países en desarrollo: Argentina, Brasil, Colombia, Kenia y Nigeria. Nuestro análisis sugiere que se necesita un nuevo enfoque para la tributación de los servicios, rompiendo con la dicotomía residencia-fuente y adoptando el prorrateo formulario. Esto podría basarse en las normas acordadas en la Solución de Dos Pilares del proyecto de la OCDE/Grupo de los Veinte (G20) sobre la erosión de la base imponible y el traslado de beneficios (BEPS) y desarrolladas ahora a través de la ONU.*

TABLE OF CONTENTS

1. The Imbalanced Design of Tax Treaties

1.1 Tax Treaties and the Allocation of Taxing Rights

This paper aims to analyse the impact of restrictions in 'double taxation agreements' (DTAs) on taxing rights, particularly on developing countries and for income from cross-border services.[1] Countries generally tax the income derived by non-residents from activities performed in or connected with their jurisdiction. However, bilateral DTAs restrict taxation of income derived from the country by residents of the treaty-partner.

First, they confine the right to tax net business income to that attributable to a 'permanent establishment' (PE), specified in terms of criteria defining a 'fixed place of business' in the country. Secondly, they limit the right to apply a withholding tax (WT) at source in respect of various types of payments of income to residents of the treaty partner. This is in line with their purpose of facilitating international investment by allocating taxing rights to prevent international double taxation. Restrictions on source taxation are particularly stringent in treaties based on the model of the Organisation for Economic Co-operation and Development (OECD), and somewhat less so in the model developed by the United Nations Tax Committee (UNTC) for use with developing countries.[2]

The priority for residence-based taxation is particularly problematic for developing countries, and especially in relation to services. There is generally a significant imbalance in all types of cross-border business, typically dominated by multinational enterprises (MNEs), as developed countries are mainly their home (or residence) countries, while developing countries are mainly hosts (or source) countries. Hence, formal reciprocity prioritising residence countries results in a net loss of tax revenue to poorer countries. In addition, it is relatively easy to take advantage of rules on residence, especially for legal persons such as corporations, to locate entities in jurisdictions where their income is low-taxed. This stimulates competition to attract corporate residence by offering tax advantages, and creates 'double non-taxation' as income untaxed at source also benefits from low or no taxation in the recipient's country.

DTAs have nevertheless been considered by policymakers to be necessary to encourage inward foreign direct investment by MNEs. This justification has been greatly weakened as it has become increasingly easy to do business in a country with little or no physical presence, due to improved international communication, most recently through digitalisation.[3] This is particularly so for services, which are intangible, that can be delivered remotely.

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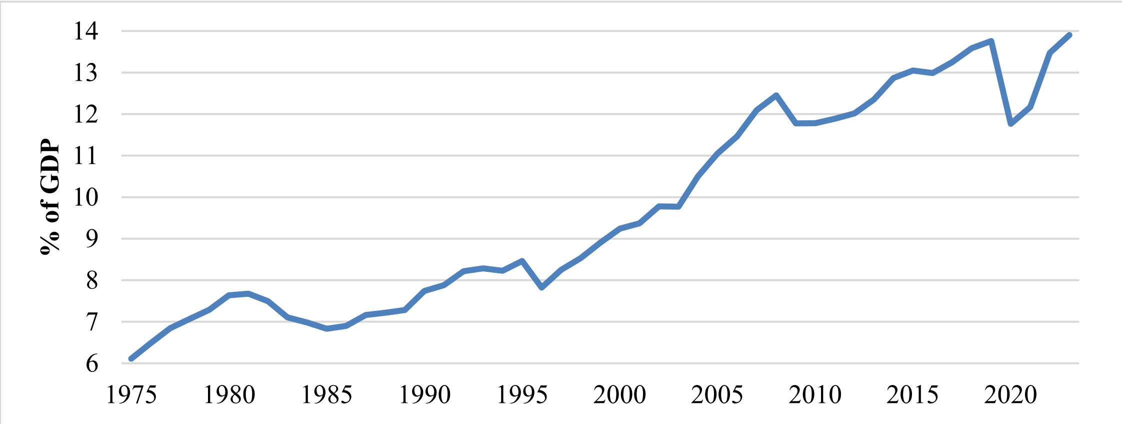
[1] We define developing countries as including all but high-income countries in line with the International Monetary Fund (IMF)/World Bank classification. Income from cross-border services is the income or profit derived by a non-resident from services performed in a country. Hence, we exclude travel, which mainly reports spending by a non-resident in the country, especially due to tourism. However, our analysis also includes payments for intellectual property rights which are reported in the data for services trade, and are also subject to treaty restrictions. See further below.

[2] Leduc and Michielse, 2021, pp. 125-6; for more details see below, and Picciotto, 2021.

[3] The problem has also been exacerbated by the interpretation of tax treaty provisions as requiring the business income of MNEs to be allocated to its various affiliates by treating them as if they were independent entities, dealing with each other at 'arm's length'. This allows MNEs to attribute substantial revenue from sales to a non-resident affiliate, located in a country where this income is low-taxed, while local affiliates performing related functions (such as customer support, or order fulfilment) can declare low levels of taxable profit under a 'one-sided' method based on a standard rate of return on local expenditures: see for example Uber (Cicin-Šain, 2020). These methods systematically allocate the super-profits resulting from the synergy of large integrated MNEs to entities easily located in low-tax jurisdictions, typically holding companies for intangibles and providers of services (Wittendorf, 2016, p. 332; Schoueri and Galendi, 2021).

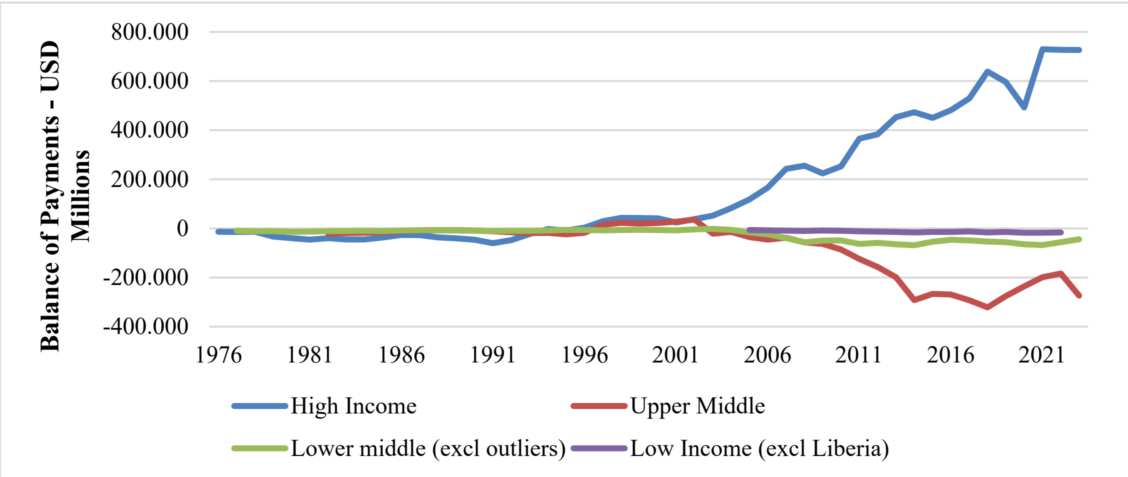
Services have become increasingly important to economic development, with a general 'servicification' of the economy (Nayyar, Hallward-Driemeier, & Davies, 2021). There has been a secular increase in the share of gross domestic product (GDP) attributed to services, rising by 2022 to an estimated 64% of value added worldwide, but ranging between 34% for low-income and 70% for high-income countries.[4] Trade in services has grown rapidly in relation to GDP, particularly between 1995 and 2007 (see Graph 1), with high-income countries continuing to dominate exports and maintaining a large net surplus (see Graph 2).

Graph 1: Global Trade in Services as a Percentage of Gross Domestic Product



Source: World Development Indicators (World Bank, 2023)[5]. Trade in services is the sum of service exports and imports.

Graph 2: Services Balance of Payments across Income Groups



Source: World Development Indicators (World Bank, 2023)[6]. Services balance of payments for each income group is calculated as the difference between service exports and service imports.

[4] See the World Bank's World Development Indicators, Table 4.2 Structure of Value Added: https://wdi.worldbank.org/table/4.2.
[5] See the World Bank's World Development Indicators: https://data.worldbank.org/indicator/BG.GSR.NFSV.GD.ZS
[6] India, Morocco, the Philippines, Tunisia and Ukraine had disproportionately high exports compared to their imports. They were therefore excluded from the calculation for the lower-middle income countries. Liberia was similarly excluded from the calculation for the low-income countries.

Although there has been a relative decline in developed countries' share of total services exports, the expanding share from developing countries has been mainly from relatively few jurisdictions (Loungani *et al*., 2017). Significantly, the widening of the net deficit has been more marked for upper-middle income countries, although the data must be treated with caution due to distortions in the attribution and valuation of services income for tax reasons.[7] However, the data suggests that this is due to payments for international transport, as well as for telecommunications and computer services, where they heavily rely on non-resident providers, with the volume of these payments being proportional to GDP. Overall, developing countries generally have a substantial net deficit in services trade (WTO, 2019). Hence, DTA restrictions on taxation of imports of services generally have an asymmetric impact on tax revenues of developed and developing countries.

The tax treaty restrictions also provide perverse incentives to deliver services across borders without a local fixed base or employees which might create a taxable presence. Hence, the arguments for restricting tax on non-residents have shifted towards claims that foreign competition may improve quality, and that high quality services, even if supplied from abroad, improve productivity (UNCTAD, 2018, pp. 16-17). On the other hand, lower taxation of non-residents favours MNEs over domestic firms and stifles the emergence of local service providers. We do not investigate in detail here the evidence for these claims, but clearly DTA restrictions on source taxation of services are increasingly hard to justify. Our focus is the tax implications, which can more clearly be identified. Nevertheless, the evidence from our analysis supports the view that the unsuitability of international tax rules on services significantly affects the comparative advantage of developing countries in fostering growth in high value-added services.

Developing countries have long been concerned by the restrictions on source taxation of services, while the OECD has continued to champion residence-based taxation. This perspective only began to change in the course of the OECD/Group of Twenty (G20) project on base erosion and profit shifting (BEPS).[8] The BEPS project has focused on the problem of 'double non-taxation', as income not taxed at source due to treaty restrictions can be attributed to entities in jurisdictions where that income is taxed at zero or low rates. This could be considered an abuse of tax treaties, as when a State accepts treaty provisions that restrict its right to tax elements of income, it generally does so on the understanding that these elements of income are taxable in the other State.[9] The need to stop such abuses has further strengthened the arguments for source taxation, especially for services. However, the BEPS Action Plan did not aim to address the balance of taxing rights between residence and source but to 'restore the intended effects and benefits' of existing standards. It also at the start rejected adopting an alternative approach, particularly a formulary apportionment of the total profits of MNEs (OECD, 2013, pp. 13-14, 20).

The issue of allocation of taxing rights came much more into focus in the second phase of the BEPS project from 2018, when it began to seriously address the implications for international tax of digitalisation and globalisation of the economy. This resulted in proposals hailed as the 'Two Pillar solution' in October 2021.

These now finally do adopt a new approach, prompted by proposals from developing countries (G24, 2019). Pillar One includes a proposal for unitary taxation of MNEs, with an allocation to countries of their global consolidated profits based on their sales in each country. This would clearly be a superior approach, since it would tax each MNE's actual net income. It can only be ensured by an apportionment of the total profits, since there is a mismatch between the

[7] We have excluded Liberia from the low-income group for this reason.
[8] This was backed by the G20 in 2013, and since 2016 has been open for participation by all countries in the so-called Inclusive Framework on BEPS (the IF).
[9] See the Preamble, and Paragraph 15.2 of the Introduction in OECD Model 2017.

source of income and the location of expenditure generating that income. However, the actual proposal would apply to only around 100 of the largest and most profitable MNEs, and reallocate only 25% of their 'residual' profits. Implementation would require ratification of a multilateral treaty by a critical mass of states, including the United States, which is highly unlikely.

Hence, the most practical immediate method for taxing non-residents' income is to apply a WT, which can be collected from the persons making payments. This is relatively easy to administer, but it applies to the gross amount, and hence is unrelated to the profitability of the MNE or the activity. The rate may be calibrated to take this into account, and may also differentiate between types of services. Nevertheless, many WTs can be passed on directly to customers, sometimes by 'grossing up' the price, especially if they are responsible for payment of the tax.

Taxation of cross-border services is now high on the international tax reform agenda.[10] The issue on which we focus here should be seen as part of the wider challenge of international tax reform. Stemming revenue losses through WTs at source continues to be an important practical measure for developing countries, but does not provide a principled or holistic basis for allocation of rights to tax MNEs' income. A balanced allocation of taxing rights over net income is only possible with a system of apportionment, which can take account of the location of operating expenses (employee remuneration, investment in physical assets) as well as the source of revenue from sales to third parties. Implementation of formulary apportionment has now been greatly facilitated in the work on the two Pillars, which has established agreed standards for its implementation, although only on a limited basis in the proposals for Amount A (Picciotto *et al.*, 2023). The conflicts between residence and source taxation that we analyse and quantify in this paper can only be resolved fairly and effectively by a transition to such a system.

1.2 Spreading the OECD Standards

The model convention on income and capital of the OECD has had strict restrictions on source taxation since its first version of 1963, and they have been further strengthened subsequently. Scholars point out that treaties are not necessary to prevent double taxation, since this is adequately done in domestic law. Rather, these treaties reallocate taxing rights (to the disadvantage of developing countries), while providing a framework of standards and a basis for dealing with divergences and contested interpretations (Brooks and Krever, 2015; Dagan, 2000; Dagan, 2017). The OECD model, first published in 1963, facilitated negotiation of a comprehensive network of DTAs between OECD members by 1975, but its priority for residence jurisdictions made it unsuitable for use with developing countries, since they are mainly hosts to MNEs. Hence, a United Nations (UN) Committee of Experts on International Tax was set up in 1967 and adapted the model for use with developing countries, first published in 1980. This involved compromises in the allocation of taxing rights, achieving at best an amelioration of the bias towards MNE home countries.

As regards services, under the OECD treaty standard, income from services is treated as general business income coming under article 7, and hence only taxable at source if there is a PE. The original OECD model also included a provision specifying residence taxation of independent personal services (IPS) in article 14, unless the services provider had a 'fixed

[10] It was identified as a high priority issue in the resolution approved by the United Nations (UN) General Assembly in December 2023 on the *Promotion of inclusive and effective international tax cooperation at the United Nations* (A/RES/78/230), and has been included in the draft terms of reference for negotiation of a UN Framework Convention on International Tax Cooperation (the latest version is the Chair's Proposal of 15 August 2024, UN document A/AC.295/2024/L.4).

base', which was the equivalent of the requirement of a PE. Article 14 was omitted from the OECD model in 2000, so that the article 5 requirement of a PE applied to all services. It was retained in the UN model, which also included provisions allowing source taxation of income from insurance, international transportation, and a 'services PE'. Table 1 provides a comparison of the main provisions relevant here.

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 (to which some modifications were made in phase 1 of the BEPS process (article 5)).	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).
Income from personal services of an independent character attributable to a 'fixed base' in a country could be taxed in the country (article 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 property right 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); but the OECD interpretation excluding payments for the use of software was included in the UN Commentary, and has been followed by courts even in non-OECD countries; an alternative interpretation was included in 2021, and a revised article agreed in 2023.
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.
Profits of an enterprise from the operation of ships or aircraft in international traffic are taxable only in its state of residence (art. 8).	Alternative A identical to the OECD; Alternative B allows profits from more than casual operation of ships to be taxed by the source state based on an appropriate allocation of the overall net profits, reduced by an agreed percentage (art. 8). A revised version of Alternative B is likely to be agreed by 2025, which may include air transport.
Any other income is taxable only in the state of residence (article 21.1).	Income not dealt with in other articles may 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.

Although the UN model already embodies a compromise, in practice developing country treaties include elements from both models (Wijnen and de Goede, 2014), and it has even been described as 'an albatross around developing countries' neck' (Ahmed, 2023). In recent years the developing country members of the UN Committee have acted more cohesively to strengthen the source taxation provisions, but changes to the model have no effect unless they are adopted in practice. A key issue for the new international tax framework now under negotiation in the UN will be whether reform of existing treaties can be adequate for the radical change that is clearly needed.

DTAs began to be negotiated with developing countries in the 1970s, sometimes replacing those imposed on dependencies in the colonial era. Initially there were mixed results and compromises were agreed, but developing countries increasingly accepted treaties based on the OECD model despite the loss of taxing rights they entailed (Brooks and Krever, 2015). As research by Lynn Latulippe has shown 'the OECD played a central role in the spread of tax treaties to non-member countries in the 1990s because it created the necessary conditions for the acceptance of this tool and its model' (Latulippe, 2012, p. 881).

Hearson has analysed in detail the treaty policy of the United Kingdom (which now has the largest DTA network), showing that its treaty negotiations have been driven by the priorities of UK MNEs and in close consultation with business lobby groups, while the specialist negotiators aimed to ensure competitive equality and 'acceptable' standards (Hearson, 2021, p. 98). This meant imposing source tax restrictions in line with the OECD model. The UK began with the advantage of treaties imposed on dependencies in the colonial era, and only started negotiations with countries such as Nigeria and Kenya when those countries moved to cancel them.

Protecting residence taxation in UK DTAs was a priority particularly for air and shipping lines, but in an era of national carriers it could be agreed. Defending source taxation has also been difficult because of the lack of sourcing and allocation rules needed for income apportionment, which was an option under Alternative B of the UN model provision for taxation of international transport income, although Asian countries have used variations of this model (Michel and Falcão, 2021). The UK's main red line was to restrict source tax on services, but a compromise agreement was reached with Kenya in 1973 allowing a WT on 'services of a managerial, technical or consultancy nature', although capped at 12.5%. In the 1980s Kenya succeeded in negotiating treaties with Germany and Canada limiting the WT on technical services to 15%, but eventually agreed a treaty with France in 2007 that had no provision for source taxation of income from technical services. Nigeria's reluctance blocked agreement until a change of government policy resulted in acceptance of a DTA with the UK based on the OECD model in 1982, but approval was delayed until 1987. The UK's willingness to compromise ended by 2005 when its aim became the elimination of source taxation of services.

Key Latin American countries resisted longer. In the case of Brazil, although UK business lobbying prompted talks starting in the 1960s, negotiations in 1976 failed, due particularly to Brazil's insistence on source taxation of royalty payments (Hearson, 2021, ch. 5), which Brazil applied also to technical assistance and services.[11] Colombia's resistance on services blocked agreement with the UK for decades. The obstacle began to be removed when some middle-income developing countries for wider economic and political reasons aspired to OECD membership,[12] a condition of which was acceptance of OECD international tax standards, including closer alignment with its DTA model. Thus Colombia, which began accession negotiations with the OECD in 2013, agreed a DTA with the UK in 2016 that did not include a WT on payments for technical services (Hearson, 2017). Similarly, Brazil, having opened accession negotiations with the OECD in 2022, later that year agreed a DTA with the UK that would phase out source taxation of services over four years. However, this has not yet been ratified by Brazil. Argentina has also signed a treaty with Japan, not yet ratified, that would block source taxation of technical services income, potentially affecting a dozen existing DTAs due to 'most-favoured-nation' (MFN) clauses (see below).

[11] For more details see Brazil case study below.
[12] The key accessions were Mexico - 1994, Chile - 2010, Colombia - 2020, Costa Rica - 2021.

The network of bilateral tax treaties grew steadily especially from the 1990s, reaching around 3000, although there are still relatively few with low-income countries (Leduc and Michielse, 2021, p. 133). Nevertheless, even a single treaty may have wide effects. The diffusion of the OECD standard has been helped because some OECD countries that in early years accepted relatively high WTs did so subject to MFN provisions, which extend to them the benefits of a more favourable treaty subsequently agreed with a third state.[13] Thus, Colombia had seven treaties subject to MFN provisions potentially triggered by the UK treaty, but the official interpretation issued by the tax administration limited these effects to four, [14] and the Brazil-UK and Argentina-Japan treaties could also have knock-on effects. OECD data indicate that around 80% of DTAs of OECD and IF members restrict source WT on services to 0-4% (OECD, 2024, p. 32).

1.3 The Lose-Lose Effects of the OECD's Residence Standard

The residence principle is relatively easy to exploit, as MNEs can create affiliates resident in a country with a suitable treaty to act as conduits. This is facilitated by countries which have a wide network of treaties that reduce taxation of income at source and either provide exemption for such foreign-source income, or enable its onward transmission without imposing tax. This may be through tax-transparent entities such as partnerships, or by back-to-back matching payments to another affiliate in a low- or zero-tax country, which are not subject to WT in the conduit country.

Such jurisdictions are now described euphemistically by the OECD as 'investment hubs', defined as jurisdictions with a total inward foreign direct investment position above 150% of GDP (OECD, 2024, p. 95). Data now available from MNEs' country-by-country reports indicate a significant misalignment between real activities and the income attributed to entities resident in these countries under current DTA rules, with a median value of revenues per employee of $1,640,000 compared to $330,000 for all other countries (OECD, 2024, p. 73).[15] The activity of 31% of these conduit entities is holding shares, while some 15% of them are described as providing general services, 12% sales, marketing or distribution and 7% administrative, management or support services (OECD, 2024, p. 94). The OECD does not publish data on the revenues attributed to entities fulfilling these functions, but it is likely to be substantial. A listing of countries with a high volume of exports of services in relation to their GDP includes almost all of the countries identified as investment hubs, but also some others (Table 2).

Yet, OECD countries have strengthened the residence principle, largely due to the increased economic importance to them of services, and of their exports. They continued negotiating treaties based on these standards even during the years of the BEPS project negotiations, in which many of them argued for source taxation of income from digitalised services, and even introduced their own WTs on digital services.

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[13] For a discussion and critique of these MFN provisions see Kapoor, 2021.

[14] Czechia, Canada, Portugal and Mexico (but not for consultancy fees); the agreements with Spain, Chile and Switzerland were considered not to be activated (DIAN, 2020).

[15] These 'investment hubs' appear to be: Anguilla, Bahamas, Bailiwick of Guernsey, Barbados, Bermuda, British Virgin Islands, Cayman Islands, Curaçao, Cyprus, Gibraltar, Hong Kong (China), Hungary, Ireland, Isle of Man, Jersey, Liberia, Luxembourg, Malta, Marshall Islands, Mauritius, Netherlands, Puerto Rico, Singapore and Switzerland (Hugger *et al*, 2023, Table D.1, p. 58). Also, a higher share of these revenues comes from related parties (30%, compared to 18% in high-, 13% in middle- and 5% in low-income countries: *ibid*., p. 68).

Table 2: Receipts from Royalties and Services Exports to GDP, 2021

Economy	Services Exports (excl travel)	Gross Domestic Product	Service Exports to GDP
	USD, Millions	USD, Millions	%
Bermuda*	38,111.39	7,127.20	534.73%
Liberia*	17,404.15	3,509.00	495.99%
Barbados*	11,239.06	4,923.10	228.29%
Luxembourg*	106,512.10	85,584.11	124.45%
Malta*	15,968.82	18,087.21	88.29%
Fiji	3,657.49	4,305.03	84.96%
Seychelles	1,056.64	1,286.69	82.12%
Cyprus*	20,419.00	29,482.92	69.26%
Samoa	516.36	843.92	61.19%
Cayman Islands*	3,491.64	6,028.37	57.92%
Ireland*	287,084.22	513,391.78	55.92%
Singapore*	213,095.36	423,797.10	50.28%
Curaçao*	1,285.15	2,739.59	46.91%
Tuvalu	26.23	60.20	43.57%
Hong Kong – China*	123,731.51	368,911.39	33.54%
Djibouti	930.53	3,385.83	27.48%
St. Vincent and the Grenadines	234.79	872.22	26.92%
Belize	651.15	2,424.58	26.86%
Sint Maarten (Dutch part)	354.64	1,353.07	26.21%
Bahamas*	2,809.54	11,527.60	24.37%
Estonia	8,060.79	37,191.17	21.67%
Panama	14,399.48	67,406.74	21.36%
Lithuania	13,965.90	66,798.93	20.91%
Netherlands*	211,770.14	1,029,678.34	20.57%
Macao SAR, China	5,889.50	30,969.33	19.02%
Denmark	76,384.17	405,688.00	18.83%

Mauritius*	2,133.69	11,484.36	18.58%
Switzerland*	150,056.36	813,408.79	18.45%
Dominica	96.60	555.27	17.40%
Belgium	104,475.43	600,748.81	17.39%

Source: Created by authors based on data from BaTIS, which includes payments for intellectual property rights and licensing fees, as well as services, from which we excluded Travel and Government Services (see below for explanation); GDP from World Development Indicators. Reports the top 30 countries with the highest volume of exports in relation to GDP in 2021 (the most recent year for which data is available).
** also an 'investment hub' (Hugger et al., 2023).*

Article 14 was retained in the UN model, and developing countries also generally aimed to retain the right to apply a WT on fees for technical services (FTS). Some argued that this came under article 12 on royalties, which referred 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 (Schoueri and Silva, 2012, p. 188). Others modified the wording of article 12, or negotiated a specific provision for a WT on FTS, and this was formalised by the inclusion of article 12A in the UN model in 2017.

However, treaty provisions allowing WTs on royalties and technical services have been weakened by contested interpretations. In 1992 the OECD included in its model treaty Commentary a new section specifying that payments for the use of software should not be taxable as royalties for the use of copyright under article 12. This section was also included in the UN model's Commentary, although rejected by some members.[16] Consequently, payments for software licences have been classified under treaties not as royalties but as income for services, even by courts in developing countries whose governments rejected this interpretation.[17] At the same time, the term 'technical services' was said to require human knowledge or skills, so WTs on fees for technical services (if allowed) could not apply to digital supply of services, including software.[18] Hence, even if treaties include provisions allowing WTs on royalties and on fees for technical services, they would likely be interpreted to exclude both payments for software licences and for services delivered by digital means, in the absence of an explicit provision for digitalised services.

A restrictive interpretation has also been generally accepted of the UN model's version of the Other Income article, which adds paragraph 21.3 allowing source taxation of income arising in the state not 'dealt with' in other articles. Some countries, notably Brazil, used this to justify application of a domestic withholding tax on payments for services even if not explicitly provided in the treaty, and for countries that did not accept a protocol applying article 12 to technical services. This interpretation was disputed, on the grounds that the income should be considered business profits, and hence already 'dealt with' under article 7. This led to

[16] The Commentary to the UN model was amended in 2017 to include a dissenting view from some members, and this alternative position was amplified in further revisions agreed in 2021 to Article 12.
[17] After years of conflicting decisions, this was the view finally taken by India's Supreme Court (*Engineering Analysis,* 2021), which was followed by the Kenya High Court (*Seven Seas,* 2021).
[18] A new article 12A for a WT on fees for technical services was added in 2017 to the UN model, based on provisions already widely adopted in developing country treaties, sometimes in article 12 on Royalties (Falcão and Michel, 2018). The Commentary specified that technical services 'must involve the application by the service provider of specialized knowledge, skill or expertise on behalf of a client or the transfer of knowledge, skill or expertise to the client'. A new article 12B was added in 2021 to cover taxation of income from automated digital services.

cancellation of the treaty with Germany, and a challenge by a taxpayer in relation to the treaty with Finland was upheld by the Brazilian courts.[19]

Revenue losses are particularly visible and impactful for business services, since they are normally expenses deductible from the customer's business profits, so the payments to non-residents directly reduce the source tax base. This has been a concern for developing countries long pre-dating digitalisation, which has now resulted in a spread of digital services taxes (DSTs). These may be formulated as applying to income and collected by a WT, or as a transaction tax, and may apply to both business and consumer services.[20] They are generally designed as transaction taxes rather than taxes on income, and hence considered to be outside the scope of treaties. Many existing DSTs are specified to be withdrawn in the draft multilateral convention under Pillar One once implemented. However, this has still not been agreed at the time of writing, and it seems highly unlikely to come into force, as it would require ratification by a critical mass of states (particularly the US).

Due to developing country pressures, the BEPS negotiations included work on a new 'subject to tax rule' (STTR) for inclusion in tax treaties, which would override treaty restrictions to allow source taxation if payments for interest, royalties and services are low-taxed. However, the version agreed in the BEPS project has many restrictions and limitations, especially by applying only to intra-MNE services, as well as other limitations. A competing model has been developed by the UN Committee which is much wider (Picciotto, Kadet and Michel 2024).

At the root of all these problems is the failure of the tax treaty models to deal adequately with taxation of income derived from a country from the performance of services.

[19] Schoueri and Silva, 2012, p. 189; Schoueri, 2020, p. 29, and see the case study of Brazil below. Kenyan tax tribunals have also rejected this position (*McKinsey*, 2021: *Total Kenya*, 2022), while tribunals in India have differed on the point (Schoueri, 2020, p. 30).
[20] India introduced its 'equalisation levy' in 2016, which targeted payments for digitalised advertising, largely because court decisions had blocked its attempts to tax such payments as either royalties or fees for technical services. It was subsequently widened to cover e-commerce activities more generally, and these are generally included in DSTs introduced by other countries. For a survey of such measures see KPMG's regularly updated *Taxation of the Digitalized Economy*.

2. Estimating the Revenue Effects

2.1 Research Methodology

In this paper, we aim to analyse and quantify the effects on tax revenue of some selected developing countries due to treaty restrictions on source taxation of services. Economists have produced a range of estimates of the scale of the general shifting of profits, based on methodologies to identify excess profits booked by foreign-owned companies in tax havens (Tørsløv *et al.*, 2023). A key technique for such profit shifting is to locate affiliates owning intangibles in countries where income from abroad is subject to low or zero taxation. This enables substantial income categorised as royalties or fees for services to be channelled to such entities, which can be passed through to zero-tax countries. Such payments may come from either related entities within the same corporate group, or from third party customers to offshore service providers. In both cases the attribution of the income to an entity in a jurisdiction where it is low-taxed, instead of where the intangibles are exploited or the services performed, constitutes profit shifting.

An accurate overall calculation of aggregate revenue losses due to treaty restrictions would be highly complex, as it depends on analysis of each country's domestic tax regime, as well as the restrictions in its tax treaties. It would be even more complex to estimate the overall losses due to the exploitation by MNEs of conduit structures, as outlined in the previous section.

Our study focuses more specifically on the costs to countries of accepting treaties that restrict source taxation of payments for services and of royalties. This requires a more targeted approach on specific countries. Hence, we have focused on in-depth analyses for Argentina, Brazil, Colombia, Kenya and Nigeria. These countries were chosen because of their relevant and varied experience, and the availability of data, related to the research question, as well as leadership roles on the issue.

Our primary source of data on international payments for services is the Balanced Trade in Services (BaTIS) dataset, now available in the recently launched International Trade in Services (ITIS) database, hosted on the OECD Data Explorer website. This is the only source for bilateral payments disaggregated by country, and provides bilateral data on inflows and outflows of payments for service and royalties, classified by sector, for 204 economies between 2005 and 2021.[21]

However, it has some significant limitations that may affect reliability. In particular, only 65 of the 204 countries provide full or partial information, although coverage has improved over time so that it now includes around 65% of world trade (Liberatore and Wettstein, 2021, p. 7). Hence, statistical techniques are used to create the full 'balanced' trade dataset. Missing data is imputed by filling gaps in time series with estimates. Where no data is available, gravity models are used which assume that flows are proportional to the GDP of trading partners, and take account of distance, contiguity, common language, and existence of a colonial relationship; then the data is adjusted to reconcile asymmetric reporting of export and import data between country pairs (*ibid.*).

[21] It is derived from the World Trade Organization (WTO)-United Nations Trade and Development (UNCTAD) dataset, which combines reported data from Eurostat, the OECD, and the IMF Balance of Payments Statistics, as well as national sources. The underlying data come from balance of payments statistics, the collection of which has been standardised by the IMF's Balance of Payments Manual (latest version BPM6), extended by the UN Manual on Statistics of International Trade in Services (MSITS) (IMF, 2009).

Due to these techniques for estimating and imputing values, the full BaTIS balanced data may either under- or over-estimate payments for imports reported as made to residents of countries benefiting from treaties. As a check on this, we compared the reported and balanced values for one of our case study countries, Argentina, which does have reported data for 2015-21. Table 3 shows that the reported data for Argentina was lower than the final balanced values for some significant countries with which it did not have treaties (the US, Singapore, China, India), and higher for some major countries with treaties (Switzerland, Spain, the UK, Mexico, Chile, Brazil). This suggests that reported payments to treaty countries may increase due to routing through the treaty partner to benefit from the restriction of source taxation.[22] Hence, despite our reservations about the data, we have based our estimates on the final balanced values, which are more likely to under-estimate than overstate the tax losses due to the treaties.

Table 3: Argentina - Comparison of BaTIS reported and final balanced import values, 2015- 2021

Partner Country	Final Balanced Values	Reported Values	Discrepancy	As a % of total discrepancy
	USD, Millions	USD, Millions	USD, Millions	
United States	29,608.02	24,434.77	5,173.25	126.9%
Singapore	2,109.47	1,118.54	990.93	24.3%
China (People's Republic of)	2,791.87	1,907.75	884.12	21.7%
India	846.22	121.84	724.38	17.8%
Italy	1,833.84	1,196.15	637.69	15.6%
Netherlands	4,737.40	4,311.42	425.98	10.5%
Ireland	1,303.30	954.68	348.62	8.6%
Australia	428.47	113.88	314.59	7.7%
Germany	4,948.29	4,666.75	281.54	6.9%
Korea	404.85	131.50	273.35	6.7%
Greece	1,540.06	1,337.17	202.88	5.0%
Denmark	1,152.78	974.82	177.97	4.4%
France	2,659.44	2,499.04	160.40	3.9%
Israel	244.11	92.20	151.91	3.7%
Chinese Taipei	260.35	130.60	129.76	3.2%
Paraguay	1,716.95	1,843.20	-126.25	-3.1%
Sweden	2,006.11	2,158.30	-152.19	-3.7%

[22] This assumes that outbound payments are more likely to be reported to the source country as made to a treaty partner (to benefit from the treaty), while the methodology used for deriving 'balanced' data in the BaTIS dataset disregards tax motivations for reporting of the payment's destination.

Hong Kong, China	165.37	340.01	-174.65	-4.3%
Canada	849.90	1,035.76	-185.86	-4.6%
Turkey	231.41	510.61	-279.20	-6.8%
Switzerland	2,189.89	2,554.41	-364.51	-8.9%
Spain	4,055.26	4,480.43	-425.17	-10.4%
Panama	746.56	1,226.95	-480.39	-11.8%
Colombia	355.35	845.65	-490.31	-12.0%
Uruguay	1,737.64	2,233.13	-495.49	-12.2%
United Kingdom	2,603.26	3,215.67	-612.41	-15.0%
Mexico	376.90	1,044.87	-667.97	-16.4%
Peru	271.94	991.66	-719.72	-17.7%
Chile	3,294.27	4,558.04	-1,263.77	-31.0%
Brazil	3,878.48	5,399.90	-1,521.42	-37.3%

Source: Created by authors based on BaTIS data. Reports the top 15 countries and bottom 15 countries by the volume of increases (decreases) in final balanced values in relation to reported values. Reported values were only available from 2015. Treaty countries are highlighted in blue.

Next, we analysed the descriptions of the twelve BaTIS data categories to determine the likely tax treatment of the payments involved. We excluded the data from two of the categories: Government Goods and Services (which covers services provided by government bodies), and Travel (which covers expenditure by non-residents during visits to the country), since these do not involve payments normally subject to WTs.[23] The remaining data covers payments from residents to non-residents, so would likely be subject to any WTs that may be applicable in domestic law, subject to tax treaty restrictions. The WT calculations are based on the date of entry into force of each tax treaty, which is typically 01 January of the following year, as outlined in Articles 30/ 31 of the respective treaties. We assumed that income from services attributable to a PE would not be reported in BaTIS data as payments to a non-resident,[24] except for the 'deemed PE' under article 5.6 of the UN model related to insurance premiums.

[23] Full definitions of the categories are provided in IMF, 2009, ch. 10.C. The categories are also used in the UN MSITS, but this extends also to services supplied in the country through a foreign affiliate (Mode 3), as well as to non-residents visiting a country, neither of which would be subject to a WT.

[24] The IMF Balance of Payments Manual explains: 'When a branch is identified, there are direct investment inflows to the territory, but the provision of goods or services to customers in that territory is a resident-to-resident transaction. In contrast, if the operations are not substantial enough to qualify as a branch, the provision of goods or services to customers in that territory are imports of that territory' (IMF 2009, para. 4.33). It is of course possible that the tax authorities may challenge a payment reported as made to a non-resident and treat it as income of a PE; our calculations do not include tax recovered in this way.

Table 4: Comparison of the BaTIS Service Categories with Applicable Domestic Legislative and Tax Treaty Categories

BaTIS Service Category	**BaTIS Service Sub-Categories**	**Applicable Tax Category**		
		Domestic Legislation	**Tax Treaties (OECD)**	**Tax Treaties (UN)**
Manufacturing services on physical inputs owned by others	Goods for processing in reporting economy	Professional/ technical services	Business profits Art. 7	Art. 12A
	Goods for processing abroad			
Maintenance and repair services		Professional/ technical services	Art. 7	Art. 12A
Transport	Sea transport (passenger, freight, other)	Sea transport	International shipping (art. 8)	Art. 8 (alt A/ B)
	Air transport (passenger, freight, other)	Air transport	International air transport (art. 8)	Art. 8 (alt A)
	Others - support and auxiliary services (passenger, freight, other), including containers	Other modes of transport	Art. 7	Art. 7
	Postal and courier services			
Travel	Business trips	Excluded. Relates to expenditure by non-residents during visits to the country which are unlikely to attract WT		
	Personal trips			
Construction (not substantial enough to be recognised as a branch)		Professional/ technical services	Art. 7	Art. 12A
Insurance and pension services	Direct insurance (life, freight, other direct insurance)	Insurance	Art. 7.	Art. 5.6
	Reinsurance	Reinsurance	Art. 7	Art. 5.6/ 7 (UN model amended in some treaties to include reinsurance)
	Auxiliary insurance (agent commissions, consulting services, actuarial services)	Auxiliary/ other insurance payments	Art. 7	Art. 7
	Pension (pension services, standardised guarantee services)	May be regarded as retirement insurance e.g. Argentina, otherwise professional/ technical services	Art. 7	Art. 7

<table>
<tr><td rowspan="2">Financial services</td><td>Explicitly charged and other financial services (do not require special calculation). Assumes no human intervention</td><td>Professional/ technical services</td><td>Art. 7</td><td>Art. 7/12B</td></tr>
<tr><td>Intermediation services indirectly measured (interest on deposits and loans)</td><td colspan="3">Excluded as outside the scope of this review</td></tr>
<tr><td rowspan="4">Charges for the use of intellectual property</td><td>Franchises and trademarks licensing fees</td><td rowspan="4">Royalties</td><td rowspan="4">Royalties, excluding software (Art. 12)</td><td rowspan="4">Royalties, excluding software (Art. 12), until revised version adopted</td></tr>
<tr><td>Licences for use of outcomes in R&D</td></tr>
<tr><td>Licences to reproduce/ distribute computer software (not impacted by art. 12 OECD exclusion, as this doesn’t pertain to the simple use of software)</td></tr>
<tr><td>Licences to reproduce/ distribute audio-visual and related products</td></tr>
<tr><td rowspan="4">Telecommunications, computer, and information services</td><td>Telecommunication services. Assumes no human intervention</td><td>Telecommunication transmissions, otherwise professional/ technical services</td><td>Art. 7</td><td rowspan="2">Art. 7/12B</td></tr>
<tr><td>Computer services (computer software applications and licences)</td><td>Royalties in some countries (e.g. Colombia), otherwise professional/ technical services</td><td>Art. 12</td></tr>
<tr><td>Computer services other than software (technical support, data processing and storage, maintenance)</td><td rowspan="2">Professional/ technical services</td><td>Art. 7</td><td>Art. 12A</td></tr>
<tr><td>Information services (news agency services, information services other than news agency)</td><td>Art. 7</td><td>Art. 7/12B</td></tr>
<tr><td rowspan="3">Other business services</td><td>R&D (work to increase knowledge, sale and proprietary rights, others)</td><td>Professional/ management/ technical services</td><td>Art. 7</td><td>Art. 12A</td></tr>
<tr><td>Professional and management consulting (legal, accounting, management consulting, public relations, advertising, market research)</td><td>Professional/ management/ technical services</td><td>Art. 7</td><td>Art. 12A/B (online advertising)</td></tr>
<tr><td>Technical, trade-related and other business services (architecture, engineering, waste treatment,</td><td>Professional/ management/ technical services</td><td>Art. 7</td><td>Art. 12A</td></tr>
</table>

	operating lease, trade-related, other business services)			
Personal, cultural, and recreational services	Audio-visual and related services	Professional/ technical services	Art. 7	Art. 12B
	Others (health, education, heritage and recreational services, others)	Professional/ technical services	Art. 7	Art. 12A
Government goods and services		Excluded. Relates to services supplied by governments, or to government units such a embassies, consulates, military and defence units, which are unlikely to attract WT		

Source: Created by authors, based on: the BaTIS Services categories described and explained in IMF 2009 and UN 2010.

Table 4 explains our assumptions in mapping the data in the various BaTIS categories and subcategories to the provisions of domestic law, and of tax treaties. As the Table indicates, we have assumed that the data in most of the BaTIS data categories[25] would be treated as 'professional/technical services' in tax law, except for Transport, Insurance /Pensions, part of Financial Services (intermediation), and Charges for the Use of Intellectual Property. In our calculations we have assumed that if a tax treaty applies, payments for such services to non-residents included in BaTIS data are taxable in the country of residence, unless the treaty provides for a WT, in which case the specified rate applies.[26] The relevant treaty provisions (presented in Table 1 above) are those for insurance (UN model article 5.6), international transport (article 8), royalties (article 12), and professional or technical services (article 12A, or 14 if 'independent'). For the sake of completeness we have included in Table 4 UN model article 12B, which covers automated digital services, although this was not present in any treaty in force during our study period.

The BaTIS data breaks down Transport into three sub-categories sea, air, and others (such as passenger, freight, postal, auxiliary, and courier services). Where a treaty makes a distinction between each category, we have applied the prescribed WT rates, calculating the proportion of transport payments by category (sea, air and other) relative to the total transport payments to each country in our sample.

Similarly, because the tax treaties of our case study countries frequently amend the UN model to include reinsurance, we have calculated the effects of the treaty provisions for direct insurance, reinsurance, auxiliary insurance, and pensions separately. We have applied the treaty WT rate to insurance and reinsurance (where applicable) and assumed that payments for auxiliary insurance and pension are taxed in the country of residence. There are some exceptions like Argentina where contributions to the private system are regarded as insurance and subjected to the insurance WT rates. In the case of Nigeria, we limited the WT computation for insurance payments to Singapore, since BaTIS did not provide sub-category breakdowns for payments to any other DTA countries.

[25] These are: 'Manufacturing Services on Physical Inputs owned by Others' (defined as processing, assembly, packing and other services performed by enterprises that do not own the goods), 'Maintenance and Repair work performed at the repairer's site or elsewhere', 'Construction activities' (performed by a non-resident for too short a period to constitute a PE), 'Telecommunications, Computer and Information services' (which we assume includes software licensing), and Other Business Services (including personal, cultural, recreational, audio visual, and related services, which we assume includes streaming services).

[26] As explained above there are contested interpretations of article 12, and the country case studies in the Appendix discuss the position in each country on this issue. Since the BaTIS data do not distinguish services provided by independent professionals (IPS) from those supplied by companies, we treat all such payments as FTS.

BaTIS categorises financial services into explicitly charged services and intermediation services indirectly measured. Explicitly charged financial services are those that do not require special calculation, such as standard fees for deposit and lending services (IMF, 2009, p. 172); since these are not bespoke services requiring human knowledge or skill, we assume they would be treated as automated digital services. As the reviewed tax treaties do not include Article 12B, payments for these services are regarded as taxable in the country of residence. In contrast, intermediation services indirectly measured, which relate to interest payments, were excluded from our calculations as they fell outside the scope of our review.

Telecommunications services encompass broadcast or transmission of sound, images, data, mobile telecommunications services, internet backbone services, and online access services. We have assumed that telecommunication services which qualify as automated digital services and computer services (software applications and licenses) would not be subject to a WT on FTS. The BaTIS subcategory 'Computer services other than software' covers payments for technical support, data processing, and maintenance etc., which we assume would be subject to WT as technical services. Regrettably, we were only able to calculate data for this BaTIS subcategory for three of our sample countries for which the breakdown is available (Brazil, Kenya, and Argentina),[27] but since this represents only about 15% of values in the category in our view it does not significantly affect the estimates for the other countries.

The BaTIS category 'Personal, cultural and recreational services' has two sub-categories: we have assumed that health, educational and related services would be treated as professional/technical services, while audiovisual and related services would be automated digital services. In practice, each subcategory may include payments that could be treated as for technical services (e.g. fees for production of cultural products), or conversely as digitalised (e.g. remote learning). However, we consider that our assumptions should produce reasonable estimates for this category overall.

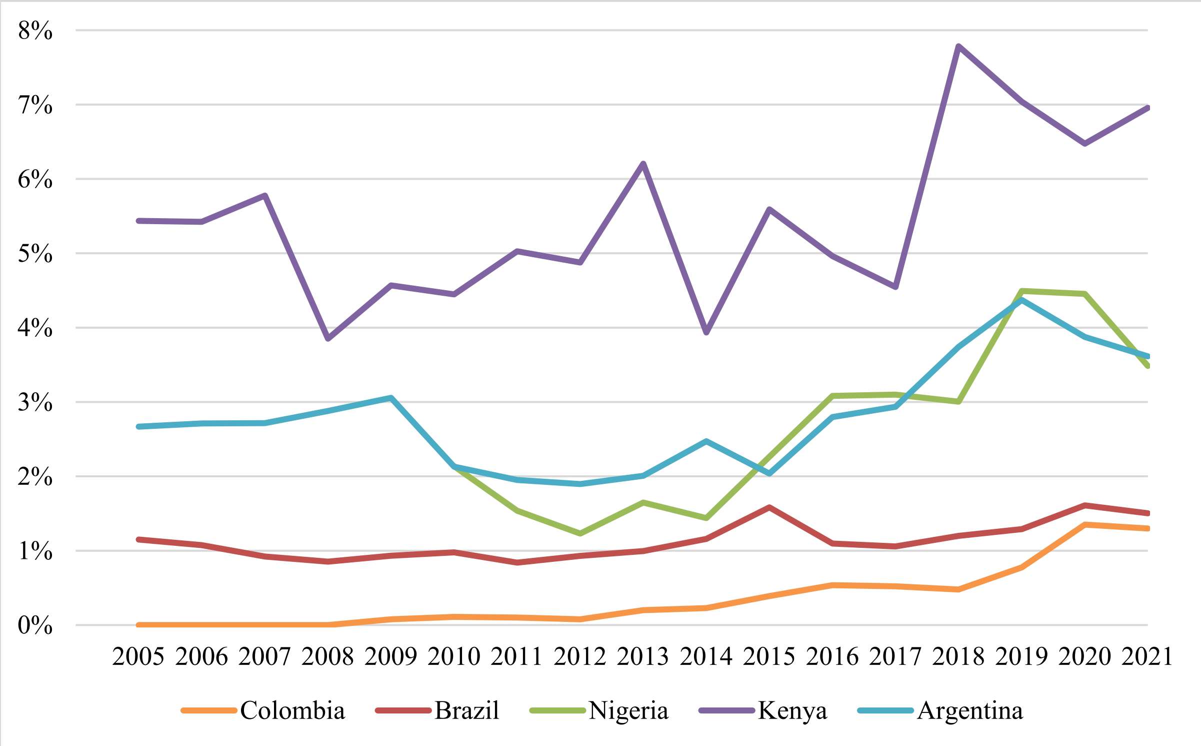
Finally, we assume that the BaTIS data on 'Charges for the use of intellectual property' is covered by the treaty article 12 on Royalties, since payments related to software come under computer services in BaTIS. Since BaTIS provides no breakdown in respect of categories on which sometimes a higher WT rate is allowed (e.g. trademarks), we assume the standard rate applies. Where treaties provide a range of rates for different categories of royalty payments we have applied a median rate.

[27] BaTIS subcategory breakdowns for 'Computer services other than software' are available for only 5 out of the 33 countries with which Brazil had DTAs during the review period, 2 out of 15 countries for Kenya and 2 out of the 20 countries for Argentina.

3. Overall Analysis

Here we provide an overall analysis of the findings based on our estimates, which are given in more detail in the case studies in the Appendix.

Graph 3: Withholding Tax Revenue Losses as a Percentage of Corporate Tax Revenue



Source: Created by authors, based on our estimates of revenue losses, and using data on revenue from taxes on corporate income and capital gains in the OECD Revenue Statistics database. Data for Nigeria are only available since 2010.

It should be noted that our estimates are based on the tax that we assume would apply under domestic law, were it not for tax treaty restrictions. Some of these allow a WT either on royalties or technical services, or both, although usually at rates below the standard domestic rate, while others exclude source taxation of services, especially in the recent treaties of OECD countries. Hence, the tax losses depend on both the domestic rate otherwise applicable, and the effect of relevant tax treaties.

All our studied countries have suffered significant revenue losses, as reported for individual countries in the case studies in the Appendix. Graph 3 provides a comparison of the revenue losses for the countries studied, as a percentage of their total revenues from tax on corporate income and capital gains. Under this measure the relative losses for Brazil are much less than those for Kenya, although its absolute losses are greater (for more detailed data by country see the Appendix).

We stress that these are only estimates, based on the BaTIS data, although as explained above our use of the BaTIS 'balanced' data means that they are likely to under-attribute the revenue losses. More accurate estimates may be possible for studies with access to data that may be available to individual countries' authorities. It should also be emphasised that the countries we studied are not necessarily representative, indeed our qualitative analysis suggest that they have been notable for their efforts to defend their source tax base, at least until relatively recently.

For example, 18% of the revenue losses we calculate for Brazil are attributable to the Netherlands, for which Brazil's 1992 treaty limited the withholding tax to 15%. In 2011 the Netherlands was classified by Brazil as a 'privileged' regime, although not among the 'favourable' regimes subject to the higher withholding tax rate of 25%. However, in 2000 Brazil enacted a special levy, the Contribution for Intervention in the Economy (Contribuição de Intervenção de Domínio Econômico – CIDE) of 10% on royalties, technical and administrative services, which applies to the payer and is regarded as outside the scope of tax treaties. The other countries we studied, except for Nigeria, have not had a treaty in force with the Netherlands, although the Netherlands has created an extensive network of treaties. Brazil is the only one of our studied countries to have a treaty in force with Luxembourg, but this does not account for a significant proportion of the estimated revenue losses in relation to services, though it likely does affect taxation of interest and dividends, which we do not analyse.

These revenue losses would of course be offset to some extent by revenues from tax on income from services of local firms, since the stimulation of international trade in services is an objective of restrictions on source taxation. However, all the studied countries have continued to show a deficit in services trade and, while both exports and imports have significantly increased, for all of them the net deficit has widened during the period of seventeen years we covered. This continuing and widening deficit shows that tax treaty restrictions on source taxation of services mainly benefits developed countries. It should also be borne in mind that most OECD countries in any case do not apply a WT on outbound payments for technical services, so if a developing country agrees a DTA exempting such payments there is no benefit to its own services exporters, only to those of its treaty partner.[28] The bulk of 'exports' of services attributed to developing countries comes from tourism, which is reported in the BaTIS category for Travel. This covers spending in the country by non-residents, which is not affected by tax treaties, as the payments are not subject to WTs, so this data has been excluded from our calculations.

Developing countries' deficits in services trade in value terms is also likely due, to a significant extent, to the international tax rules for attribution of profits, which result in both over-attribution of income to countries where it is low-taxed, and under-attribution to those where tax would be higher. Although there is some awareness that the substantial volumes of exports reported by countries such as Liberia, Bermuda and the Bahamas result from their tax haven status, this is often overlooked in analyses of services trade, which tend to unquestioningly accept the values attributed. The tax treatment of payments for services and other income from intangibles should be recognised as a major distorting factor in the data on trade in services.

For example, a study by the United Nations Trade and Development (UNCTAD) of comparative advantage in services does not mention tax, while reporting that the top ten countries with 'revealed comparative advantage' in services trade are Maldives, Aruba, Luxembourg, Sao Tome and Principe, Comoros, Malta, Lebanon, Bahamas, Barbados and Montenegro, all of which offer favourable tax regimes affecting services. On the other hand, the countries listed in this study with low comparative advantage in services are Equatorial Guinea, Nigeria, Venezuela, Angola, Saudi Arabia, Lesotho, Iraq, Brunei Darusalaam, Mexico and Oman (UNCTAD, 2018, p. 13). These are all economies with large extractive industries, which are prone to profit shifting due to the provision by non-resident companies of transportation, engineering and construction services. The lack of local companies providing such services is more likely to be due to international tax rules than to their lack of 'comparative advantage'.

[28] The UK, for example, only applies a WT on payments of interest and royalties in its domestic law.

On the other hand, developing countries are seen as having important opportunities for growth of export-oriented services due to offshoring and outsourcing, in sectors such as contract assembly (maquiladoras), as well as information technology (IT) and other business services. However, under international tax rules these are typically treated as ‘routine’ activities for which relatively low levels of profit are attributed using ‘one-sided’ transfer pricing methods, e.g. applying a standard profit margin to operating costs. Hence, any tax derived from taxing such profits is likely to be far less than the tax foregone due to treaty restrictions on source taxation on payments for services to which much greater value is attributed.

This again provides important incentives to foreign as against locally owned firms. Furthermore, foreign companies can contract for the supply of services while avoiding a local taxable presence themselves, by treating workers operating remotely (e.g. providing information technology services) as freelancers and not employees (like drivers for non-resident ride-hailing services providers such as Uber). This gives strong tax advantages to foreign firms, to the detriment of local providers exporting such services which are taxed on their net profits, as well as enabling some workers to operate as freelancers and avoid local taxation, benefiting from exemptions aimed at stimulating services exports (Khan and Cheema, 2024).

4. Conclusions

The development of international tax rules has been particularly unsuitable for taxation of income from services. The requirement of a PE for taxation of active business income in the country where it derives is particularly inappropriate, since services can be delivered with little or no physical presence, and this has become much easier with improved communications and digitalisation. Yet paradoxically services often entail closer relationships with customers, strengthening the case for taxation in the country where they are performed. This has also been reinforced by digitalisation, with systematic collection of valuable data from users, as well as user contribution of content. The residence basis is also inappropriate because the intangible nature of many services, particularly when provided by companies, makes the income easy to attribute to a tax haven.

The OECD model tax treaty has insisted on physical presence even for services, especially with the elimination of the article on independent professional services in 2000. Developing countries sought to protect their tax rights in the UN model through the provision for a 'services PE', and by reversing the presumption of residence taxation in the article on Other Income, but these were fatally weakened by conflicting interpretations. Taxation of net income when there is little or no local physical presence necessarily entails apportionment of the MNE's total income, and provisions for this were included in the UN model in Alternative B on shipping income, and in article 7(4) for attributing income to a PE, but they remained largely unused.

Hence, developing countries have relied on the application of WTs on payments for services, which apply to gross revenues. Some argued that this could be justified under tax treaties by the provision for a WT on royalties, which extended to 'information concerning industrial, commercial or scientific experience'; but a more explicit provision for FTS was regarded as preferable, and was eventually formalised by the UN model's article 12A in 2017. However, this was interpreted as requiring human intervention, so an additional article 12B was included in the UN model for automated digital services in 2021. These uncertainties and divergences entailed compromises if treaties were to be agreed between OECD and developing countries, by fixing the WT rate below the normal domestic rate. However, from around 2005 OECD countries began to insist on excluding any provision for a WT on services. Some developing countries, accepting the arguments justifying the need for tax treaties, entered into such treaties, but others held out until relatively recently. These include, in our sample, Colombia and Brazil, whose revenue losses from treaties remained relatively low until their treaty policies began to change.

The impact of digitalisation led to a policy reversal among OECD countries, but only for digitalised services mainly for consumers, and many adopted DSTs, which are essentially WTs on payments for digital services. This intensified the negotiations on international tax reform through the BEPS process, resulting in agreement on the 'Two Pillar Solution' in 2021. Hence, the experience of the BEPS project has made clear that progress cannot rely only on reasoned discussions. Countries must be willing to defend their tax base by the best means available. Those which have adopted DSTs have affirmed that these measures will continue until the multilateral convention for Amount A is not only agreed but actually implemented. Since this is highly unlikely, DSTs will continue and even proliferate.

In this context, it is clearly important for developing countries to continue to protect their right to tax all income from services arising in the country, including through WTs. They should not ratify treaties they may have signed which would give up such rights, for example in our sample countries Brazil's treaty with the UK, and Argentina's with Japan.

Some, particularly developing countries, have gone further and enacted new provisions for a tax nexus, beyond the PE concept, based on a 'significant economic presence'.[29] This would also entail a methodology for attribution of income, which should be based on formulary apportionment, and a proposal for this was published by India in 2019.[30] It has also been argued that the time is right for a concerted approach among a group of willing countries to adopt this approach, and that it could be done by either reinterpretation or renegotiation of tax treaties (Picciotto *et al.,* 2023).

The importance of a longer-term solution is evident from the priority given to negotiations through the UN for measures on taxation of income 'derived from the provision of cross-border services in an increasingly digitalized and globalized economy'.[31] This should entail a shift to a new paradigm, moving away from the one-sided perspectives fostered by the outdated concepts of residence and source, and towards taxation of MNEs as unitary enterprises with formulary apportionment of their profits. This approach has now been accepted in the proposed Amount A of Pillar One, and the two Pillars provide technical standards for its application. It should be applied comprehensively, without the scope restrictions and complexities of Amount A. This is the only effective and equitable way to tax net profits, especially from services, due to the disjuncture between the location of revenues and expenses. It would finally fulfil the mandate from the G20 for the BEPS project in 2013 that MNEs should be taxed where their activities take place.

Although significant progress has been made towards such an approach in the last phase of the BEPS project, it seems clear that a new impetus is needed. This is clearly a major factor in the overwhelming support that has now been expressed for the UN negotiations. The process now begun through the UN could build on this, rather than start from scratch or duplicate work already done. This offers the best pathway to achieving consensus on a sustainable and fair solution to this long-standing but increasingly urgent problem. A key role in this shift has been played by the pivotal group of developing countries which have actively participated in the BEPS project, but now clearly consider that a new approach is needed. Important among them are the countries whose experience we have studied in more detail, as presented in the case studies in the Appendix.

[29] These include Colombia, Kenya and Nigeria in our sample countries, as well as others.
[30] Proposal for Amendment of Rules for Profit Attribution to Permanent Establishment, available at https://www.incometaxindia.gov.in/news/public_consultation_notice_18_4_19.pdf.
[31] *Terms of Reference for a United Nations Framework Convention on International Tax Cooperation*, UN Document A/AC.295/2024/L.4, adopted 16 August 2024, para. 15; available at https://news.un.org/en/story/2024/08/1153301.

APPENDIX

CASE STUDY: ARGENTINA

Our research aims to analyse and quantify the effects on Argentina's tax revenue due to treaty restrictions on source taxation of services imports. We analyse available data on payments from Argentina to non-residents for a range of categories for the period 2005-2021.

Domestic Legislation

Argentina's domestic law taxes resident companies on their worldwide income, and non-residents on local source income. Domestic tax legislation prescribes specific WT rates for various types of payments to non-residents.

A tax reform in 2017 made substantial modifications to Argentina's Income Tax Law (with subsequent amendments), including changes to general tax rate for corporate income. However, articles 102 and 103, in combination with article 73 (b) of the Income Tax Law (consolidated in 2019) have not been modified and apply a rate of 35% to the deemed profit element legislatively specified for various categories of payments. Table 1 states the resultant rate we assume was applicable to the gross payment (35% is applied to categories for which the deemed profit element is 100%).

The following domestic rates were used to estimate the WT revenue on imports, taking account of the legislative changes during the review period.

Argentina Table 1: Rates used to estimate the WT revenue on imports

Type of payment	WT rate (%)	Article in Corporate Income Tax Law as at 2019
Technical assistance, engineering, or consulting services	21%	Art. 104 a) 1
Transfer of rights or licenses for the exploitation of invention patents and other objects	28%	Art. 104 a) 2.
Copyrights registered with the National Copyright Directorate	12.25%	Art. 104 b)
International transport- freight for passengers and cargo	3.5%	Art. 10
International transport- payments to foreign shipowners for time or voyage charters	3.5%	
International transport- companies engaged in the container business*	7%	
Reinsurance	3.5%	Art. 12
Insurance (direct and auxillary)	35%	Art. 12
Pension **	35%	Art. 12
Financial services	35%	Art. 13
Audiovisual and related services	17.5%	Art. 14

Information services (news agency services, information services other than news agency)	3.5%	Art. 11
Salaries, fees and other remuneration to people who work temporarily in the country, such as intellectuals, technicians, professionals, artists not included in 104 b)	24.5%[32]	Art. 104 (e)
All other non- resident payments	31.5%	Art. 104 (i)

**Article 10 of the Income Tax Law provides that tax on rental of containers by non-resident companies is 20% of the gross income.*
*** For the purpose of Argentine legislative framework, voluntary contributions are considered to be made to 'retirement insurances' regulated by Resolution 19,106 of the National Insurance Superintendence and its modifications. Thus, Pensions referred to in BaTIS should be understood to be in the scope of article 12, since there is no alternative pension system to the mandatory contributions regulated by Law 24,241. Moreover, hiring insurances abroad, except for the case of reinsurances, is forbidden by Law No. 12,988 of 1947.*

Treaties

DTAs prevail over domestic law in Argentina.

As regards the scope of what are considered 'technical services', there are two court decisions dealing with payments for accessing a database abroad (the Amadeus airlines reservation data base), in which the tax appeals tribunal found that a WT could apply since there was technical assistance, because the computer system does not operate exclusively automatically, but requires data to be loaded by the provider company, as well as its continuous updating. We assumed that in such cases the payments would be reported as technical assistance, while for other data relating to the use of software in which there is no technical support or licensing of copyright, we assumed that no tax is withheld.

Changes in the Income Tax Law in 2018 article 14 provided that 50% of all payments for broadcasting or streaming any images or sound constitute net income in Argentina, and this is considered to include streaming services, social media and advertising services. This is collected by a WT, but if a tax treaty applies it is only taxable if there is a local PE to which the income can be attributed. Hence, we assume that such payments to a resident of a treaty country are not taxable.

In relation to services provided through apps, such as Uber, an opinion issued by the Ministry of Economics characterised them as transportation services and the drivers as employees, thus constituting a Service PE in Argentina under article 5.3.b of the Argentina-Netherlands treaty of 1996 (Teijeiro and Vazquez 2019). In such cases we assume that the income is attributed to a local PE, and not reported as a payment to a non-resident in the BaTIS data.

[32] Given that the ITIS sub-sector categories for "other business services" include a range of professional, management consulting and technical services, and it was not possible to differentiate technical services from other fees, the rate used for the estimation was 21%.

Argentina Table 2: Treaties in Force

Country (effective date)	5.3.b services PE	insurance*	8 shipping & aircraft*	12 royalties**	IPS/FTS	Other Income
Germany (1978, 1996)	No	Residence	POEM	15%	FTS: 15%	OECD
Italy (1979, 1997)	No	Source for insurance	POEM	10% /18%	IPS UN Model / FTS: 18%	OECD/UN from 1997
Bolivia (1979)	Yes	Source	Residence	Unlimited	IPS source /FTS source	UN
France (1981, 2007)	No	No	POEM	18% for all cases	IPS UN Model / FTS: 18%	UN
Austria (1982, denounced in 2008)	No	UN 5.6 insurance	POEM	15% for all cases	IPS: UN Model/ FTS: 15%	OECD
Brazil (1982, 2018)	No	Residence	POEM	Unlimited**/from 2019 15%/10%	IPS UN Model/ FTS 10% from 2019	UN
Chile (1984, 2006- treaty denounced in 2012)	Yes	No	Residence	Unlimited	IPS source / FTS source	UN
Spain (1993- treaty denounced 2012)	Yes	2.5% for reinsurance, local rate for insurance	POEM	3/5/10/15%	IPS: if no fixed base 10%/ FTS: 10%	OECD, UN after 2013
Canada (1994)	Yes	Source	Residence	3/5/10/15%	IPS: if no fixed base 10%/ FTS: 10%	UN
Sweden (1997)	Yes	2,5%	Residence	3/5/10/15%	IPS: if no fixed base 10%/ FTS: 10%	OECD/UN
Finland (1996)	Yes	2.5% reinsurance, local rate insurance	Residence	3/5/10/15%	IPS: if no fixed base 10%/ FTS: 10%	OECD

Denmark (1997)	Yes	2,5%	Residence	3/5/10/15%	IPS UN Model FTS: 10%	UN
UK (1997)	Yes	2,5%/ Residence from 2018 due to MFN	Residence	3/5/10/15%	IPS UN Model / FTS: 10%	UN
Netherlands (1998)	Yes	2,5%/ Residence from 2018 due to MFN	POEM	3/5/10/15%	IPS UN Model / FTS: 10%	OECD
Australia (1999)	Yes	Source	Residence	10/15%	IPS UN Model / FTS: 10%	UN
Belgium (1999)	Yes	2,5%/ Residence from 2018 due to MFN	Residence	3/5/10/15	IPS UN Model/ FTS: 10%	OECD
Switzerland (2001, denounced 2012)	Yes	2.5%	POEM	3/5/10/15% also applies to technical assistance	IPS if no fixed base 10%	No provision
Norway (2001)	Yes	Source	Residence	3/5/10/15%	IPS if no fixed base 10%/fixed base from 2016 due to MFN / FTS: 10%	UN
Russia (2012)	Yes	Source	Residence	15%	IPS: source/ FTS: 15%	UN
Switzerland (2015)	Yes	2,5%	POEM	3/5/10/15%	IPS: UN Model / FTS: 10%	None
Chile (2016)	Yes	10% insurance, 2.5% reinsurance	Residence	3/10/15%	IPS fixed base/ FTS: 10%	UN
Mexico (2017)	Yes	Residence	Residence; except land transportation	10/15%	IPS UN Model / FTS: 10%	OECD
UAE (2019)	Yes	Source		10%	IPS UN/ FTS 10%	UN

Source: Compiled by authors using data from treaties, the AFIP (Administración Federal de Ingresos Públicos) website and Amaro Gómez (2015, p. 216). Only treaties in force before 2021 affect our calculations here.
**Argentina has negotiated a different treatment for income from container rental in its DTAs. However, such transactions are not identified in BaTIS, so we are not able to take this into account in our calculations.*
***The DTA with Brazil was extensively updated by a Protocol in 2018 (effective 2019), which inter alia extended article 12 broadly to all professional and technical services, and applied the provision on the right to use copyright works to software.*
Argentina terminated in 2008 the treaty with Austria, and in 2012 the treaties with Chile, Spain and Switzerland (Salassa Boix, 2012).
In 2018 Argentina signed a DTA with Qatar (effective 2022), and in 2018 and 2019 with Austria, China, Luxembourg, France (protocol modifying the existent treaty), Japan, and Turkey. Only the treaty with Turkey has been ratified. The treaty with Japan signed in 2019 restricts taxation of technical services, and would affect 12 other treaties which have MFN clauses.

In addition to the above listed treaties, Argentina has signed international transport agreements with the following countries:

Argentina Table 3: International Transport Agreements in Force

Country (effective date)	**Type of transport affected**	**Taxation right**
Belgium (1/1/1946- suspended)	-	-
Brazil (23/5/1977 suspended)		
China (9/12/1980)	International maritime transport	POEM (Container source)
Colombia (10/05/1972)	International air and maritime transport	POEM (Container source)
Cuba (27/10/1980)	International maritime transport	Residence (Container source)
Ecuador (28/1/1983)	International air transport	Residence (Container source)
USA (30/12/1987)	International air and maritime transport	Residence (Container source)
Greece (21/3/1950)	International maritime transport	Residence (Container source)
Iran (10/11/1989)	International maritime transport	Residence (Container source)
Israel (3/6/1982)	International air and maritime transport	Residence (including container)
Japan (8/9/1976)	International air and maritime transport	Residence (Container source)
Malaysia (9/2/2001)	International air and maritime transport	Residence (including container)
Norway (1/1/1946- suspended)	-	-

Panama (18/1/2005)	International air and maritime transport	Residence (including container)
Paraguay (19/4/2000)	International air, river and land transport	Residence (Container source)
Peru (1/1/1946)	International air and maritime transport	Residence (Container source)
Portugal (01/03/1950)	International air and maritime transport	Residence (Container source)
Uruguay (15/5/1950)	International maritime, river and air transport	POEM (Container source)
Venezuela (17/11/1993)	International air transport	Residence (Container source)

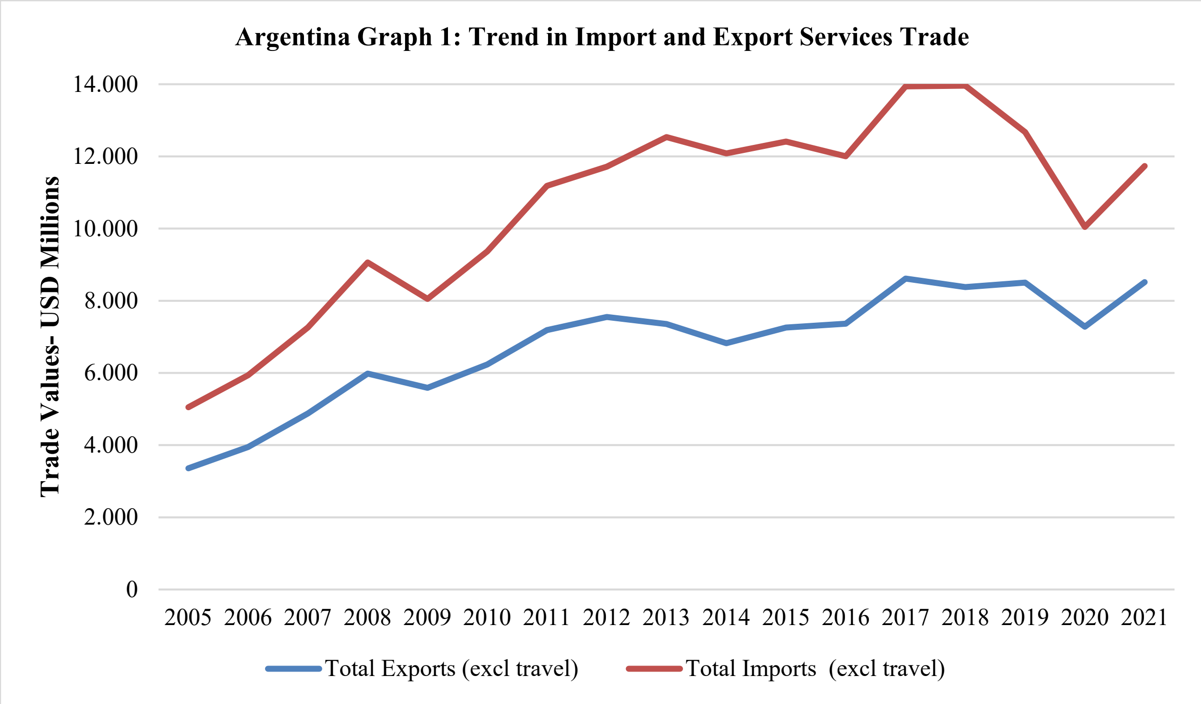
Source: Compiled by authors using data from treaties, the AFIP website

These agreements were signed between 1948 and 1997, and were all in force in the period under analysis, except for those with Belgium, Brazil and Norway that were repealed upon entry into force of the DTAs with those countries.

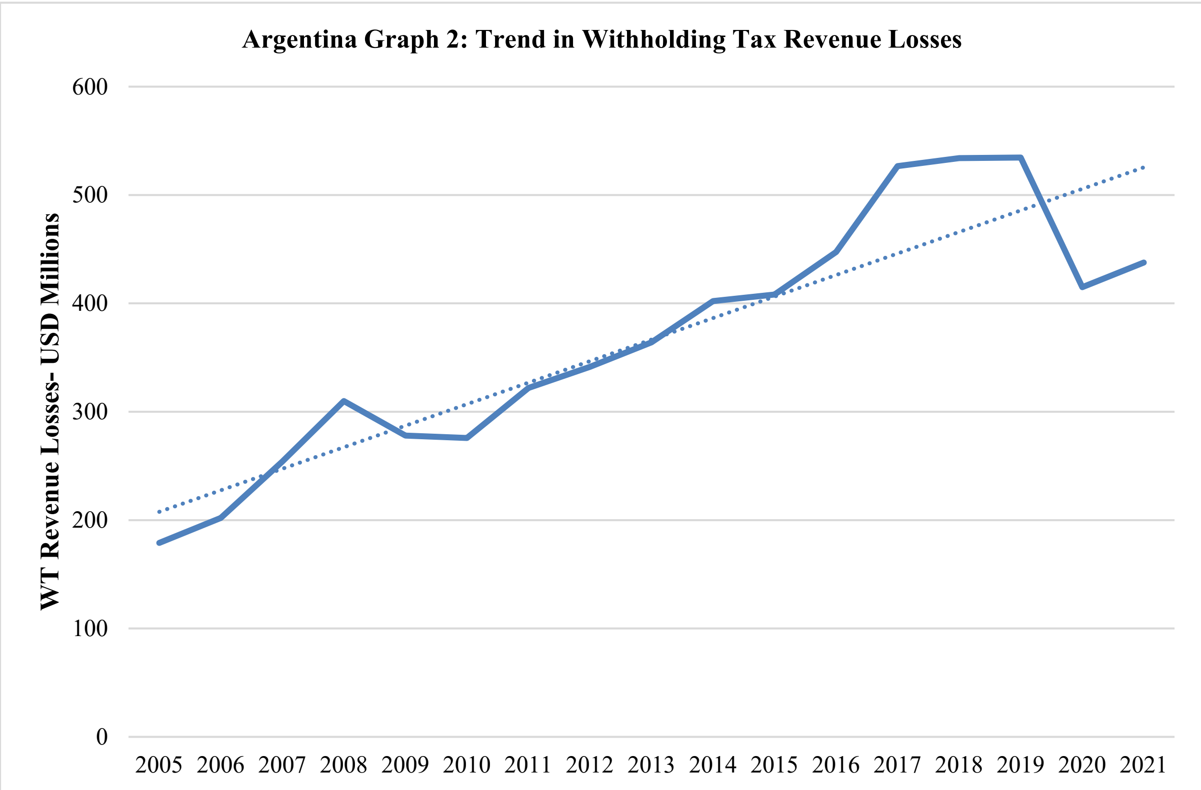
These treaties allocate the right to tax to the country of residence (sometimes defined as the country of effective management, POEM), and except for the cases of Panama, Malaysia and Israel, they do not refer to container rental, therefore allowing such income to be taxed at source.

Analysis

Although service exports have been growing between 2005 and 2021, Argentina has consistently experienced a substantial deficit in its trade of services, with imports reaching a peak in 2018, exceeding exports by more than 1.67 times. There has been some reduction in this disparity between 2020 and 2021, due to a reduction of imports (see Graph 1). However, this reduction has not been sufficient to offset the imbalance in services.



Our estimates indicate that tax revenue losses amounted to USD 6,106m over the review period. The highest estimated losses (USD 523m) were in 2019, followed by an approximate 20% decline in 2020 and 2021 (see Graph 2). Most of the losses are attributed to OECD countries with which it had long-standing agreements (Netherlands, UK, Germany, Spain and Sweden, see Table 2). The losses levelled out in 2017-19, and then fell, in line with the trend in services imports.



About 11% of the WT losses (USD 673m) are linked to countries with which Argentina has international transport agreements. Notably, this excludes Belgium, Brazil and Norway which, as was mentioned above, repealed these agreements upon entry into force of the full tax treaties.

As explained in the previous section, for transportation services covered by either a DTA or a transportation agreement, the taxation right is given to the residence jurisdiction or the POEM, which, for estimation purposes, has been presumed to be the residence country. Considering the importance of agricultural commodity exports for Argentina,[33] tax losses on payments for their transportation are significant.

It should be noted that Argentine exports of goods are quite diversified, but the main countries of destination of Argentina's export of goods (Brazil, the USA, China, Chile, and Peru)[34] and the main countries used for triangulation of Argentine exports (the USA, The Netherlands, Switzerland and Uruguay) (Grondona, 2023) are covered either by transportation agreements or by DTAs. A similar situation is observed in the case of the main countries supplying the Argentine market (Brazil, China, the USA, Paraguay and Germany).[35]

Argentina Table 4: Tax Revenue Losses by Country (top 10 countries)

Partner Country	WT Receipts using domestic WT rates	WT Receipts using treaty WT rates	WT Revenue Losses	% Contribution
	USD Millions	USD Millions	USD Millions	
Netherlands	1,810.04	726.30	(1,083.74)	17.75%
United Kingdom	1,186.19	253.74	(932.45)	15.27%
Germany	1,116.71	560.96	(555.75)	9.10%
Spain	1,256.34	783.77	(472.57)	7.74%
Sweden	660.06	252.20	(407.85)	6.68%
United States	381.26	22.14	(359.11)	5.88%
Brazil	950.49	620.28	(330.22)	5.41%
France	1,009.37	722.08	(287.29)	4.70%
Italy	540.21	260.81	(279.40)	4.58%
Switzerland	812.85	586.20	(226.65)	3.71%
Total	**9,723.52**	**4,788.49**	**(4,935.03)**	**44.69%**

[33] In 2023, exports of services amounted to 19.1% of total exports, while import of services represented 24.6% of total imports (Source: Argentine Foreign Affairs report on Trade in Services for 2023). The rest of the imports and exports were goods.
[34] These countries represent 45.1% of Argentine exports of goods in 2023 (source: trademap).
[35] These countries represent 63.9% of Argentine imports of goods in 2023 (source: trademap).

CASE STUDY: BRAZIL

Our research aims to analyse and quantify the effects on Brazil's tax revenue due to treaty restrictions on source taxation of services imports. We analyse available data on payments from Brazil to non-residents for a range of categories for the period 2005-2021.

Domestic Legislation

Brazil's domestic law[36] taxes resident companies on their worldwide income, and non-residents on local source income. Non-resident companies are subject to a WT (the Imposto de Renda Retido na Fonte, IRRF)[37] on all taxable income, including payments for royalties or services. In the absence of a tax treaty, this provides for a 15% for royalties, as well as for technical services, and 25% for other services, and a higher rate of 25% for jurisdictions designated as having favourable regimes.[38] In practice however, most service payments are subject to the 15% rate, because the higher rate does not apply to payments that are subject to Brazil's special tax (the Contribution for Intervention in the Economy (Contribuição de Intervenção de Domínio Econômico – CIDE))[39] of 10% on royalties, technical and administrative services.[40] Since the CIDE applies to the Brazilian payor and not the foreign beneficiary it is regarded as outside the scope of tax treaties, hence unaffected by treaty limitations.

Special rates apply to transportation and to insurance, although the 25% rate for payments to designated favourable regimes applies also to these categories.

Brazil Table 1: Rates used to estimate the WT revenue on imports[41]

Type of payment	WT rate (%)	Relevant Article
Royalties	15	Art. 17
Technical services, technical, administrative and similar assistance	15	Art. 17
Other services	25	Art. 16
International transport- maritime, river and air	0	Art. 2
Mixed international transport contracts- maritime & oil, natural gas exploration, liquefied natural gas transportation or storage services	0/ 15	Art. 2
Other transportation	25	Art. 16
Reinsurance	0	Art. 22
Other insurance premiums	0 to 7.38	Art. 22
All payments to favourable tax regimes	25	Art. 8

For mixed maritime and oil/ natural gas transportation, the 0% rate is limited to a specific contractual percentage, which varies depending on the type of vessel. 15% WT applies to

[36] Código Tributário Nacional, available at www.planalto.gov.br/ccivil_03/leis/L5172.htm .
[37] Imposto de Renda Retido na Fonte, available at https://www.gov.br/receitafederal/pt-br/assuntos/orientacao-tributaria/tributos/IRRF.
[38] Law 9,779 of 1999, article 8, available at http://www.planalto.gov.br/ccivil_03/leis/L9779.htm. This also includes a separate list of countries with privileged tax regimes, to which the 25% rate does not apply.
[39] Law 10.168 of 2000, Art. 2º-A, available at https://www.planalto.gov.br/ccivil_03/leis/L10168.htm created the CIDE. Law 9,779 of 1999, article 7 and Decree 9.580 of 2018 (the Income Tax Code, available at https://www.planalto.gov.br/ccivil_03/_Ato2015-2018/2018/Decreto/D9580.htm), article 746, determines that the 25% rate is only charged in the absence of the CIDE.
[40] Normative Instruction 1,455 of 2014, article 17 has a broad definition of technical and administrative services, hence most services payments are subject to the 10% CIDE.
[41] Normative Instruction 1,455 of 2014, articles 2, 16, 17 and 22, available at http://normas.receita.fazenda.gov.br/sijut2consulta/link.action?naoPublicado=&idAto=50414&visao=compilad.

the contractual value that exceeds this limit. We have used a median 2.54% rate to estimate the WT on other insurance premiums.

Treaties

Brazil has long tried to ensure that its tax treaties protect taxation at source, particularly in respect of royalties and fees for technical services.

Brazil took the view that the provision for a WT on royalties also covered payments for technical services, based on the definition of royalties in article 12 of both the OECD and UN models that included payments for 'information concerning industrial, commercial or scientific experience'. However, since this was not explicit, it required the addition of a protocol stating that the definition of royalties included 'the rendering of technical assistance and technical services', and this was agreed for almost all of its treaties.[42] For Spain, the issue was resolved through a mutual agreement procedure.[43]

The Receita Federal do Brasil (RFB) also took the view that, even if this interpretation was not formally agreed, it could apply WTs on all types of income under the Other Income article, worded similarly to the UN model, in its DTAs. However, this was contested in relation to the treaty with Finland (signed in 1996), and a court decision in 2010 ruled against the RFB, while Germany's refusal to accept this interpretation led to cancellation of its treaty in 2005 (Schoueri and Silva, 2012, pp. 188-190). Hence, we assume that unless this interpretation was explicitly added in respect of article 12, there is no right to a WT on payments for technical services. Another ruling issued in 2014 stated that the provision for a WT on technical services (in the treaty with Spain) applied even if there was no technology transfer, which was accepted by the Supreme Court (Jakuk and da Rocha, 2021).

Brazil Table 2: Treaties in Force

Country (effective date)	5.3.b services PE	UN 5.6 insurance	8 shipping & aircraft	12 royalties	IPS/FTS	Other Income (UN or equivalent)
Japan (1967)	No	No	Residence	12.5/15/25%	IPS fixed base, no FTS	Yes
France (1972)	No	Yes	POEM	10/15/25%	IPS source for payments by resident/no FTS	None
Belgium (1973)	No	Yes	POEM	10/15/25%	IPS source for payments by resident, FTS 10%	Yes

[42] Those with Denmark (1974), Italy (1978), Argentina (1982), Canada (1984), Norway (1984), Czechia-Slovakia (1986), Ecuador (1986), India (1988), China (1991), Philippines (1991), Hungary (1991), Netherlands (1992), S. Korea (1992), Portugal (2000), Chile (2003), Russia (2004), Israel (2005), Ukraine (2006), South Africa (2006), Belgium (2007), Mexico (2007), Peru (2009), Turkey (2010), Venezuela (2014), Trinidad and Tobago (2014).
[43] ADI 27/2004, replaced by Interpretive Declaration SRF No. 4 17 March 2006.

Spain (1975)	No	Yes	POEM	10/15%	IPS source for payments by resident; FTS 15%	Yes
Denmark (1975)	No	Yes	POEM	15/25%	IPS source for payments by resident, FTS 10%	Yes
Austria (1976)	No	Yes	POEM	10/15/25%	IPS source for payments by resident	Yes
Sweden (1976)	No	Yes	POEM	15/25%	IPS source for payments by resident/FTS 15%	Yes
Luxembourg (1980)	No	Yes	POEM	15/25%	IPS source for payments by resident/FTS 15%	Yes
Italy (1981)	No	Yes	POEM	15/25%	IPS source for payments by resident/FTS 15%	Yes
Norway (1982)	No	No	POEM	15/25%	IPS source for payments by resident/FTS 15%	Yes
Argentina (1983/2018)	No	Yes	POEM, including land	Unlimited/from 2019 10/15%	IPS source for payments by resident, FTS 10% from 2019	Yes from 2019
Canada (1986)	No	Yes	POEM, except for direct traffic	15/25%	IPS source for payments by resident/FTS 15%	Yes

Ecuador (1988)	No	Yes	POEM	15/25%	IPS source for payments by resident/FTS 15%	Yes
Philippines (1991)	No	Yes, except reinsurance	Source	15/25%	IPS source for payments by resident/FTS 15%	Yes
Czechia-Slovakia (1991)	No	No	POEM	15/25%	IPS source for payments by resident/FTS 15%	Yes
Hungary (1991)	No	No	POEM	15/25%	IPS source for payments by resident/FTS 15%	Yes
Netherlands (1992)	No	Yes, except reinsurance	POEM	15/25%	IPS source for payment by resident/FTS 15%	Yes
S. Korea (1992)	No	No	Residence	15/25%	IPS source for payments by resident/FTS 15%	Yes
India (1992)	No	No	POEM	15/25%	IPS source for payments by resident/FTS 15%	Yes
China (1993)	Yes	No	POEM	15/25%†	IPS source for payments by resident, FTS 15%	Yes
Finland (1998)	No	No	POEM	10/15/25%	IPS source for payments by resident, no FTS	Yes

Portugal (2001)	No	No	POEM	15%	IPS source for payments by resident/FTS 15%	Yes
Chile (2003)	No	No	Residence, including land	15%	IPS source for payments by resident, FTS 15%	Yes
Israel (2005)	No	No	POEM	10/15%	IPS source for payments by resident/FTS 10%	Yes
Ukraine (2006)	No	No	POEM	15%	IPS source for payments by resident/FTS 15%	Yes
South Africa (2006)	No	No	Residence	10/15%	IPS source for payments by resident/FTS 10%	Yes
Mexico (2007)	No	Yes, except reinsurance	POEM	15%	IPS source for payments by resident/FTS 15%	Yes
Peru (2009)	No	Yes, except reinsurance	Residence, including land	15%	IPS source for payments by resident/FTS 15%	Yes
Turkey (2013)	No	No	Residence	10/15%	IPS fixed base/FTS 10%	Yes
Venezuela (2014)	No	No	POEM, incl. land	15%	IPS source for payments by resident/FTS 15%	Yes
Trinidad & Tobago (2014)	No	No	POEM	15%	IPS source for payments by	Yes

					resident/FTS 15%	
Russia (2017)	No	No	POEM	15%	IPS source for payments by resident/FTS 15%	Yes
Switzerland (2021)	No	No	POEM	10/15%	IPS fixed base/FTS 10%	Not covered
UAE (2021)	No	Yes, not reinsurance	Residence	15%	IPS fixed base/FTS 15%	Yes
Singapore (2022)	Yes	Yes, not reinsurance	Residence	10/15%	IPS fixed base/FTS 10%	Yes
Uruguay (2023)	Yes	Yes, not reinsurance	Residence	10/15%	IPS fixed base/FTS 10%	Yes

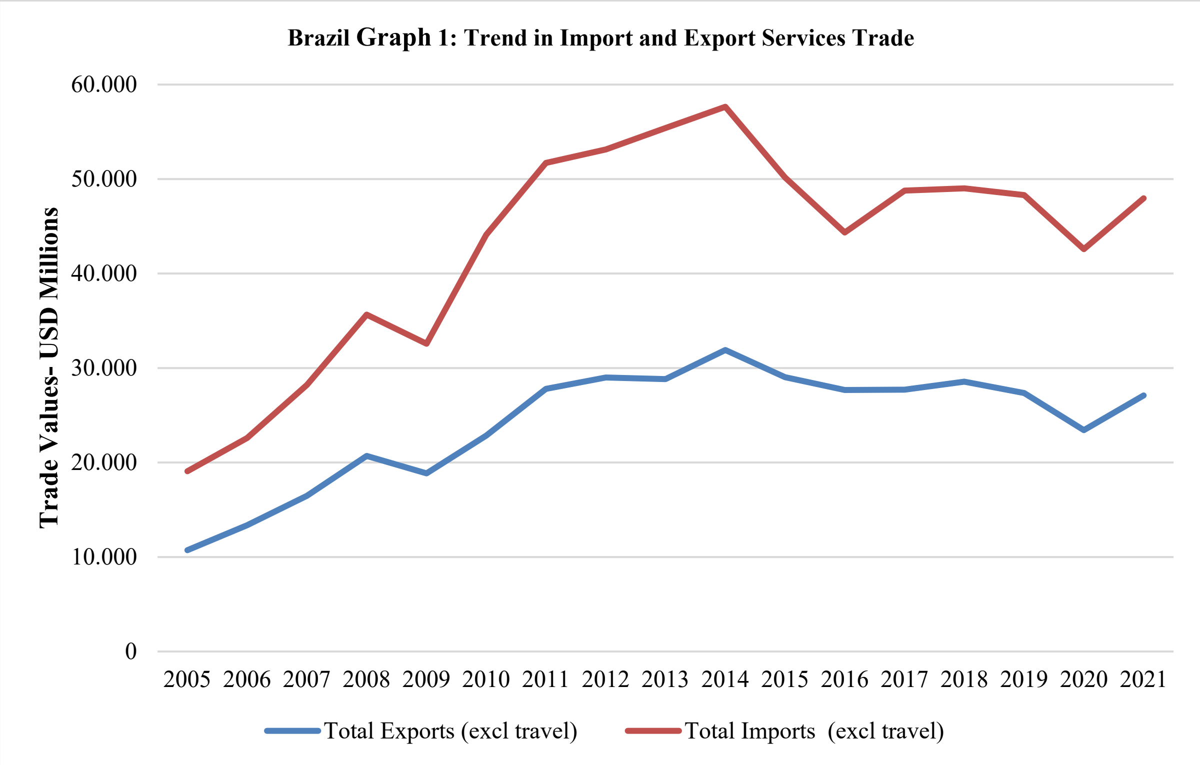
Source: RFB website . Only treaties in force before 2021 affect our calculations here.
POEM = place of effective management; IPS = independent professional services; FTS = fees for technical services.
The treaties generally provide different rates for royalties, in addition to the standard rate (in earlier ones 15%, more recently 10%) a 25% rate (more recently 15%) for the right to use a registered trademark, and many also 10% for copyright in a work (sometimes if produced by a resident of either party). Since it is not possible to break down the BaTIS data for payments for intellectual property rights, we have applied the standard rate to all payments in this category.
Most of Brazil's treaties allow source taxation of income from independent professional services (IPS) if the payment is borne by a resident of or a PE in the source state. However, since the BaTIS data do not distinguish between IPS and FTS, we have not taken this into account, but have assumed that the FTS rate applies.
** The DTA with Argentina was extensively updated by a Protocol in 2018, which amongst other matters stated that article 12 extended broadly to all professional and technical services, and the provision on the right to use copyright works includes software.*
† Revised in 2022 to 10/15%.

Treaties negotiated after 2017 have included a specific article based on the new article 12A on fees for technical services included that year in the UN model, with a rate capped at 10%, four of which have come into force.[44] Three signed in 2022, in the last months of the Bolsonaro presidency have not yet been ratified: those with Colombia and Poland including the article and the 10% rate, and one signed in November 2022 with the UK with the rate capped at 8% for two years, 4% for a further two years, and zero thereafter.

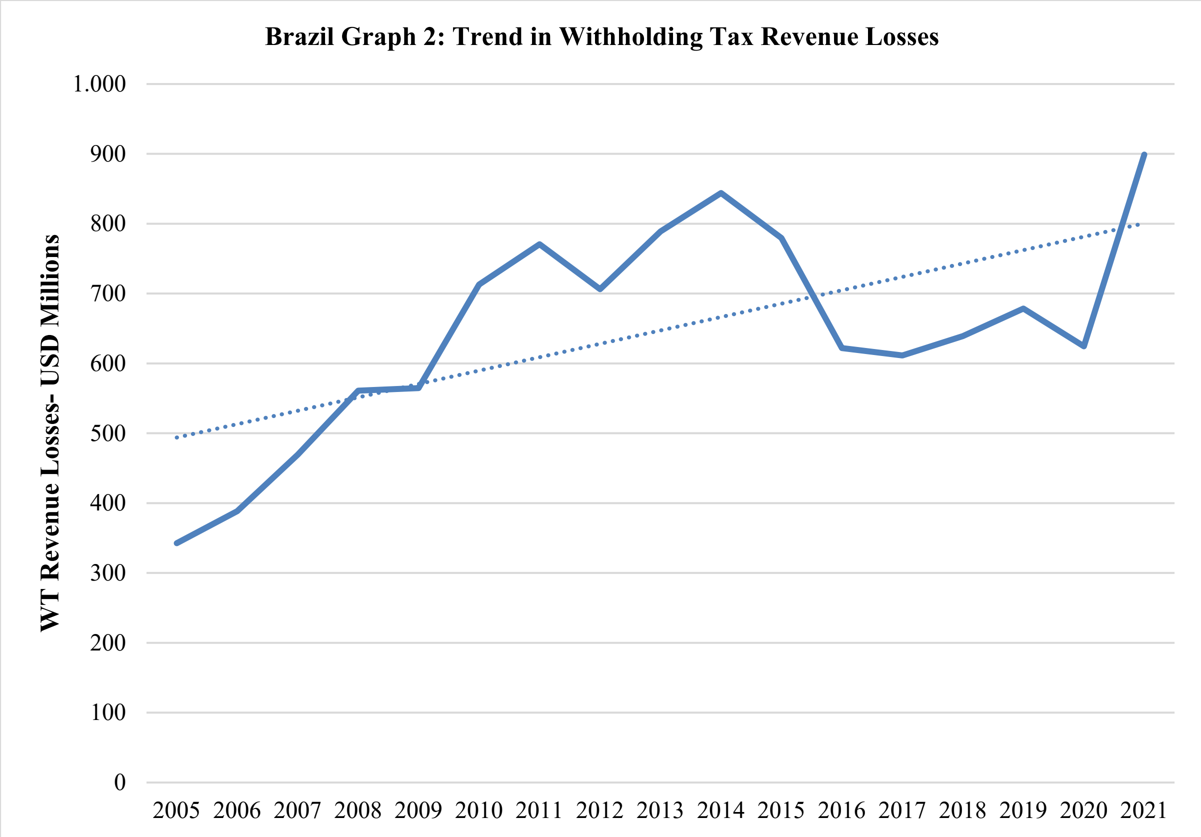
[44] Treaties with Switzerland, United Arab Emirates, Singapore and Uruguay.

Analysis

Brazil has had a significant deficit in services trade, with imports peaking in 2014 at almost twice the exports, although they have declined somewhat in 2016-17. Nevertheless, the gap remains considerable (see Graph 1).



Our estimates indicate that despite some protection of source taxation rights in Brazil's treaties, there have been considerable tax revenue losses, totalling USD 11,003m during the review period.



As can be seen, these losses rose gradually from USD 343m in 2005 to USD 844m in 2014, with a subsequent slight decline in line with the trend of imports and exports. The highest estimated losses (USD 899m) were in 2021, amounting to an estimated 1.5% of Brazil's tax revenues from corporate income and capital gains that year. This share was similar in 2020 despite a 44% decline in the absolute amount (see Graph 3 in the paper).

Nearly 60% of the total tax losses were attributed to imports from three countries- France, the Netherlands, and India- with payments for telecommunications, computer, and information services contributing almost 50% of the total. Payments for transport and other business services represented the second largest source of tax losses.

The WT revenue losses were not impacted by the flat 25% domestic WT rate applicable to transactions with favourable regimes,[45] as Brazil has not entered into a DTA with any of these countries.

Brazil Table 3: Tax Revenue Losses by Country

Partner Country	WT Receipts using domestic WT rates	WT Receipts using treaty WT rates	WT Revenue Losses	As a % of Total
	USD Millions	USD Millions	USD Millions	
France	3,455.64	388.38	(3,067.26)	27.88%
Netherlands	18,484.72	16,522.82	(1,961.90)	17.83%

[45] Law 9,420/1996, as amended in 1999 considers that favourable regimes do not tax income or do so at a rate lower than 20%, and do not allow access to information relating to corporate composition, ownership or the identification of the effective beneficiary of income attributed to non-residents. Normative Instruction 1,896/2019 lists countries currently deemed to be favourable regimes.

India	2,891.75	1,462.29	(1,429.46)	12.99%
Spain	2,030.30	1,085.08	(945.23)	8.59%
Chile	584.45	59.60	(524.86)	4.77%
Luxembourg	708.96	353.86	(355.10)	3.23%
Argentina	593.34	279.05	(314.28)	2.86%
Finland	357.15	59.69	(297.47)	2.70%
Sweden	1,166.27	878.69	(287.59)	2.61%
Norway	1,655.12	1,380.43	(274.68)	2.50%
Italy	1,660.48	1,401.78	(258.70)	2.35%
China	758.15	523.86	(234.29)	2.13%
Belgium	660.58	490.93	(169.65)	1.54%
Canada	654.68	488.23	(166.45)	1.51%
Israel	355.38	246.29	(109.10)	0.99%
Japan	1,284.39	1,198.10	(86.29)	0.78%
Korea	632.72	559.68	(73.04)	0.66%
Philippines	242.45	173.26	(69.19)	0.63%
South Africa	175.84	123.27	(52.57)	0.48%
Portugal	544.47	492.35	(52.12)	0.47%
Hungary	290.10	243.67	(46.43)	0.42%
Peru	95.20	52.65	(42.55)	0.39%
Austria	468.55	426.71	(41.84)	0.38%
Denmark	399.13	364.46	(34.67)	0.32%
Ukraine	159.07	128.49	(30.58)	0.28%
Slovak Republic	63.68	45.07	(18.61)	0.17%
Venezuela	36.09	18.78	(17.31)	0.16%
Mexico	88.52	75.00	(13.52)	0.12%
Czechia	183.63	170.34	(13.29)	0.12%
Turkiye	74.73	67.62	(7.11)	0.06%
Russia	221.39	216.26	(5.13)	0.05%
Ecuador	17.02	15.38	(1.65)	0.01%
Trinidad and Tobago	5.45	4.26	(1.18)	0.01%
Total	**40,999.41**	**29,996.31**	**(11,003.10)**	**100.00%**

CASE STUDY: COLOMBIA

Our research aims to analyse and quantify the effects on Colombia's tax revenue due to treaty restrictions on source taxation of services imports. We analyse available data on payments from Colombia to non-residents for a range of categories for the period 2015-2021.

Domestic Legislation

Under Colombia's Tax Law,[46] non-residents are taxed on all Colombian source income; this includes the furnishing of services both inside and outside the country (article 24.8). Domestic tax legislation prescribes specific WT rates for various types of payments to non-residents. These rates, initially established in Decree 624 of 1989, underwent revisions in 1995, 2016, and 2019. During the review period a single rate of 15% was established in 2016 on royalties and all services, which meant a sharp reduction for royalties and an increase for technical services (Table 1), but this rate was increased to 20% in 2019.

The following domestic rates were used to estimate the WT revenue on imports, taking account of the legislative changes during the review period.

Colombia Table 1: Rates used to estimate the WT revenue on imports[47]

Type of payment	WHT rate (%) from:			Relevant Article
	1995	2016	2019	
Royalties	33%	15%	20%	408
Royalties on software licences			20%	408
Consultancies, technical services and technical assistance	10%	15%	20%	408
International transportation services- air and water	3%	5%	5%	414
Reinsurance premiums		1%	1%	408
Other services	14%	15%	15%	415

Treaties

Colombia has long aimed to protect its source tax base, adhering to the policy of the Andean Community, and consequently had no tax treaties, until a change of policy in 2004. The new policy aimed to negotiate treaties with OECD countries using the OECD model, while limiting the impact on tax revenues where possible (Quiñones, 2012). In particular, it specified a 10% WT on royalties, including also in the same article technical services, technical assistance and consulting services.[48]

On this basis, treaties came into force with eight OECD countries (Spain, Chile, Switzerland, Canada, Mexico, South Korea, Portugal and Czechia), and one with India. All these provided for a WT of 10% on royalties, including fees for technical services. Six treaties allowed source taxation of insurance (but not reinsurance), based on article 5(6) of the UN model, but those with Spain and Switzerland did not. Additionally, all included article 8 of the OECD model,

[46] Estatuto Tributario Nacional, available at https://estatuto.co/.
[47] Decree 624 of 1989 (with amendments), articles 408, 414 and 415, available at https://normograma.dian.gov.co/dian/compilacion/docs/estatuto_tributario.htm.
[48] This was done explicitly in the treaty text, perhaps learning from the experience of Brazil.

ceding the right to tax income from international shipping or aircraft to the country of residence. Except for Spain and Switzerland, this article also extended to containers directly connected to or ancillary to operating ships or aircraft in international traffic.

However, the treaties with OECD countries (except for South Korea) were subject to inclusion of an MFN provision, which would extend to them the benefits of concessions to another country in relation to royalties or technical services.

In 2013 Colombia began accession negotiations to join the OECD. As part of these, countries are expected to adopt the OECD international tax standards, including the tax treaty model, which does not include a WT on fees for technical services. In 2016, Colombia signed a DTA with the UK excluding the right to apply a WT on fees for technical services, which had been an essential requirement for the UK since 2005 (Hearson, 2017). Consequently, income from services would fall under Article 7 (Business Profits), so that a UK resident would only be taxable in Colombia if it had a PE.

Colombia Table 2: Applicable Treaties and Effective Dates

Country (effective date)	**5.3.b services PE**	**UN 5.6 insurance**	**8 shipping & aircraft**	**12 royalties**	**IPS/FTS**	**Other Income**
Spain (2008)	No	No	Residence (POEM)	10%	IPS UN model/ FTS 10%	OECD
Chile (2009)	Yes	Yes, except reinsurance	Residence	10%	IPS UN model/ FTS 10%	UN
Switzerland (2012)	No	No	Residence (POEM)	10%	IPS source if payment by resident/ FTS 10%	OECD
Canada (2012)	Yes	Yes, except reinsurance	Residence, except direct traffic	10%	No IPS/ FTS 10%	UN
Mexico (2013)	Yes	Yes, except reinsurance	Residence	10%	No IPS/FTS 10%	UN
India (2014)	Yes	Yes, except reinsurance	Residence	10%	IPS UN model/FTS10%	UN
Korea (2014)	No	Yes, except reinsurance	Residence	10%	No IPS/FTS 10%	OECD
Czechia (2015)	Yes	Yes, except reinsurance	Residence	10%	No IPS/FTS 10%	UN
Portugal (2015)	Yes	Yes, except reinsurance	Residence	10%	IPS UN model/ FTS 10%	UN
UK (2019)	Modified version	No	Residence	10%	No IPS/No FTS	UN

Source: Compiled by the authors, from the treaty texts. The treaties signed with France in 2015, Italy (2018) and Japan (2018) came into effect after the cut-off date of this research, while those with the UAE (2017), Uruguay (2021), Brazil (2022), The Netherlands (2022) and Luxembourg (2024) are not yet in force. All those with OECD countries are now like the UK's, excluding a WT on fees for technical services.

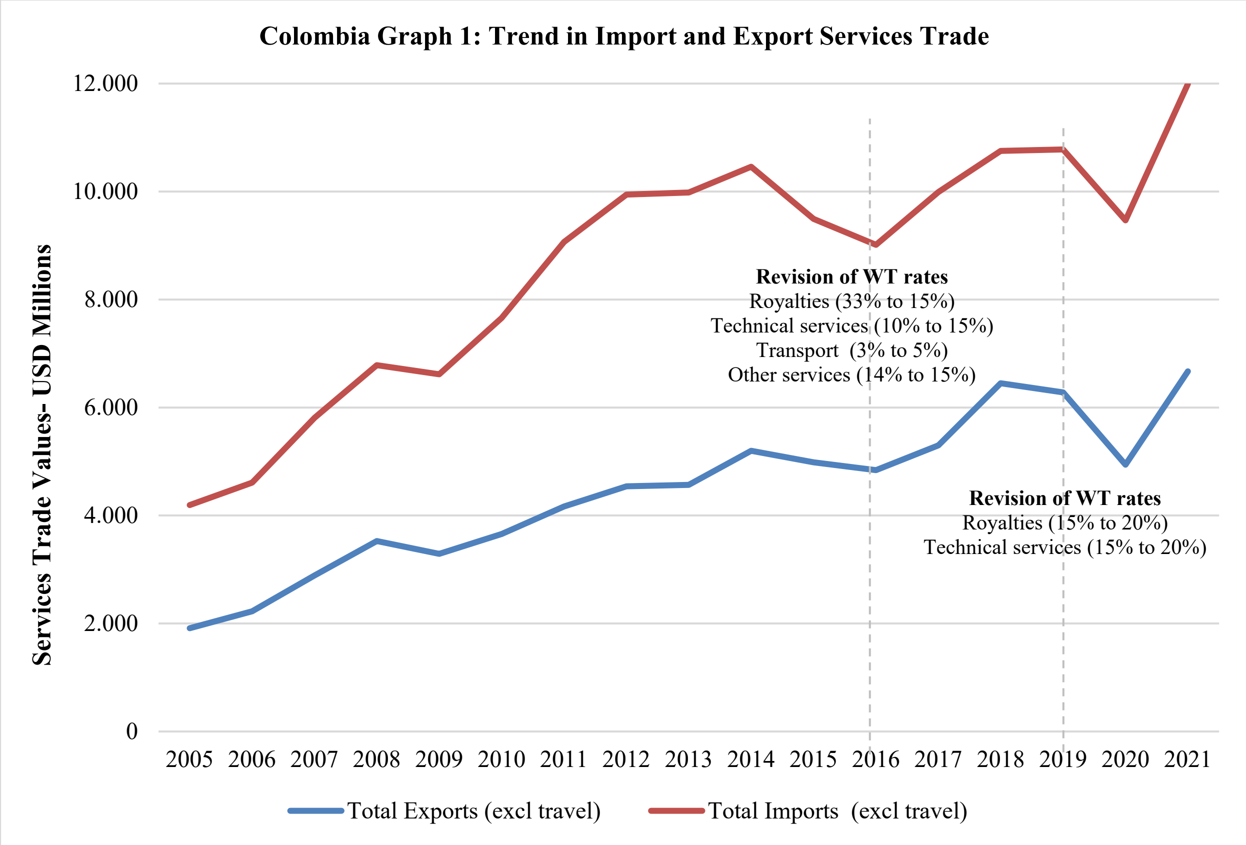
The UK treaty, based largely on the OECD model, potentially triggered the MFN provisions for seven treaties. However, the Colombian tax authority reviewed the MFN clauses in detail, and determined that three were not activated (Spain, Chile, Switzerland), while four were: Canada, Czechia, Mexico (but not for consultancy fees), and Portugal.[49]

Analysis of the Data

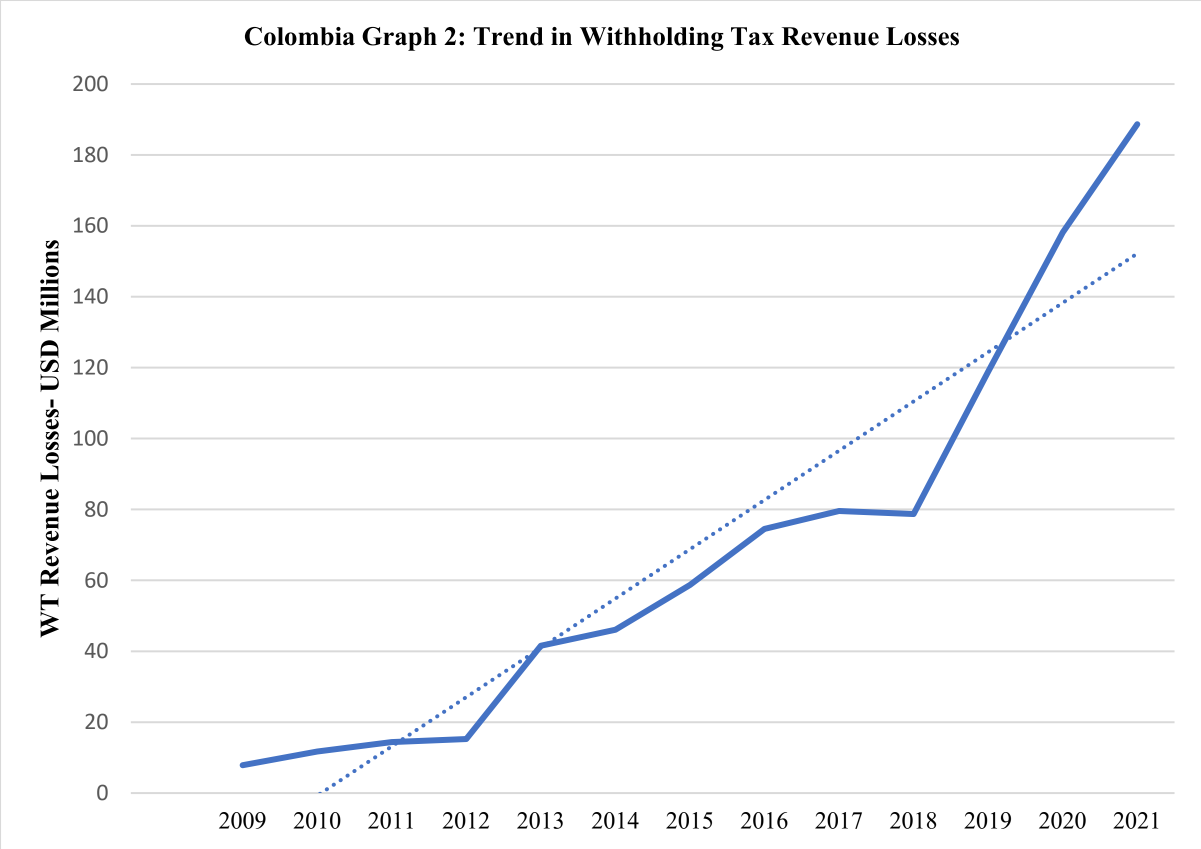
Colombia has had a significant net deficit on trade in services, and the gap widened as both imports and exports generally rose, to peak in 2014 with imports around twice the value of exports. Responding to a negative economy following a fall in the oil price, in 2016 the government implemented tax reforms, including a halving of the WT rate on royalties and increase in the rate on technical and other services to equalise them at 15%, and a slight increase on transport services. This was followed by an increase in both imports and exports of services until 2018, levelling out from 2019 when the WT rates on royalties and technical services were increased to 20%. The decline in exports and imports between 2019 and 2020 was likely due to the COVID-19 pandemic, with the country seeing a recovery in 2021.

We analysed the effects of the changes in WT rates in 2016 and 2019 on both services imports and exports, as well as tax revenues (Graph 1). Both imports and exports grew initially, then levelled out, but they followed parallel tracks. This suggests that both were affected by factors unrelated to the changes in WT rates, which would only impact imports. Colombia has had some success in increasing exports of 'other business services' by attracting business process outsourcing, such as call-centres (Duque and Chamorro, 2020, p. 31).

[49] This was on the basis that some MFN clauses referred only to a reduced rate on royalties, while others more widely to any more favourable treatment of technical services; the UK treaty retained the 10% rate on royalties, while excluding technical services from the article (DIAN, 2020). Colombia's interpretation is being contested by Chile.



The trend in revenue losses due to tax treaties can be seen more clearly in Graph 2. Revenue losses were registered from 2009 when Colombia's first treaty with Spain came into force, rose from 2012 as other treaties with OECD countries came into force, and climbed steeply from 2018, totalling USD894m over the 17 years. Colombia had the lowest relative tax revenue losses of the countries we studied, peaking at 1.3% of its corporate income tax revenues in 2020-21 (see Graph 3 in the paper). This is no doubt because, its first tax treaty was not until 2008, and until its concession to the UK, its treaties allowed a 10% WT on technical services, the same as its domestic rate (until the increases in this rate in 2016 to 15% and then 20% in 2019). However, its treaty rate on royalties of 10% (which was retained in the UK treaty) was significantly below the domestic rate of 33%, and even somewhat below the reduced rates of 15% from 2016 and 20% from 2019.



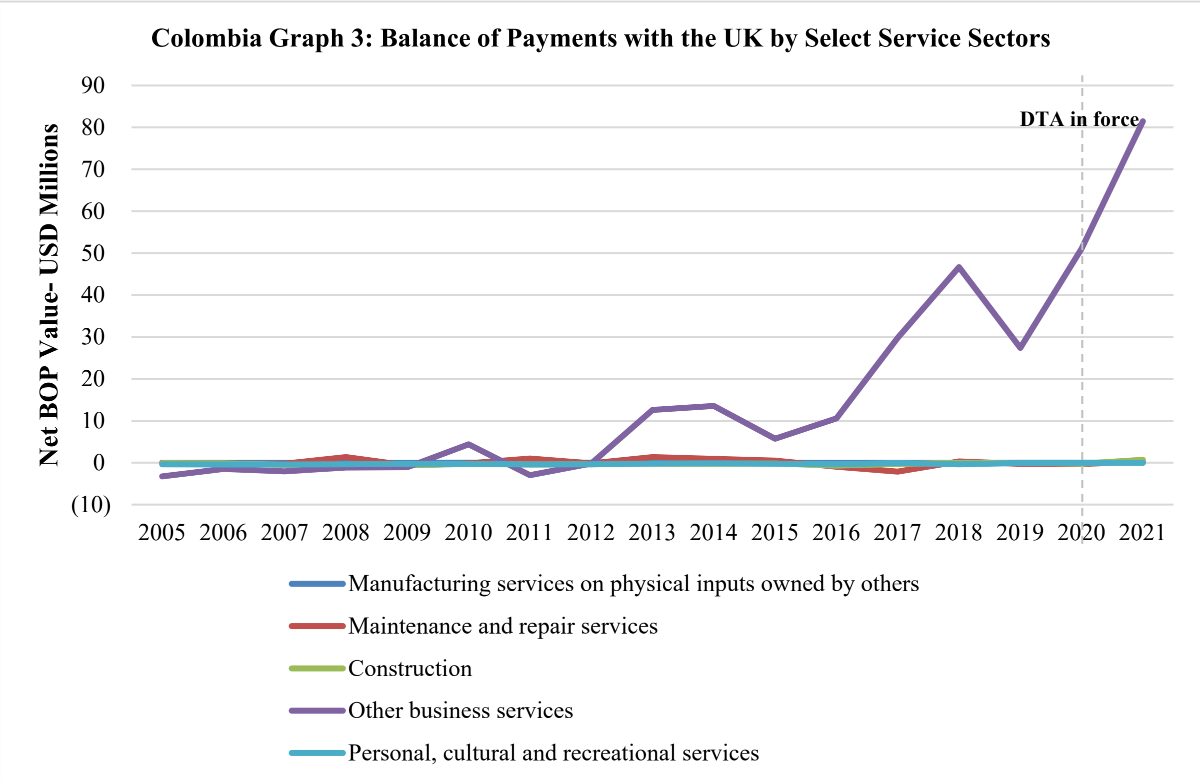
Our estimates indicate that over 40% of these losses are on payments for telecommunications, computer and information services, mainly to Spain and India (see Table 3). There are also considerable payments from Colombia for other business services and charges for the use of intellectual property. The peak in import services trade in 2021 coincided with the highest registered WT revenue loss.

Colombia Table 3: Revenue Losses by Country

Partner Country	WT Receipts using domestic WT rates	WT Receipts using treaty WT rates	WT Revenue Losses	As a % of Total
	US Dollar, Millions	US Dollar, Millions	US Dollar, Millions	
Spain	434.37	175.42	(258.94)	28.96%
India	290.43	133.40	(157.04)	17.56%
Switzerland	372.13	230.93	(141.20)	15.79%
Canada	166.59	88.75	(77.84)	8.71%
Korea	255.25	189.87	(65.38)	7.31%
Mexico	152.60	92.07	(60.54)	6.77%

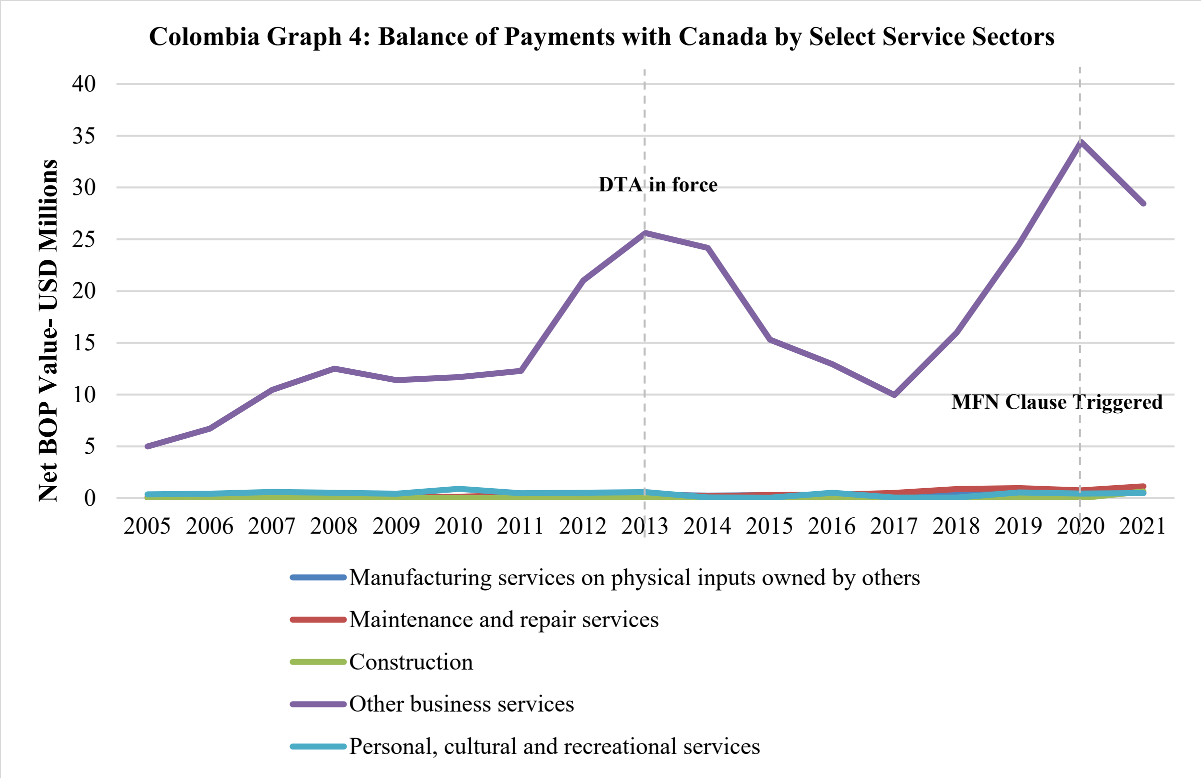
United Kingdom	632.87	571.63	(61.23)	6.85%
Chile	115.04	56.87	(58.17)	6.51%
Portugal	15.73	8.78	(6.95)	0.78%
Czechia	12.52	5.76	(6.76)	0.76%
Total	**2,447.53**	**1,553.48**	**(894.04)**	**100.00%**

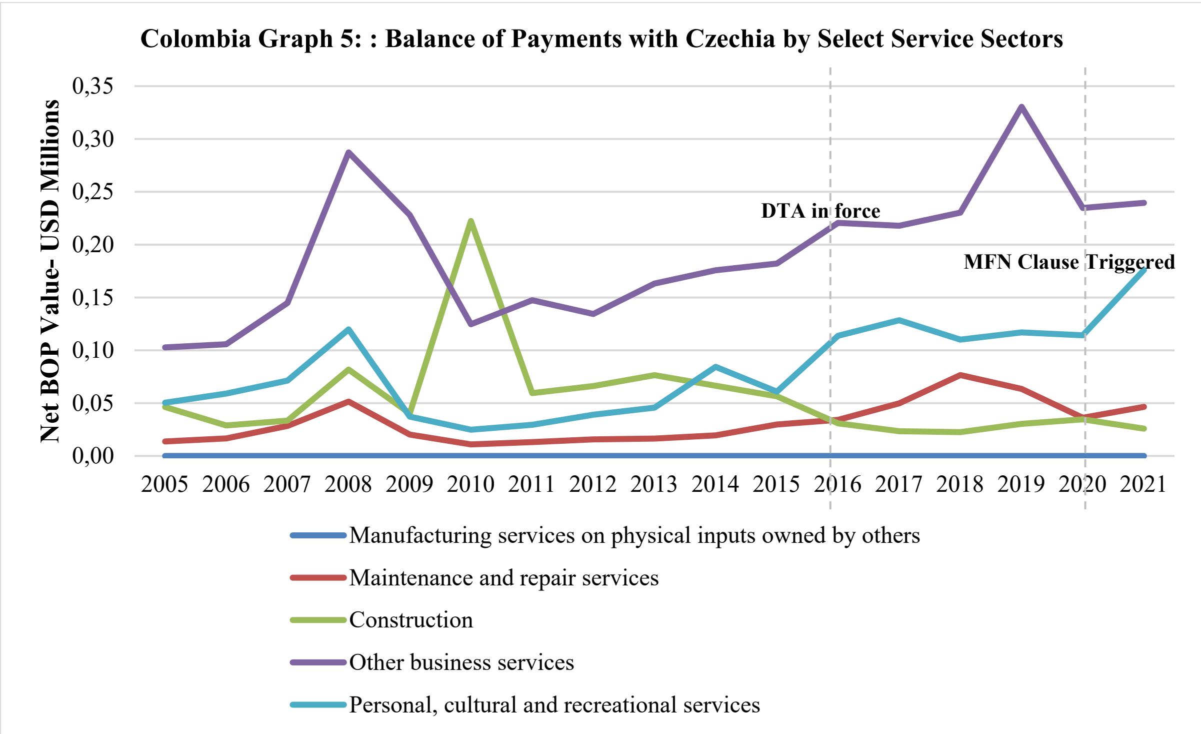
We also analysed in more detail the impact of the treaty with the UK, and its triggering of MFN clauses with the other four countries.

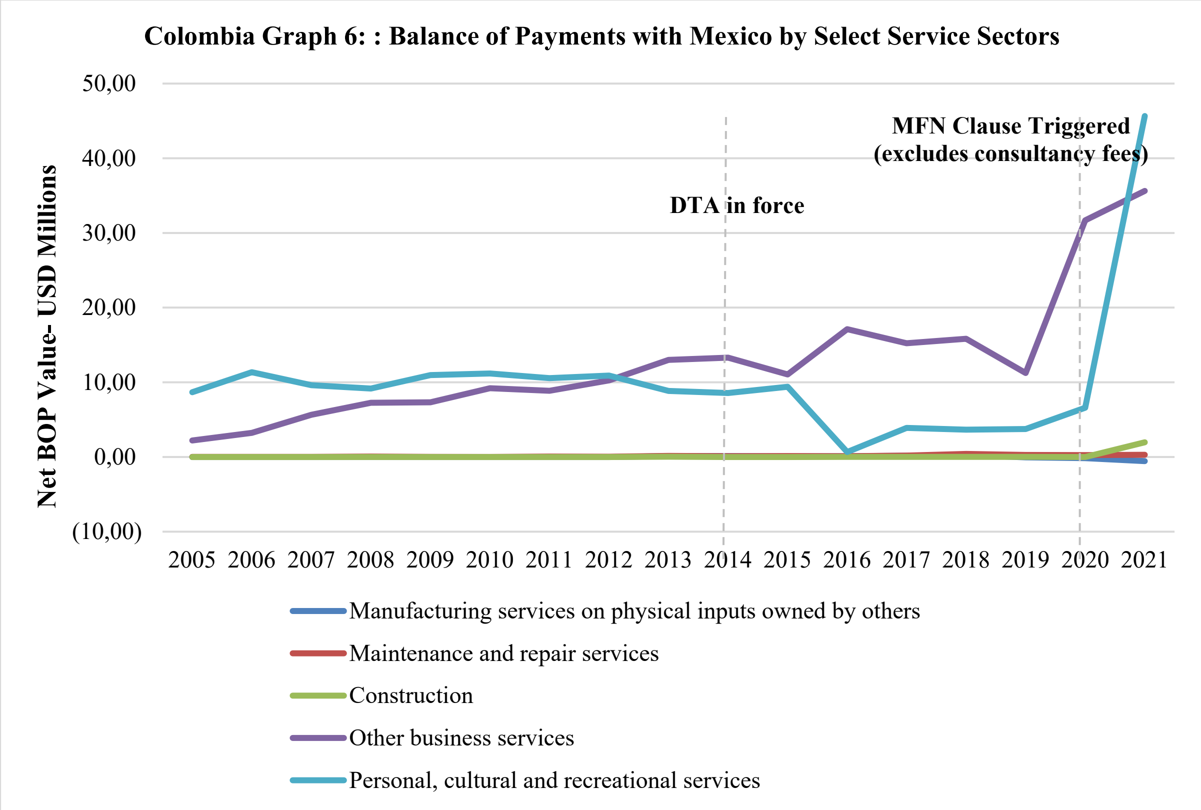


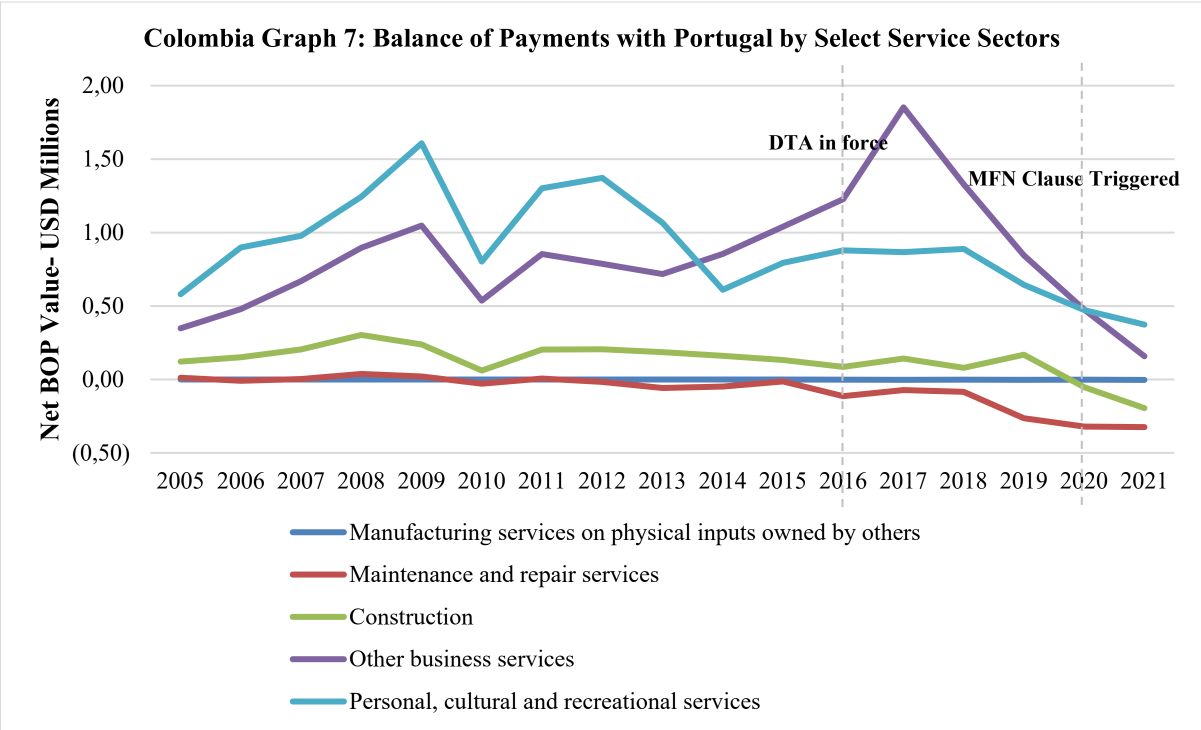
The UK treaty itself does not seem to have had a significant impact on the balance of services trade: the significant growth in Colombia's balance for 'other business services', which had begun earlier, continued, while for other sectors the balance remained flat (Graph 3). A similar rise in Colombia's net balance of payments for 'other business services', predating the effects of the WT reduction, was seen with the other countries, except for Portugal. The ending of the WT with Mexico on services (except for consulting) was followed by a sharp increase in Colombia's balance of payments on personal, cultural and recreational services.

Since we have only two years of data, and they may have been affected by the COVID-19 pandemic, no firm conclusions can be drawn.


Colombia Graph 4: Balance of Payments with Canada by Select Service Sectors
Net BOP Value- USD Millions
40
35
30
25
20
15
10
5
0
DTA in force
MFN Clause Triggered
2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016 2017 2018 2019 2020 2021
Manufacturing services on physical inputs owned by others
Maintenance and repair services
Construction
Other business services
Personal, cultural and recreational services


Colombia Graph 5: : Balance of Payments with Czechia by Select Service Sectors
Net BOP Value- USD Millions
0,35
0,30
0,25
0,20
0,15
0,10
0,05
0,00
DTA in force
MFN Clause Triggered
2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016 2017 2018 2019 2020 2021
Manufacturing services on physical inputs owned by others
Maintenance and repair services
Construction
Other business services
Personal, cultural and recreational services


Colombia Graph 6: : Balance of Payments with Mexico by Select Service Sectors
Net BOP Value- USD Millions
50,00
40,00
30,00
20,00
10,00
0,00
(10,00)
2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016 2017 2018 2019 2020 2021
DTA in force
MFN Clause Triggered (excludes consultancy fees)
Manufacturing services on physical inputs owned by others
Maintenance and repair services
Construction
Other business services
Personal, cultural and recreational services


Colombia Graph 7: Balance of Payments with Portugal by Select Service Sectors
Net BOP Value- USD Millions
2,00
1,50
1,00
0,50
0,00
(0,50)
2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016 2017 2018 2019 2020 2021
DTA in force
MFN Clause Triggered
Manufacturing services on physical inputs owned by others
Maintenance and repair services
Construction
Other business services
Personal, cultural and recreational services

CASE STUDY: KENYA

Our research aims to analyse and quantify the effects on Kenya's tax revenue due to treaty restrictions on source taxation of services imports, over the review period of 17 years, 2005-21. We analyse available data on payments from Kenya to non-residents for a range of categories.

Domestic Legislation

Income tax is charged under Kenya's Income Tax Act (ITA) for both residents and non-residents on 'income which accrued in or was derived from Kenya' (ITA s. 3.1), broadly defined to include gains or profits from a business (ITA s. 3.2.a), as well as other specified categories.[50] These include various categories of payments made in connection with a business in Kenya to a non-resident (ITA s. 10), with specific rates of tax to be withheld by the person making the payment (ITA Third and Ninth Schedules).

Kenya Table 1: Rates used to estimate the WT revenue on imports[51]

Type of payment	WT rate (%)	Relevant Article
Royalties	20	Paragraph 3(b) of the 3rd Schedule
Management or professional fees (general)	20	Paragraph 3(a) of the 3rd Schedule
Management or professional fees (oil and gas)	12.5/ 10	Paragraph 16(d) of the 9th Schedule
Other contractual fees	20	Paragraph 3(a) of the 3rd Schedule
Consultancy fees - EAC citizens	15	Paragraph 3(a) of the 3rd Schedule
Telecommunication transmissions	5	Paragraph 3(l) of the 3rd Schedule
Transportation (excluding air and shipping transport services)	20	Paragraph 2 of the IT (Amendment) Act 2020
Transport (shipping services)	2.5	Paragraph 3(k) of the 3rd Schedule
Insurance and reinsurance premium (excluding aircraft premiums)	5	Paragraph 3(p) of the 3rd Schedule
Pension or retirement annuity	5	Paragraph 3(f) of the 3rd Schedule
Financial services	20	Paragraph 3(a) of the 3rd Schedule

Lower rates apply to payments made by operators in Special Economic Zones. The WT rate on oil and gas management and professional fees was revised from 12.5% to 10% in July 2021. The WT on insurance and reinsurance premiums took effect from July 2018.

Treaties

Kenya's early treaties retained the right to apply its full domestic WT rate on fees for technical services, although a reduction to 12.5% was accepted for the UK from 1977. Since the agreement with France in 2007, this right to tax technical services has not been included, except for the Seychelles treaty. Conversely, since the 1970s, the treaties have protected the WT on insurance (but not reinsurance), except for Iran.

[50] Since 2021 also 'from a business carried out over the internet or an electronic network including through a digital marketplace' (ITA 3.2.ca)
[51] ITA Cap 470 and IT (Amendment) Act 2020, available at https://kenyalaw.org/kl/fileadmin/pdfdownloads/Acts/IncomeTaxAct_Cap470.pdf and https://kenyalaw.org/kl/fileadmin/pdfdownloads/AmendmentActs/2020/TaxLaws_Amendment_Act_No.2of2020.pdf.

Kenya Table 2: Applicable Treaties and Effective Dates

Country (effective date)	5.3.b services PE	UN 5.6 insurance	8 shipping & aircraft	12 royalties	IPS/FTS	Other Income
Zambia (1964)	No	No	Residence except for direct traffic	Residence	IPS Residence	No
Denmark (1972)	No	Yes	Aircraft POEM; shipping source @50%	20%	Payments to any person 20%	OECD
Sweden (1973)	No	Yes	Aircraft POEM; shipping source @ 50% rate	20%	Payments to any person 20%	No
Norway (1973)	No	Yes	Aircraft POEM; shipping source on 5% receipts % 50% rate	20%	Payments to any person 20%	OECD
UK (1977)	No	Yes	Residence except for direct traffic	15%	IPS fixed base/FTS 12.5%	No
Germany (1980)	No	Yes, not reinsurance	Residence	15%	IPS fixed base/FTS 15%	OECD
India (1986/ 2018) *	Yes	Yes, except reinsurance	Aircraft POEM, shipping source @50% rate	20%/ 10%	IPS 17.5%/FTS 10%	UN
Canada (1987)	No	Yes	Aircraft POEM, shipping source on 6% receipts @ 50% rate	15%	IPS fixed base/FTS 15%	UN
France (2011)	No	Yes, except reinsurance	Aircraft POEM, shipping source on 5% receipts @ 50% rate	10%	IPS fixed base/No FTS	UN

S. Africa (2015)	Yes	Yes, except reinsurance	Aircraft residence, shipping source @ 50% rate	10%	IPS fixed base/No FTS	No
Qatar (2015)	Yes	Yes, not reinsurance	POEM	10%	IPS fixed base/No FTS	OECD
Seychelles (2015)	Yes	Yes, not reinsurance	POEM	10%	All services 10%	UN
UAE (2017)	Yes	Yes, except reinsurance	Aircraft POEM; shipping source on 5% receipts @ 50% rate	10%	IPS fixed base/No FTS	UN
Korea (2017)	No	Yes, not reinsurance	POEM	10%	IPS fixed base/No FTS	OECD
Iran (2017)	Yes	No	POEM	10%	IPS fixed base/No FTS	OECD

Source: Compiled by the authors, based on the Kenya Treasury list https://www.treasury.go.ke/agreements/. POEM = place of effective management.
** Kenya's first DTA with India which took effect in 1986 protected domestic WT on insurance and royalties, with a slight reduction to 17.5% for professional and management services. This treaty was subsequently renegotiated and the new one which came into force on 30 August 2017 amongst other matters introduced a services PE clause, eliminated WT on reinsurance and lowered the WT rates on royalties, professional and management services to 10%.*
The multilateral tax treaty for the East African Community has not entered into force, nor have treaties with Italy (1979), Thailand (2006), Mauritius (2012), Netherlands (2015), China (2017), Singapore (2018), Portugal (2018), Barbados (2019) and Botswana (2019); treaties have been proposed or concluded (but not signed) with Botswana, Ireland, Nigeria, Singapore, Thailand and Turkey, and others are under consideration.

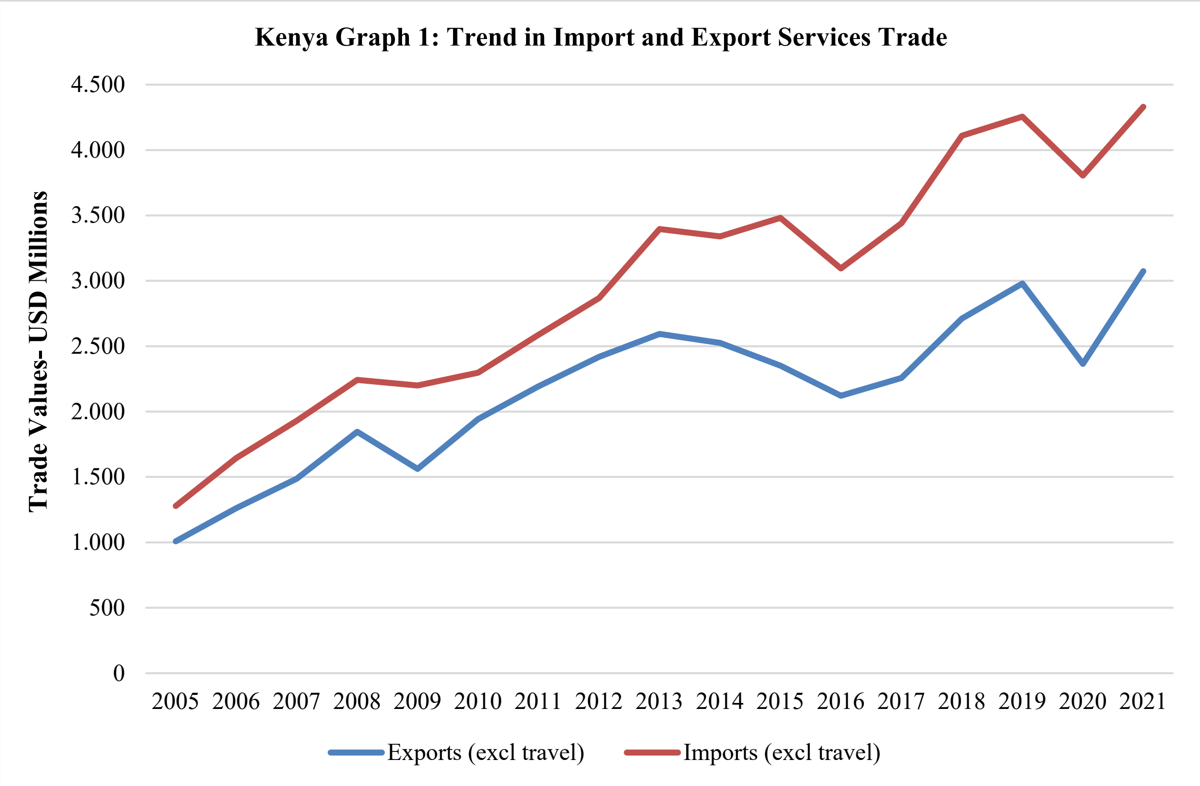
Court cases brought by Tax Justice Network Africa have challenged the validity of the ratification procedure used since 2010, on the grounds that the Kenya Constitution of that date required consultation with the National Assembly. This was partly upheld in relation to the treaty signed with Mauritius (*TJN-Africa v. Treasury,* 2019), and a decision is pending on the broader constitutional issue for the other treaties. In the meantime, Treasury has begun consulting on proposed treaties, and no new treaties have been ratified.

The Kenya Revenue Authority (KRA) took the view that article 12 on royalties in its treaties covered payments for the use of software, which was a matter of disagreement in the UN Tax Committee (see section 1.3 above), and the High Court ruled against the revenue authority (*Seven Seas,* 2021). The KRA also argued that a withholding tax on services could be applied even if the treaty did not explicitly provide for one, under the UN model's version of the Other Income article, but this was also rejected by the courts (*McKinsey*, 2021). In 2023, the provision in domestic law for deduction of WT (ITA s.35) was extended to cover payments in respect of 'digital content monetization' (Finance Act 2023 s.21), and this was defined to include offering electronically for payment a range of material, including software.[52] The treatment of this provision under tax treaties is still to be determined.

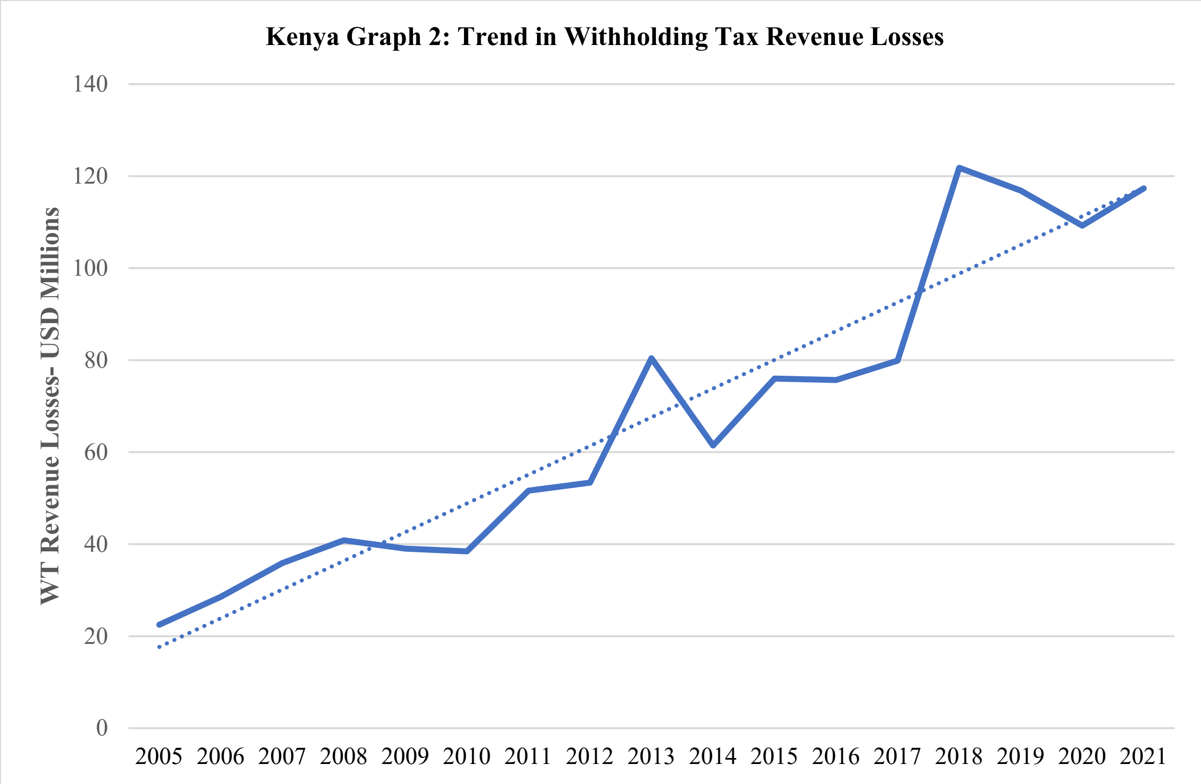
Our methodology assumes that the tax treaty rate for royalties applies to payments in the BaTIS category for Intellectual Property Rights; but payments for the use of software are assumed to be reported in the category 'Telecommunications, computing and information services', for which we assume that no WT applies since they are automated and do not qualify as technical services.

Analysis of the Data

Kenya is a substantial net importer of services. Services trade has grown significantly over the years, both imports and exports have generally trended upwards, with imports rising faster than exports (see Graph 1).



[52] However, this Finance Act was withdrawn after public protests and court rulings that several provisions were unconstitutional.



As can be seen more clearly in Graph 2, tax revenue losses increased gradually over the review period, in line with the trend in services trade, from USD22m in 2005 to USD122m in 2018, when services imports peaked, totalling USD1.148m over the 17 years. This was the highest level of tax revenue losses in relation to GDP of the countries in our study, ranging between 4% and nearly 8% of GDP (see Graph 3 in the paper).

Some 80% were due to imports from three countries. Unsurprisingly, close to 40% were attributable to the UK, and in respect of payments for transport and various technical and financial services. Payments to India, mainly for transport, telecommunication, computer and information services, were the second largest source of tax losses, accounting for approximately 25% of the total.

Kenya Table 3: Revenue Losses by Country

Partner Country	WT Receipts using domestic WT rates	WT Receipts using treaty WT rates	WT Revenue Losses	As a % of Total
	US Dollar, Millions	US Dollar, Millions	US Dollar, Millions	
United Kingdom	856.65	422.13	(434.52)	37.8%
India	541.00	260.36	(280.64)	24.4%
France	251.68	70.44	(181.24)	15.8%
Canada	91.42	29.34	(62.08)	5.4%
Germany	113.92	47.48	(66.44)	5.8%
Denmark	68.71	39.89	(28.82)	2.5%
Korea	52.65	34.98	(17.67)	1.5%

South Africa	48.18	29.11	(19.08)	1.7%
United Arab Emirates	54.04	31.40	(22.64)	2.0%
Sweden	38.75	18.77	(19.98)	1.7%
Norway	17.93	10.07	(7.85)	0.7%
Qatar	7.84	3.34	(4.50)	0.4%
Zambia	1.38	-	(1.38)	0.1%
Iran	4.56	3.09	(1.47)	0.1%
Seychelles	2.66	2.09	(0.57)	0.0%
Total	**2,151.38**	**1,002.51**	**(1,148.87)**	**100.0%**

CASE STUDY: NIGERIA

Our research aims to analyse and quantify the effects on Nigeria's tax revenue due to treaty restrictions on source taxation of services imports, over the review period of 17 years, 2005-21. We analyse available data on payments from Nigeria to non-residents for a range of categories.

Domestic Legislation

Nigeria's Companies legislation requires any foreign company wishing to do business in the country to do so through a locally incorporated entity.[53] While foreign companies generally comply with this requirement for activities physically taking place in the jurisdiction, they can still contract directly with local customers to provide cross-border services (Arogie *et al.*, 2014), although the Federal Internal Revenue Service (FIRS) has tried to limit this by applying a 'single contract' principle, which was upheld in the courts.[54] Despite these attempted safeguards, Nigeria continued to have considerable outflows of payments to non-residents for services provided to residents, which are estimated in the BaTIS data that we analyse. However, it is important to note that since 2020 these losses have been stemmed by the enactment of a new taxable nexus for non-residents based on significant economic presence, which applies to all services not just those delivered digitally.[55] This applies unless the recipient is resident in a country with a treaty restricting source taxation.

Tax applies to 'the profits of company accruing in, derived from, brought into, or received in, Nigeria' (Companies Income Tax Act (CITA), s.9). This tax is recoverable at source from any payments made to the company (CITA s.81), and regulations prescribe specific WT rates for various types of payments to foreign non-residents. The rates set in 1997 have remained unchanged, except for some variations for construction and related services.

The following domestic rates were used to estimate the WT revenue on services imports[56]:

Nigeria Table 1: WT Rates (Excluding Construction)

Type of payment	WT rate (%)	Relevant Article
Royalties	10	78
Outbound freight income on shipping and air transport	2%- 6%	14
Non- freight income and all other transport services	PE rules apply	13
Management services	10	WT Regulations 1997
Commission	10	WT Regulations 1997
Consultancy and professional services	10	WT Regulations 1997
Technical services	10	WT Regulations 1997

[53] Now in Companies and Allied Matters Act 2020 s. 78.
[54] See *Saipem Contracting Nigeria & Others v. FIRS and Others*, Court of Appeal (2018) CA/L/436/2014, and Okanga, 2018.
[55] New section 13(c)&(e) of the Companies Income Tax Act, and the Significant Economic Presence Order of 2020; this does not apply to a resident of a treaty partner.
[56] CITA of 1990 and WT Regulations of 1997 available at https://admin.theiguides.org/Media/Documents/CITA.pdf and https://kwaracails.edu.ng/library/law/nigerian_laws/COMPANIES_INCOME_TAX_(RATES,_ETC._OF_TAX_DEDUCTED_AT_SOURCE_(WITHOLDING%20TAX)_REGULATIONS_S.1_10_1997.pdf.

Nigeria Table 2: WT Rates on Construction and Related Services:

Nature of construction work	WT rate (%) from:				Relevant Article
	2020	2017	2015	1997	
All building construction and related activities				5%	WT Regulations 1997
All building construction and related activities (excluding surveys, design and deliveries)			2.5%		Section 81(2)
Surveys, design and deliveries			5%		
All building construction and related activities		5%			Section 81(2); WT Regulations 2016
Construction of roads, bridges, buildings, power plants	2.5%				Section 81(2)
All other forms of construction	5%				Finance Act 2019

Extensive lobbying by the construction industry due to low profit margins and excessive WT, along with revenue collection pressures led to fluctuations in WT rates during the review period (PwC, 2015).

Treaties

Nigeria's national tax policy until 2017 was to expand its treaty network, while reviewing and if necessary renegotiating treaties regularly, and ensuring that they prevent double taxation without creating opportunities for nontaxation (Nigeria, 2017). As can be seen from the Table, its treaties in force generally align with the OECD model, except for the inclusion of a services PE in some, and a potentially wider right to tax Other Income in accordance with the UN model in most of them. However, Nigeria does not seem to have claimed the right to apply a WT to payments for services under this provision. The current treaty policy, however, is to seek to amend treaties to bring them into line with Nigeria's new international tax policies, particularly to include a WT on services.

Nigeria Table 3: Applicable Treaties and Effective Dates

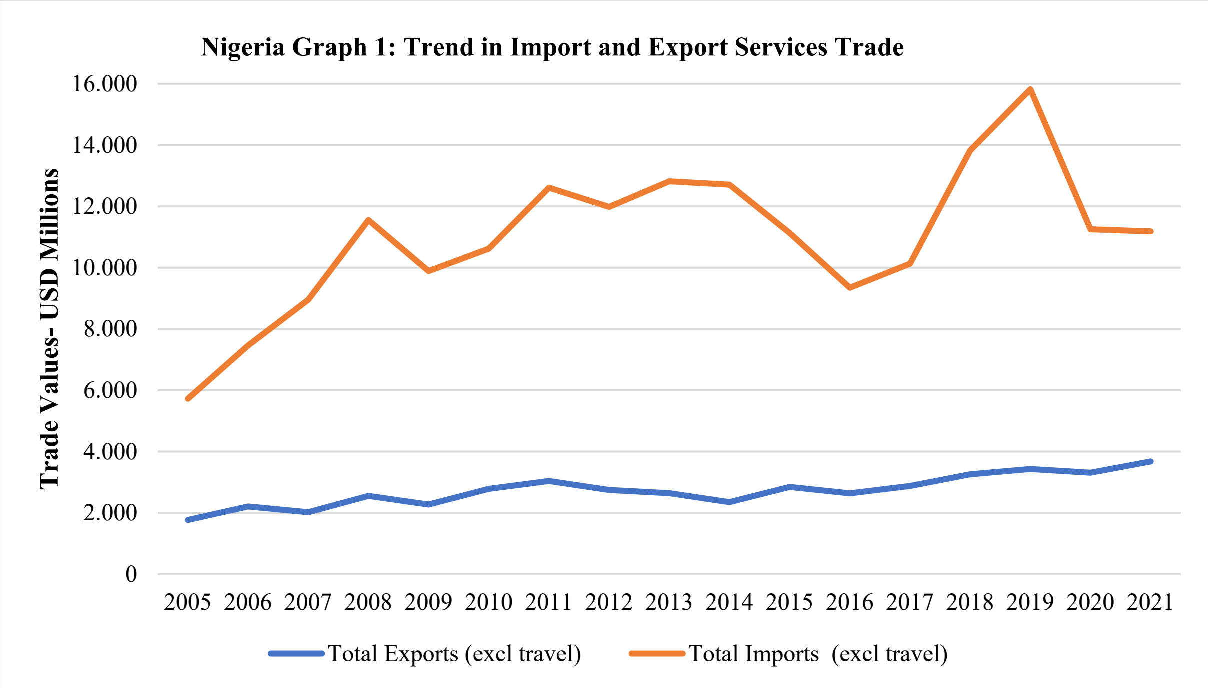
Country (effective date)	5.3.b services PE	UN 5.6 insurance	8 shipping & aircraft	12 royalties	FTS	Other Income
Italy (1968)	N/A	N/A	Residence	N/A	N/A	N/A
UK (1988)	No	No	Residence	12.5%	No	OECD
Belgium (1990)	No	No	Residence*	12.5%	No	UN
Pakistan (1990)	No	No	Residence*	15%	No	UN
Czechia (1990)	No	No	No restriction	15%	No	UN
Slovakia (1990)	No	No	No restriction	15%	No	UN
France (1991)	No	No	Residence*	12.5%	No	UN
Netherlands (1992)	No	No	Residence*	12.5%	No	UN
Romania (1993)	No	No	Residence	12.5%	No	UN
Canada (1999)	No	No	Residence*	12.5%	No	UN
S. Africa (2008)	Yes	No	Residence*	7.5%	No	UN
China (2009)	No	No	Residence	7.5%	No	OECD
Philippines (2013)	No	No	Source 1.5%	20%	No	UN
Sweden (2014)	No	No	Residence	7.5%	No	UN
Spain (2015)	Yes	No	POEM	7.5%	No	OECD
Singapore (2018)	Yes	Yes, except reinsurance	Residence*	7.5%	No	UN

Source: https://www.firs.gov.ng/tax-treaties. The Italy treaty is limited to income arising from operating aircrafts or ships. Treaties signed with Mauritius, Korea, Kuwait, Poland, Qatar, Tunisia, Turkey, and UAE have not entered into force. Rules for the elimination of double taxation adopted within the Economic Community of West African States were effective from 01 January 2024
** subject to reciprocity, otherwise a 1% WT can be applied (only for aircraft for Canada and Romania); this 1% applies for Romania, Sweden and Spain*

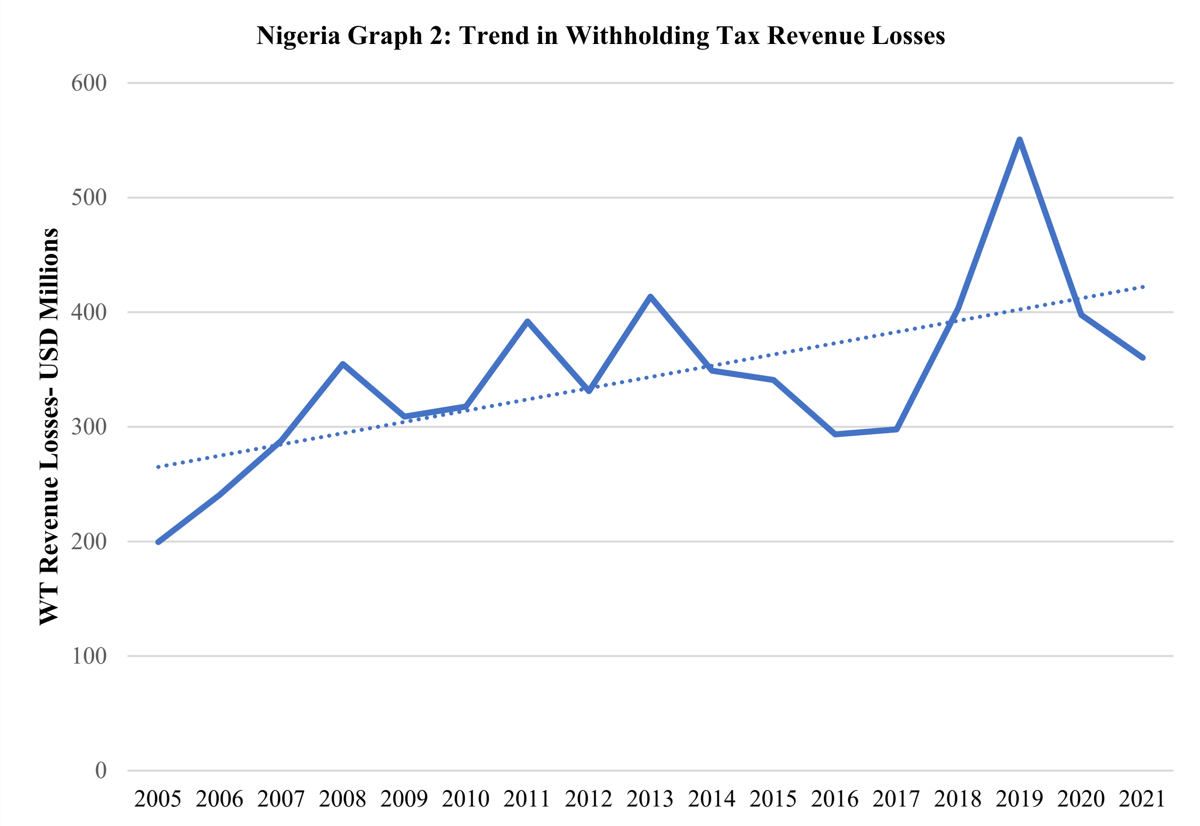
Nigeria's in-force treaties generally restrict source taxation of all categories of services, and apply a cap on source tax on royalties, although it has been higher than the domestic rate. However, when Nigeria reduced its domestic royalty WT rate from 15% to 10% in 1999, the government announced a unilateral WT rate reduction to 7.5% for all treaty partners, presumably to maintain a differential between the standard domestic rate and the treaty rate. Although this was not formalised through a legal instrument, it was adopted by the tax authority in practice, until it was revoked with effect from 1 July 2022, when the standard domestic WT rate was reinstated unless a lower rate was specified in a DTA (FIRS, 2022; PwC, 2022).

Analysis of the Data

Nigeria is a substantial net importer of services, and this gap widened significantly during the review period, with imports peaking at four times export values by 2019 (see Graph 1). Coupled with the restrictions on source taxation of services in its treaties, this has resulted in significant tax revenue losses.



Graph 2 shows the trend of revenue losses more clearly. As can be seen, the trend continued to rise during the review period, despite some fluctuations, totalling USD5.839m over the 17 years. Both the trend and the fluctuations may be due to the importance of services imports for the oil and gas sector, such as transportation, construction and engineering services. The losses peaked at 4.4% of GDP in 2019 (Graph 3 in the paper), although it should be noted that Nigeria's tax to GDP ratio is itself relatively low.



Payments to the UK accounted for nearly 40% of the total, with 75% from three OECD countries (see table below). Our estimates indicate that approximately 55% of these losses stem from 'other business services' (Table 4). Nigeria's decision to unilaterally maintain a differential between its standard domestic rate and the tax treaty rate on royalties has further added to its significant tax revenue losses, only second to Brazil, out of the countries selected for this review.

Nigeria Table 4: Revenue Losses by Country

Partner Country	WT Receipts using domestic WT rates	WT Receipts using treaty WT rates	WT Revenue Losses	As a % of Total
	US Dollar, Millions	US Dollar, Millions	US Dollar, Millions	
United Kingdom	2,174.50	18.05	(2,156.45)	36.93%
Netherlands	1,230.33	83.18	(1,147.15)	19.65%
France	1,076.44	11.61	(1,064.83)	18.24%
China	474.60	75.88	(398.71)	6.83%
Italy	227.58	-	(227.58)	3.90%
Belgium	207.66	1.19	(206.47)	3.54%
Singapore	644.31	475.73	(168.58)	2.89%
Canada	113.62	1.44	(112.18)	1.92%
Sweden	183.86	119.76	(64.10)	1.10%

Philippines	104.40	40.52	(63.88)	1.09%
Romania	45.48	0.02	(45.46)	0.78%
Spain	129.10	78.88	(50.21)	0.86%
South Africa	54.51	8.75	(45.76)	0.78%
Czechia	41.22	0.20	(41.03)	0.70%
Slovak Republic	42.53	0.02	(42.51)	0.73%
Pakistan	4.46	0.00	(4.46)	0.08%
Total	**6,754.60**	**915.24**	**(5,839.36)**	**100.00%**

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