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Tax Treaty Norms Among Lower-Income Countries and the Role of the UN Model: Past, Present and Potential

Martin Hearson,
Frederik Heitmüller and
Vincent Arel-Bundock

August 2023

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Summary

Bilateral tax treaties draw heavily from model conventions published by international organisations. In this paper we investigate the influence of the UN model on tax treaties signed by lower-income countries, as well as the potential for specific model provisions to be mainstreamed in a greater number of treaties. Despite its focus on the interests of lower-income countries, the UN model is often assumed to play a minor role compared to the OECD model. Drawing from an updated version of the ICTD *Tax Treaties Explorer* dataset, we find that a subset of UN model provisions can already be considered as the norm in treaties concluded by lower-income countries. Among the provisions now uniquely found in the UN model, these are the inclusion of 'supervisory activities' in article 5(3)a, and the whole of articles 5(3)(b) and 14. The prevalence of many UN articles is increasing, suggesting that more provisions could join these three. The influence of the UN model becomes even more apparent when we focus on the amount of bilateral investment into lower-income countries that is taxed according to UN model provisions.

To assess the avenues for further change we study countries' reservations to model conventions, as well as their recent negotiation history. This allows us to identify those provisions that are most likely to be strong priorities for lower-income countries, and acceptable to a large number of partner countries. In particular, UN articles 5(4)(b), 5(6) and 21(3) are all increasing in prevalence, have strong support from lower-income countries expressed as observations on the OECD model treaty, and show significant renegotiation potential from recent country-level precedent. Overall, we find that there is significant scope for lower-income countries to renegotiate treaties with a view to obtain more rights to tax income at source.

Keywords: international taxation; tax treaties; UN; OECD; model convention; lower-income countries; foreign direct investment; negotiations; reservations.

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Acronyms

ATAF	African Tax Administration Forum
BEPS	Base erosion and profit shifting
FDI	Foreign direct investment
IBFD	International Bureau of Fiscal Documentation
MLI	G20/OECD Multilateral Instrument to Implement Tax Treaty Related Measures to Prevent BEPS
PE	Permanent establishment
OECD	Organisation for Economic Co-operation and Development
UN	United Nations

1 Introduction

We often talk of the international tax regime, which is generally understood as the network of thousands of bilateral treaties that 'all follow one of two widely accepted models (the OECD and UN model treaties), which themselves are quite similar to each other', and are based on common principles (Avi-Yonah 2007: 5). From the perspective of lower-income countries, however, there are clear choices between the United Nations (UN) and Organisation for Economic Co-operation and Development (OECD) approaches on certain aspects of international taxation, especially in the area of cross-border services. This is not merely a technical matter, but a political struggle between what are commonly described as 'source' and 'residence' countries – importers and exporters of capital and services – over the right to tax cross-border economic activity. Some of these choices are reflected in the model conventions, where notable differences have emerged. For example, revisions to article 7 of the OECD model shift the balance for taxing rights away from countries in which multinationals have branches, and towards the countries of their parent companies, and the introduction of new articles 12A and 12B in the UN model allows for greater source taxation of fees for technical and automated digital services, respectively.

It is our contention that this situation is better understood as a 'regime complex', characterised by 'the presence of institutions whose memberships and mandates overlap' without a clear hierarchical arrangement between them (Alter and Raustiala 2018: 330). The UN model convention is a powerful focal point in a global ecosystem that includes the OECD model and a growing number of regional model treaties – and a world in which lower-income countries are increasingly active, vocal and united in global and bilateral negotiations (Hearson et al. 2022; Mason 2020). Rather than understanding global tax governance as an OECD-led regime with a minor role for the UN model, we should consider it a bipolar system comprising two distinct but overlapping regimes.

To better understand this regime complex, in this paper we set out to determine the prevalent norms within the UN-led regime. This means studying the substantive and geographical contours of the UN model's influence on bilateral treaties signed by lower-income countries, as distinct from the OECD model. Where do we observe the strongest use of norms embodied in the UN model, and how broad and deep is different countries' adoption of those norms in their treaty-making practice? We also want to know where there is the greatest potential to consolidate and expand the UN's role in the regime complex. For provisions already found in the existing UN model, this entails studying the strength of support among lower-income countries, as well as the strength of any opposition from their treaty partners. We also include some tentative exploration of the potential for the UN to adopt articles that have begun to spread organically within treaties of lower-income countries, principally in relation to taxation of extractive industries.

We have written this paper in response to the December 2022 United Nations General Assembly resolution on 'Promotion of inclusive and effective tax cooperation at the United Nations'. Our analysis builds on previous work conducted for the UN Committee of Experts on International Cooperation in Tax Matters and its predecessor Ad Hoc Committee (Wijnen and de Goede 2013; Wijnen and Magenta 1997). It is largely based on the ICTD's *Tax Treaties Explorer* dataset, which is a unique publicly-available tool for high-level comparison of tax treaties. It codes their content in line with variations between the UN and OECD models. Whereas previous large-scale studies counted the prevalence of UN model provisions in treaties in OECD and non-OECD countries, we focus solely on lower-income

countries, and drill down into the data to see how it has changed over time, and between countries.

We seek to make two contributions. First, we demonstrate that the norms relating to taxing rights found in the UN model already predominate in much of the world beyond the OECD. Most foreign direct investment (FDI) into lower-income countries is already taxed according to UN norms, though this varies for different provisions. Second, there is significant potential to expand the role of the UN model by upgrading existing treaties to be consistent with it in certain clauses. As we show, relatively few partner countries exhibit ‘red lines’ against most UN model-type provisions, and for some countries there is significant potential to renegotiate.

The paper begins with a review of literature studying the role of the model conventions and the impact of the distribution of taxing rights. We move on in section 3 to discuss the data used in this paper. Section 4 then analyses this data to consider the past and present influence of the UN model – how widely are UN model provisions used in bilateral treaties, and how has this changed over time? It shows that the UN model’s influence on the taxation of investment into lower-income countries is greater than might be expected. Section 5 is focused on the future – what is the potential for greater use of UN model provisions? By studying the implied and explicitly stated preferences of lower-income countries and their treaty partners, we identify the provisions that have the strongest support among the former, and the least widespread opposition among the latter. What emerges is a picture of several treaty provisions that already represent the distinctive normative underpinning of a UN-led international tax regime, or which have the potential to do so.

2 Literature review

There is growing debate about the costs and benefits of tax treaties to lower-income countries (ActionAid 2016; Beer and Loeprick 2021; Brooks and Krever 2015; Eyitayo-Oyesode 2020; IMF 2014; Kangave 2009; Leduc and Michielse 2021; Pistone 2010; Shepherd 2013). In part, the argument against them rests on the misuse of treaties to obtain benefits not intended when they were concluded, principally through ‘treaty shopping’ via investment hubs. Yet even if this issue were to be resolved, the balance between source and residence taxation – the extent to which treaties curb taxing rights over capital and service imports – poses a challenge for lower-income countries that are overwhelmingly in the importing position. The evidence for an effect of tax treaties on the volume of investment flowing into lower-income countries is decidedly mixed, while the costs from reduced source taxation – though hard to quantify – are certain. As a result, some authors have argued that the current tax treaty paradigm is inherently problematic for lower-income countries. Others focus on rebalancing taxing rights towards the settlement found in the UN model, rather than that of the OECD. According to Eric Zolt:

> While the traditional focus has been on whether developing countries should enter into tax treaties with developed countries, the better questions may be what form the treaties should take and with whom developing countries should enter into treaties. (Zolt 2018: 147)

The model treaties therefore matter a great deal, because they reflect different positions on how much the source state should give up its taxing rights on entering into a treaty. Many lower-income countries have negotiated treaties over decades without their own national

policy. This leaves the UN model as the main resource on which they can draw, alongside any relevant regional models (Mutava 2019).

Several studies have already been undertaken on the importance of the impact of the UN model (compared to the OECD model) in tax treaty negotiations. A first research project on the importance of the UN model was undertaken by Wijnen and Magenta (1997) at the International Bureau of Fiscal Documentation (IBFD), commissioned by the Ad-hoc Committee of Experts on Tax Matters at the UN. This analysed take-up of distinctive provisions of the UN model in treaties concluded between 1980 and 1997. A follow-up research on treaties concluded between 1997 and 2013 was conducted by Wijnen and De Goede (2013). These studies found that, unsurprisingly, the UN model was most influential in negotiations between two non-OECD countries, followed by negotiations between a non-OECD and an OECD country, and least influential in negotiations among OECD countries – though 'UN clauses' have even been included in the latter. In the 2014 study, the authors concluded that 'specific provisions of the UN Model have unmistakably obtained a solid position in the negotiation of tax treaties'. However, they found great variety in the influence of specific clauses. Some enjoyed a particularly high uptake, such as the permanent establishment (PE) provisions, article 14, and article 13(4), whereas most others were found less frequently. An edited volume by Lang et al (2012) investigates the influence of both models on national practice. In his general report, Pistone shows that several UN model clauses (in particular with respect to articles 5, 7, 12 and 14) are very important in countries' tax treaty practice, including the practice of some OECD member countries.

Several other studies have systematically investigated the patterns of retention of taxing rights across smaller samples of treaties, often using variations between the UN and OECD models as their yardstick (Baistrocchi 2008; Brooks 2007; Daurer 2014; Daurer and Krever 2012; Li 2012). For example, Daurer and Krever (2012) find greater retention of source taxing rights in Asian countries' treaties, compared with those of African countries with the same counterparts. Falcão and Michel recently observe that the UN article 8B on shipping is widely used by a small group of countries, mostly in Asia (Falcão and Michel 2021). Hearson (2018) demonstrates that power asymmetries and lack of negotiating experience translate into greater restrictions on source taxing rights when looking at less politically salient UN model provisions, such as those on permanent establishment.

An article by Ash and Marian (2019) analyses the extent of 'transnational consensus on the legal language controlling international tax matters', using a dataset of over 4,000 bilateral tax treaties and 16 model tax treaties published by the UN, OECD and US. They extract the text into different topics following IBFD classification and process it using natural language processing techniques. Finally, they calculate pairwise similarity between treaties in force in each year and model treaties. They find clear evidence of convergence in the language of bilateral tax treaties over time, which is most pronounced in areas related to transfer pricing, taxation of business income and mutual agreement procedures. There is less convergence in definitional issues, double taxation relief and tax collection assistance. Their findings on the role of the two models are worth quoting at length:

> We find the OECD Model to be the most influential model. In the years following the adoption of a new OECD Model there is a clear trend of convergence in newly adopted bilateral tax treaties towards the language of the new OECD Model. ... We also find that model treaties published by the U.N. have historically had little observable effect in the short- to medium-term. However, current treaty practices seem to align themselves with the U.N. Model of 2011 more than with the OECD Model. It is therefore reasonable

to accept an argument according to which U.N. tax policies may have a long-term effect, representing a slow shift from residence to source-based taxation, even among developed countries.
(Ash and Marian 2019: 190)

This shift may also be understated by the analysis of textual similarity. As we show later, the adoption by the OECD of a UN model-type provision – notably 13(4) – may reduce the use of distinctive text from the UN model, which belies a substantive shift in global norms towards those first introduced by the UN.

The recent shift in emphasis towards the UN model reported by Ash and Marian may reflect limited take-up of the revised article 7 of the OECD model adopted in 2010, and many countries' preference to retain article 14 in spite of its deletion from the OECD model. Since Ash and Marian's study, the degree of similarity between the UN and OECD models has decreased overall. In particular, the 2017 and 2021 updates of the UN Model Convention introduced a number of distinctive features, such as articles 12A, 12B, 13(6) and 13(7).

The body of research at present draws conclusions about the uptake of UN model provisions in treaties concluded by certain countries, as well as in aggregate. Yet, there is a wide variation between countries' treaty networks, and a clear difference in preference between different groups, most obviously between OECD members and others. If we consider treaties within a bipolar regime complex, we should study the influence of the two major models independently in the treaties of countries most disposed to follow each of them. To understand the UN-led treaty regime we therefore need to focus on treaties concluded by lower-income countries, whose interests are given special consideration in the UN model. Further, we should drill down systematically into the trends we observe, to combine system-level observations with the picture at country level, and study how this is changing over time.

3 About the data used

When countries negotiate tax treaties, they start from models. While some countries have their own models, these are closely aligned to – and in many cases largely identical to – the model tax conventions developed by the UN and OECD. This standardisation greatly assists with negotiation and interpretation. It also makes tax treaties very suitable for large-scale comparative analysis. In most cases, the presence or absence of a phrase or paragraph clearly indicates the presence or absence of the corresponding source taxing right. The comparative studies of treaty content cited above are predicated on this standardisation.

The ICTD *Tax Treaties Explorer* dataset, updated in preparation for this report, is the most comprehensive attempt to standardise and analyse the content of tax treaties.[1] It comprises 2,615 bilateral tax treaties, 331 bilateral amending instruments, and modifications through the G20/OECD Multilateral Instrument to Implement Tax Treaty Related Measures to Prevent BEPS (MLI), signed up to 15 March 2023.[2] As far as possible, this includes all treaties signed

[1] The dataset was updated for this paper (to version 2.1.0) with support from the UN Department of Economic and Social Affairs, while its original development was supported by the World Bank, Intergovernmental Group of 24 on International Monetary Affairs and Development (G-24), and ActionAid International. It can be explored on the following website: https://www.treaties.tax/.

[2] Treaties signed before the independence of a country from a colonial power, multilateral treaties, and MLI modifications are included in the dataset, but have been excluded for some parts of the analysis.

by a sample of 118 countries designed to cover as many low- and middle-income countries as possible, while excluding a few upper-middle-income countries with large treaty networks that were beyond coding capacity. The sample is those that are or were until recently low- and lower-middle-income countries, all countries in Africa, and all members of the G-24 (sample countries).[3] Most high-income (and some upper-middle-income) countries, including most OECD countries, are not part of the sample, but they appear in the analysis as counterparts to the sample countries (partner countries). Lists of treaties were compiled from the IBFD, supplemented with governments' own lists published online.

Using the UN and OECD models as its starting point, the dataset codes the content of each treaty according to standardised variations between the articles. Each of the fields in this dataset, listed in Table 1, is based on a provision of the model treaties: a difference between the UN and OECD models, a clause that is in both models but does not always appear in negotiated treaties, or a value that the models leave open to bilateral negotiations. The coding schema was heavily informed by previous work on the influence of the UN model (Wijnen et al. 2012), and includes most of the treaty provisions listed in The Platform for Collaboration on Tax's toolkit on tax treaty negotiations as being of particular importance (The Platform for Collaboration on Tax 2021: 13). It was developed in consultation with an advisory group of tax professionals, including experienced treaty negotiators and former members of the UN Committee of Experts.

Table 1 *Tax Treaties Explorer* dataset fields and index composition

<table>
<tr><td>5(3)(a)</td><td>PE definition: construction PE length in months</td><td rowspan="8">Permanent establishment definition</td><td rowspan="14">Overall source taxing rights</td><td rowspan="8">UN index</td></tr>
<tr><td>5(3)(a)</td><td>PE definition: supervisory activities associated with construction</td></tr>
<tr><td>5(3)(b)</td><td>PE definition: service PE length in months</td></tr>
<tr><td>5(4)(a)</td><td>PE definition: delivery exception to PE</td></tr>
<tr><td>5(4)(b)</td><td>PE definition: delivery exception to PE</td></tr>
<tr><td>5(5)(b)</td><td>PE definition: stock agent PE</td></tr>
<tr><td>5(6)</td><td>PE definition: insurance PE</td></tr>
<tr><td>5(7)</td><td>PE definition: dependent agent extension</td></tr>
<tr><td>10(2)(a)</td><td>WHT rate: qualifying [FDI] dividend WHT in %</td><td rowspan="6">Withholding tax rates</td><td rowspan="5">[Excluded]</td></tr>
<tr><td>10(2)(b)</td><td>WHT rate: other [portfolio] dividend WHT in %</td></tr>
<tr><td>11(2)</td><td>WHT rate: general interest WHT in %</td></tr>
<tr><td>11(2)</td><td>WHT rate: interest rate WHT applying to loans from banks and financial institutions in %</td></tr>
<tr><td>12(2)</td><td>WHT rate: general royalties WHT in %</td></tr>
<tr><td>12A</td><td>Management or technical service fees in %</td><td>UN index (binary)</td></tr>
</table>

[3] The full list of countries is Afghanistan, Albania, Algeria, Angola, Argentina, Armenia, Azerbaijan, Bangladesh, Benin, Bhutan, Bolivia (Plurinational State of), Bosnia and Herzegovina, Botswana, Brazil, Burkina Faso, Burundi, Cabo Verde, Cambodia, Cameroon, Central African Republic, Chad, China, Colombia, Comoros, Côte d'Ivoire, Democratic People's Republic of Korea, Democratic Republic of the Congo, Djibouti, Dominican Republic, Ecuador, Egypt, El Salvador, Equatorial Guinea, Eritrea, Eswatini, Ethiopia, Gabon, Georgia, Ghana, Guatemala, Guinea, Guinea-Bissau, Guyana, Haiti, Honduras, India, Indonesia, Iran, Iraq, Jordan, Kenya, Kiribati, Kosovo, Kyrgyz Republic, Lao PDR, Lebanon, Lesotho, Liberia, Libya, Madagascar, Malawi, Maldives, Mali, Marshall Islands, Mauritania, Mauritius, Mexico, Micronesia (Federated States of), Moldova, Mongolia, Morocco, Mozambique, Myanmar, Namibia, Nepal, Nicaragua, Niger, Nigeria, North Macedonia, Pakistan, Papua New Guinea, Paraguay, Peru, Philippines, Republic of Congo, Rwanda, Samoa, São Tomé and Principe, Senegal, Seychelles, Sierra Leone, Solomon Islands, Somalia, South Africa, South Sudan, Sri Lanka, Sudan, Syrian Arab Republic, Tajikistan, Tanzania, Thailand, The Gambia, Timor-Leste, Togo, Tonga, Trinidad and Tobago, Tunisia, Turkmenistan, Uganda, Ukraine, Uzbekistan, Vanuatu, Venezuela, Viet Nam, West Bank and Gaza, Yemen, Zambia, Zimbabwe. A few of these countries are not mentioned in the dataset because they had not concluded any tax treaties as of 15 March 2023. Treaties with text only available in a language other than English, French or Spanish were not coded.

12(2)	WHT rate: royalties WHT applying to payments for copyright in %		[Excluded]
12(2)	WHT rate: royalties WHT applying to payments for the use of equipment in %		UN index (binary)
7(1)(b&c)	Limited force of attraction	Other provisions	UN index
7(3)	No deduction for payments to head office		
13(4)	Source capital gains on 'Land rich' company		
13(5)	Source capital gains on shares other than those covered by 13(4)		
14	Independent personal services included		
16(2)	Source taxation of earnings by top-level managerial officials		
21(3)	Source taxation of other income		
8B(2)	Source shipping right as a %		UN index (0.5)
10(2)(a)	Threshold for qualified dividends	[Excluded from indices]	
25B(5)	Mandatory binding arbitration		
27	Assistance in tax collection		
29	General anti-abuse rule		

Throughout this paper we refer to 'UN model-type provisions' when discussing analysis from the *Tax Treaties Explorer*. This can be defined as treaty provisions that retain a source taxing right, where the UN model has currently, or had in the past, a similar source taxing right that was not present in the OECD model. The dataset uses a purposive interpretation, which means that coders were asked to take account of the intention of non-standard wording, rather than simply checking for the presence of a specific phrase. Some variations between the UN and OECD models, or between editions of the UN model, are not captured. For instance, for article 13(4) we simply code for the presence or absence of a taxing right, which was at one time omitted entirely from the OECD model. While the most significant development in respect of this provision was its adoption by the OECD in 2003, our coding does not capture differences in wording that persisted from 2003 to 2017 between the UN and OECD models, nor changes to the wording in both models over time.

The *Tax Treaties Explorer* also includes indices that amalgamate the content of a treaty into an expression of the overall protection for source taxing rights that it contains. These indices are generally provided in this paper as context – it is helpful to know the overall balance of taxing rights in a treaty when considering the prospects for renegotiation of an individual provision. To create the indices, each coded provision was assigned a value between 0 and 1, where 1 represents a greater taxing right over inward investment. Indices are averages of these values over a particular group of clauses.

- Index of source taxing rights. Incorporates all fields in the dataset that relate to the balance of taxing rights. It is calculated as the average of the permanent establishment (PE), withholding tax (WHT) and Other provision indices. It gives a high-level overview of the treaty.
- Index of permanent establishment definition. Includes fields relating to permanent establishment, which refers to the threshold above which a foreign company's presence in a country becomes taxable. It is drawn from article 5 of the model treaties.
- Index of withholding tax rates. An average of the withholding tax rates in each treaty. These are taxes imposed on cross-border investment, which treaties either prevent or limit to a maximum rate. These are articles 10 to 12A of the model treaties. Each of the four types of payment (dividends, interest, royalties and technical service fees) is given equal weighting, but within each type the values in the dataset are averaged.

- Index of other provisions. This includes the remaining fields, drawn from articles 7, 8, 13, 16 and 21(3) of the models.
- UN index. This employs a strict analysis of only the provisions that vary between the UN and OECD models, as they stood in 2017. It excludes, for example, WHT rates, since these are not specified in the UN model, but it does include the presence of article 12A or an equivalent taxing right. Shipping, where the UN model gives two options, is given half weighting.

Beyond the calculations described above, the indices based on the dataset do not employ any weighting strategy, since this will be a subjective consideration for each country.

Caveats and limitations to the dataset have been discussed in previous publications setting out the methodology (Hearson 2016, 2018; Hearson et al. 2021). It is designed for high-level comparisons rather than to give a precise or comprehensive account of the legal position, and eliminates nuance and heterogeneity by coding each provision with a single word or number. A code book online explains how the most common variations were treated.[4] Each treaty was coded twice, independently, by two different members of the project team. Coders were recruited from universities teaching Masters in Law degrees, and were either current students who had completed courses in tax treaty law, or recent graduates. Coders' early work was comprehensively checked until they achieved a satisfactory level of accuracy. Guidance on how to code common non-standard formulations was prepared with support from the advisory group, and coders were asked to flag any non-standard clauses for verification of their interpretation. The agreement rate between coders after initial data cleaning was 95 per cent. Disagreements and queries were then resolved by the project lead, consulting with the advisory group. Some coding errors and inconsistencies will inevitably remain, especially in instances of non-standard wording.

4 Past and present use of UN model

To understand the UN-led tax treaty regime, we first want to know how widely and deeply different norms embodied in the UN model are adopted. This section therefore examines how frequently the UN model provisions in the dataset are found in treaties concluded by the sample countries, and how this is changing over time. The size of the sample of treaties and comprehensiveness of the coding mean that we can conduct this analysis with a breadth and depth not found in previous studies. The section proceeds in three steps. First, we study overall trends based on the raw numbers of treaties that include a provision. Second, we weight the importance of each treaty by the share of bilateral foreign direct investment that it covers, based on the intuition that a treaty provision has more influence if it is included in treaties that cover larger volumes of investment. Third, to confirm the role of the UN model in the patterns we have observed, we study the prevalence of specific language from the UN model – not just language that is substantively equivalent, as found in the dataset – for certain provisions.

4.1 Evolution of number of treaties including UN model provisions

Source-based provisions are becoming more common across all treaties in the dataset and all clauses analysed, reversing a decline seen during the 1980s-90s (left-hand side of Figure

[4] Available at https://www.treaties.tax/files/tax-treaties-dataset-coding-book.pdf.

1).[5] The trend is more noticeable when only provisions that are an explicit difference between the current UN and OECD models are examined (right-hand side). This evidence suggests that, contrary to claims about the centrality of the OECD model on a worldwide scale, clauses that lean more towards the UN model are becoming the norm in treaties signed by lower-income countries.

Figure 1 Overall trends in treaty content

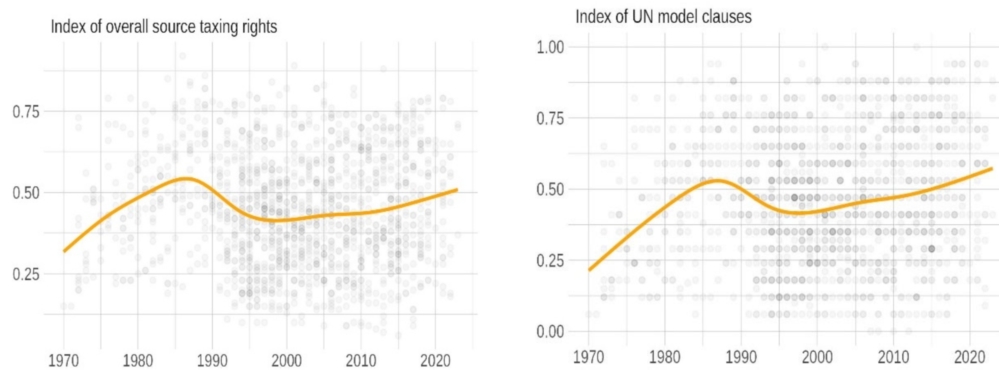


Figure 2 displays negotiation trends over time for specific clauses. The bars that point upwards indicate the number of treaties concluded without the provision, and the downwards pointing bars indicate the number of treaties that include the (usually) source-based clause, The yellow curve is a LOESS curve, and indicates the overall time trend in the share of treaties signed each year that contain the clause.[6] This curve should be interpreted with some caution, since it is not very sensitive to changes – for example, a recent sudden drop in negotiations of a specific clause would not be visible.

Some source-based clauses are negotiated more often than others. Various aspects of the PE definition, such as the inclusion of supervisory activities in relation to construction sites [article 5(3)(a)], the 'service PE' [article 5(3)(b)] and the dependent agent extension in article 5(7), are included most frequently. In addition, a UN-type provision for the source taxation of independent personal services [article 14] remains very frequent, in spite of its recent exclusion from the OECD model.

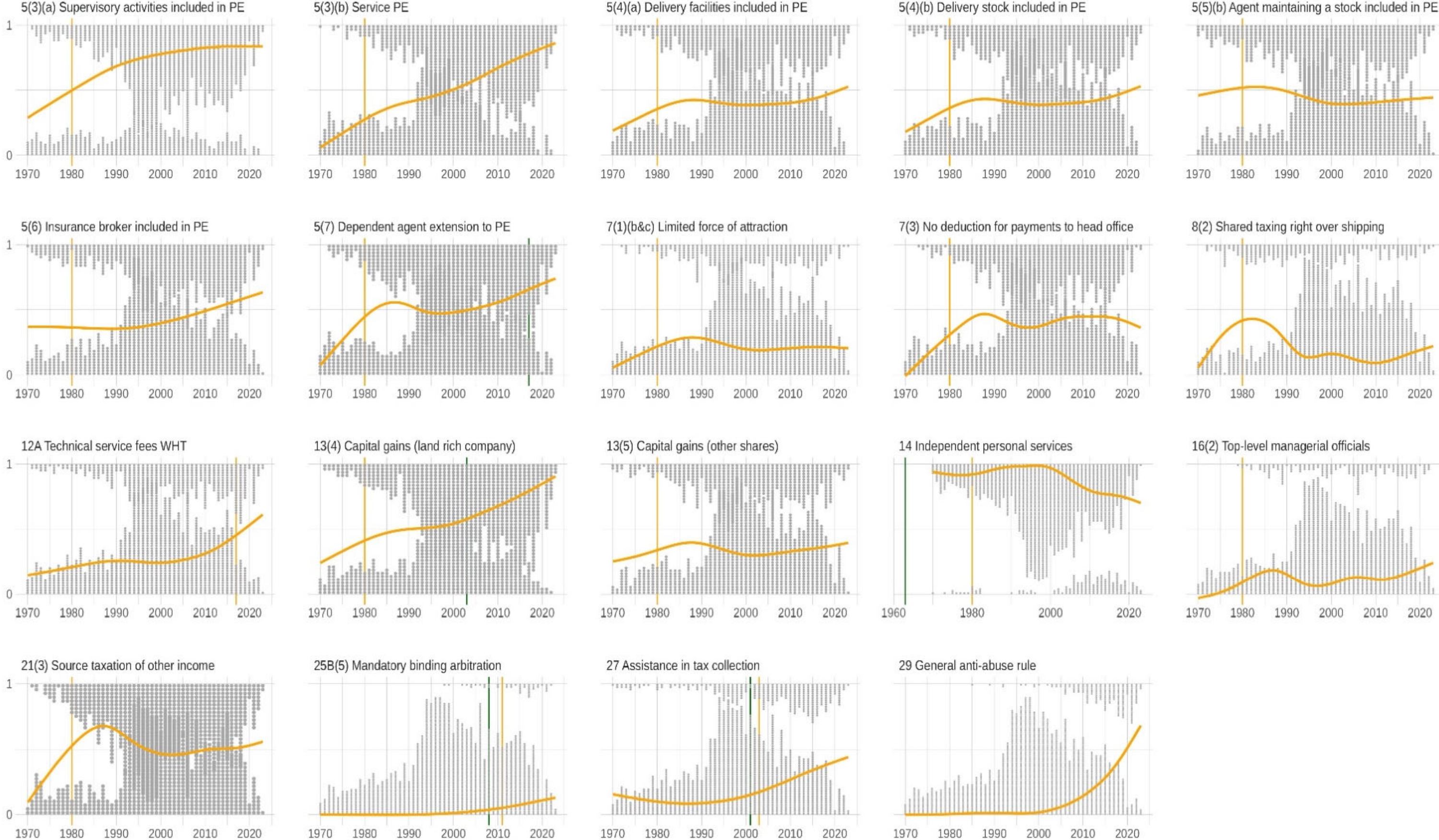
In contrast, provisions that can only be found in a few treaties are those relating to the taxation of individuals in 'top-level managerial positions' [article 16(2)], provisions granting a shared taxing right over shipping profits [article 8B(2)], the 'limited force of attraction' provision [article 7(1)(b&c)], and the provision granting a right to tax capital gains on sales of shares (other than shares of 'land-rich' companies) [article 13(5)].

The trend points clearly upwards for article 5(3)(b), the dependent agent extension to the PE definition [article 5(7)], withholding tax on technical service fees [article 12A], source taxation of capital gains on sales of 'land-rich' companies [article 13(4)], article 13(5) and the provision of mutual assistance in tax collection [article 27]. For other clauses, the

[5] This part of the analysis only includes original bilateral treaties, excluding protocols, MLI amendments, and treaties signed before the independence of a state.

[6] Technically, the coordinates of a locally estimated scatterplot smoothing (LOESS) curve are obtained by fitting many regression models to subsets of the data so that nearer points have a greater influence on the value than points further away.

Figure 2 Negotiating trends over time by provision



Note: The thick yellow line is a LOESS curve, which indicates an average time trend. The vertical lines indicate the date of introduction of the clause in either the UN model (yellow) or the OECD model (green).

trend remains constant over time. Only a few UN clauses appear to be slightly losing popularity (article 14 and article 7(3)).

4.2 Volume of investment covered by UN model provisions

Not all treaties are equally important. Reasons other than investment promotion determine the decision to sign many tax treaties in lower-income countries, and technical experts may be less influential in negotiations in these circumstances. Furthermore, to determine the importance of UN treaty norms we need to know if they are being used for treaties that impact on significant amounts of investment, where more is at stake from a negotiation.

In this section, we use a sub-sample of 47 countries for which a sufficient amount of data is available to determine to what extent foreign direct investment into these countries is covered by a specific provision or not – or by no treaty at all.[7] The source for bilateral investment data is the IMF's Coordinated Direct Investment Survey (CDIS). For each pair of countries, we use the mean of the last five observations (typically the years 2017-2021) as value. We excluded countries for which data is missing for more than 20 per cent of its counterparts. Comparing descriptive results for the subsample and sample as a whole suggests that there is no major difference between the subsample and whole sample in terms of the average prevalence of each provision. For this subsample, taxation of around 80 per cent of the stock of inward foreign direct investment is covered by an in-force tax treaty.

Looking at the share of investment covered changes our findings. A simple count of treaties (right-hand side) shows that only three UN model provisions – the inclusion of supervisory activities in article 5(3)(a), article 13(4) and article 14 – are found in a majority of sample countries' treaties (this is the same for the subsample and whole sample). But when we weight this analysis by the stock of inward investment into sample countries (left-hand side), we see that several other UN model-type provisions are in fact more important than their more residence-based alternatives, covering a greater share of aggregate FDI into sample countries. This includes articles 5(3)(b), the dependent extension to article 5(7), 13(5) and source taxation of other income [article 21(3)]. As we show in Figure 4 overleaf, these treaty provisions cover a large proportion of investment into some large emerging markets, which also account for the major share of total inward investment in the countries of this sub-sample. For article 13(5), the effect of this concentration in treaties of a few large countries is particularly significant.

Given that absence of a treaty implies retention of the source taxing right, we can extend this analysis by asking for which provisions the taxing right is curtailed for a majority of the volume of investment (there is a treaty **and** the treaty does not have a UN model-type provision). This is only the case for the exclusion of delivery facilities and delivery stock from the PE definition [articles 5(4)(a&b)], article 7(1)(b&c), shared taxing rights over shipping [article 8B(2)], and article 16(2).

[7] This part of the analysis includes all bilateral treaties currently in force, incorporating amendments through protocols or the MLI.

Figure 3 UN model-type provisions as a share of total inward investment and total treaties of sample countries

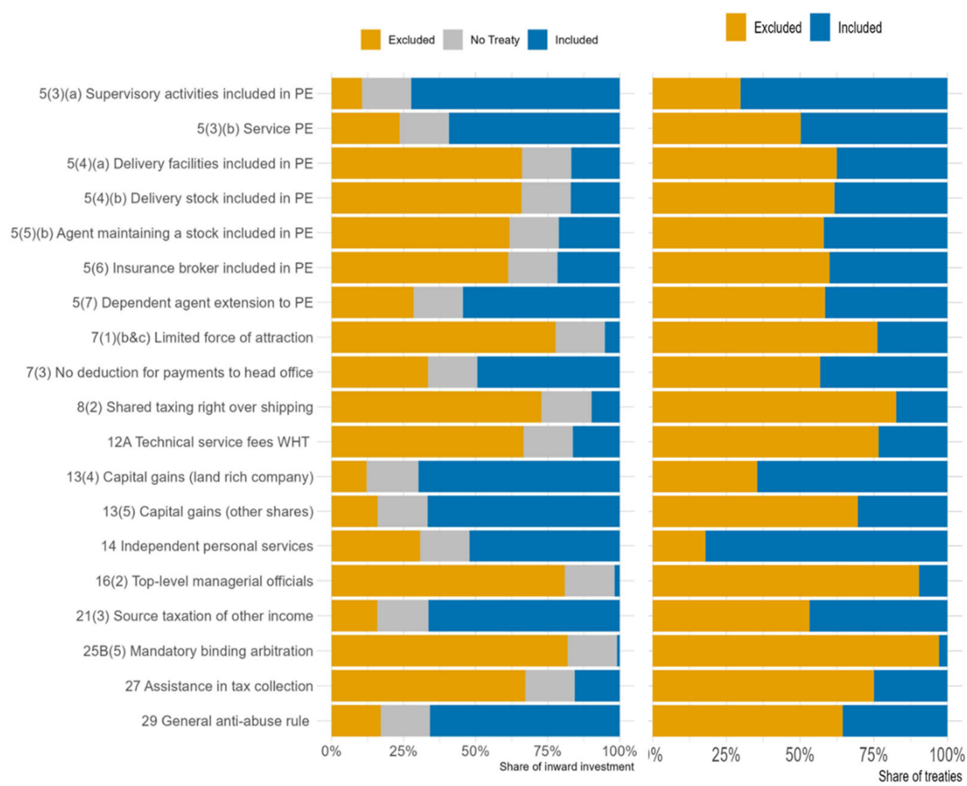
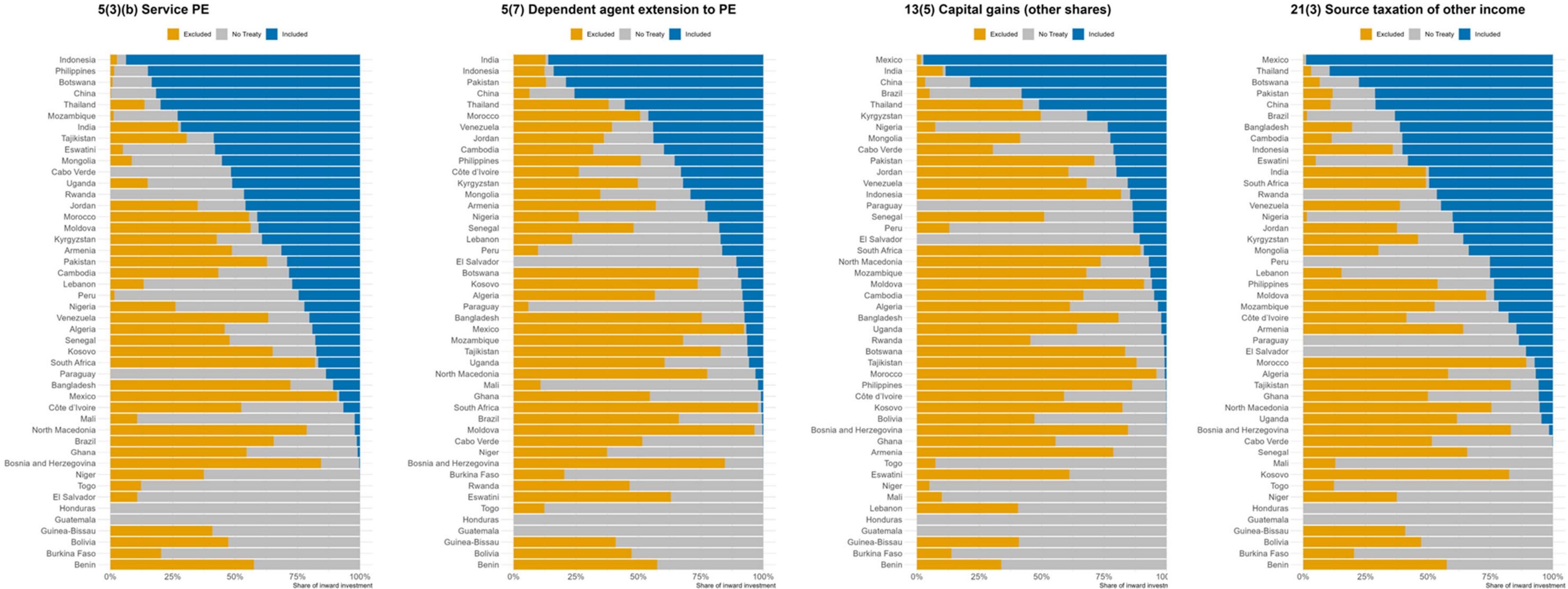


Figure 4 Share of inward investment covered by selected UN model-type provisions



4.3 Importance of UN model text

This section examines the use of specific language from the UN model. The *Tax Treaties Explorer* data, used in most of this paper, is based on a purposive interpretation that is not specific to the wording of the UN model, looking instead for the general meaning of a provision. This is different to the analysis by Ash and Marian discussed in section 2, which focuses on wording, not meaning. Purposive interpretation is labour-intensive, requiring each provision to be coded by hand, unlike an automated text analysis. The two approaches tell us different things, and are complementary, but a comparison between the two can be especially powerful. To do this, we return to counts of absolute numbers of treaties, rather than share of investment, because of the limited availability of foreign direct investment data.

We concentrate in this section on four provisions – these are interesting for different reasons, explained below. We compared the purposive coding in the dataset with a text search in the IBFD tax research platform focused on specific 'text markers', specific text found in the UN model that allowed us to identify the use of that model verbatim. We undertook extensive testing of the results to rule out common false positives that could result from the phrases being used in different contexts or with different meanings. Nonetheless, these results have not been comprehensively reviewed by hand. Table 2 shows the figures for treaties that were in force in 2023,[8] while Figure 5 overleaf shows the proportion of new agreements signed each year.[9]

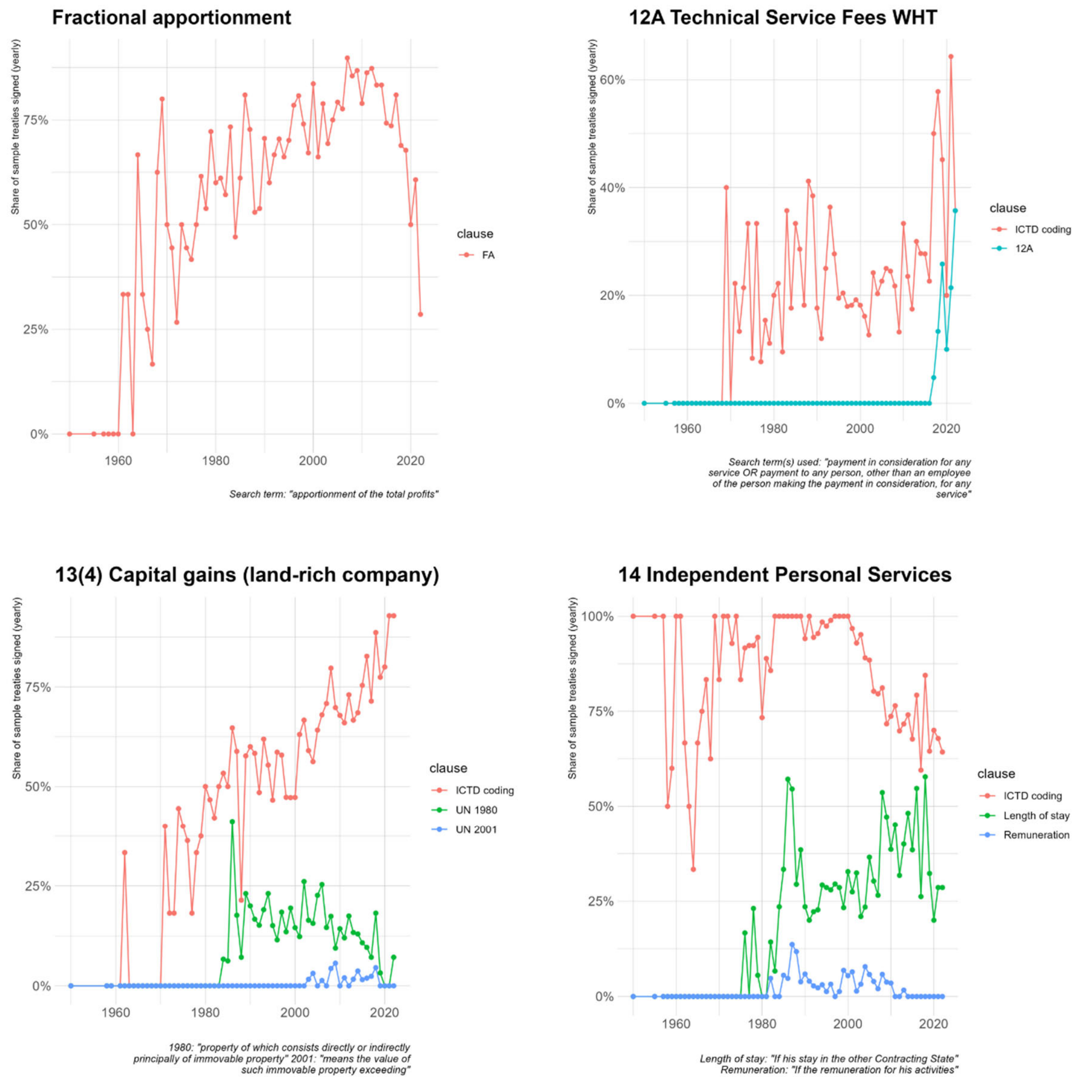
Table 2 Prevalence of UN model-type provisions and specific UN model wording in treaties in force, 2023

	UN model-type provision	UN-specific wording
7(4)		71%
12A	22%	1%
13(4)	59%	14%
14	86%	29%

[8] Including amendments through protocols and the MLI.

[9] Only including original treaties signed, excluding amendments through protocols or the MLI.

Figure 5 Share of new treaties signed each year that include selected UN model-type provisions and specific UN model wording



Article 12A. Technical service fees articles were already being included in a growing number of treaties prior to the inclusion of article 12A in the UN model. The UN model version, however, contains some new wording that was not seen in treaty practice prior to its drafting by the UN committee. This allows us to observe the impact of wording in the UN model somewhat independently of the decision to include an article of this type – although the new UN article also appears to presage an increase in the proportion of treaties including such a provision. Unsurprisingly, since it was only added to the UN model in 2017, UN wording could be found in only a small minority of technical service fee provisions now in force. Nevertheless, it has been rapidly embraced, and is the basis of around half of all new technical service fees articles in treaties signed since 2017.

Article 13(4). This provision has been growing in popularity since the UN model's first publication, but this trend accelerated with inclusion of a similar provision in the OECD model in 2003. Adoption by the OECD led to a decline in use of the UN wording, even as this source taxing right became more common. In 2017, the UN model was revised to match the

new text of the OECD model, eliminating any difference between the two. UN-specific wording is found in approximately a quarter of article 13(4) provisions in force (14 per cent compared to 59 per cent), but this statistic does not reflect the norm-shaping role of the UN in the wider regime complex.

Article 14. This is the mirror image of what happened with 13(4). The OECD's elimination of article 14 in 2000 precipitated a decline in its inclusion in new treaties, but a corresponding increase in occurrences of the UN text – which had already been growing in popularity. Overall, UN-specific wording occurs in around a third of these provisions (29 per cent versus 89 per cent). However, this observation is limited to article 14(1)(b), which allows the source state to tax income based on a length-of-stay criterion. Article 14(1)(c), which allows the source state to tax independent personal services if a resident of the source state paid more than a certain amount for the service, was removed from the UN model in 2001. The figure shows that it had always been included in a significantly smaller number of treaties, and it did not stop appearing until the early 2010s.

Article 7(4). Table 2 and Figure 5 also show the instances of UN wording relating to the use of fractional apportionment to attribute profits to a PE, which is found in around a third of treaties in force, but is not included in the *Tax Treaties Explorer*. This provision is of some renewed interest in discussions around taxation of digital services provided from abroad (Picciotto 2021). The figure shows that after the clause was removed from the OECD model in 2010 it becomes a bit less prevalent in treaties signed by countries in our sample, but in most years since then it is still included in the majority of treaties – 71 per cent of those in force.

We also searched for the presence of the most recent updates to the UN model (articles 12B, 13(6) and 13(7)), but we did not yet find any treaty that included the respective language.

5 Potential for expanded impact of the UN model

In the previous section we identified a significant and growing role for many key UN model provisions. To do this, we focused on past and recent treaty-making activity. But as the UN-led treaty regime becomes consolidated around some provisions that are now widely supported among lower-income countries and accepted by their negotiating partner, a question exists as to how to bring older treaties into line with modern norms. A proposed 'fast track' instrument at the UN could be adopted to achieve this, but would need to be based on the identification of areas in which compromise is possible among a diverse set of states. A UN instrument can be expected to seek to shift the balance of taxing rights towards source states, but it will be challenging to do so in a manner where the major origin countries of investment – both ultimately and as conduits – are willing to sign up. MLI provisions that strengthened the PE definition are a case in point. While a majority of countries from the global South opted in to them, there was less support from the global North, and only a small majority of treaties were augmented in this way as a consequence (Hohmann et al. 2022).

This section approaches the question in two ways. First, we examine the intensity of countries' revealed negotiating preferences, by counting the proportion of treaties in their networks that included each UN model provision. This gives us an idea of which sample countries are likely to be most interested in adding each UN model provision to any treaties that omit it, and which partner countries are most likely to be willing to accept it. We supplement this discussion by comparing it with countries' reservations to, and observations on, the OECD and African Tax Administration Forum (ATAF) model treaties. In a second step, we create an index of renegotiation potential, which gives an idea, for each clause in each treaty, of the likelihood that the partner country would be willing to include a UN provision that is not currently present. This approach ignores the balance within the negotiation as a whole, assuming that such a renegotiation would take place as part of a normative shift towards greater source taxing rights in treaties, but without crossing any specific strong red lines evidenced by countries' recent negotiating history.

5.1 Revealed preferences for UN provisions through negotiating history

To understand negotiating positions per country, we made 'heatmaps' showing the composition of treaties signed by, or with, the sample countries since 2000 (see Figures 6 and 7).[10] For conciseness, we have limited the heatmaps to countries that signed ten or more agreements during the relevant period. We have examined the apparent presence of red lines that countries are unwilling to agree to in bilateral negotiations – shown as dark blue in the heatmaps. This is a very minimal threshold to set for likely positions in multilateral negotiations, as many countries' MLI reservations were more conservative than their recent bilateral treaties.

[10] Only including original bilateral treaties, hence without amendments through protocols or the MLI.

Figure 6 Heatmap of treaty clause prevalence by partner country, 2000-2023

Ordering is by overall source index. After each country name is the total number of treaties signed.

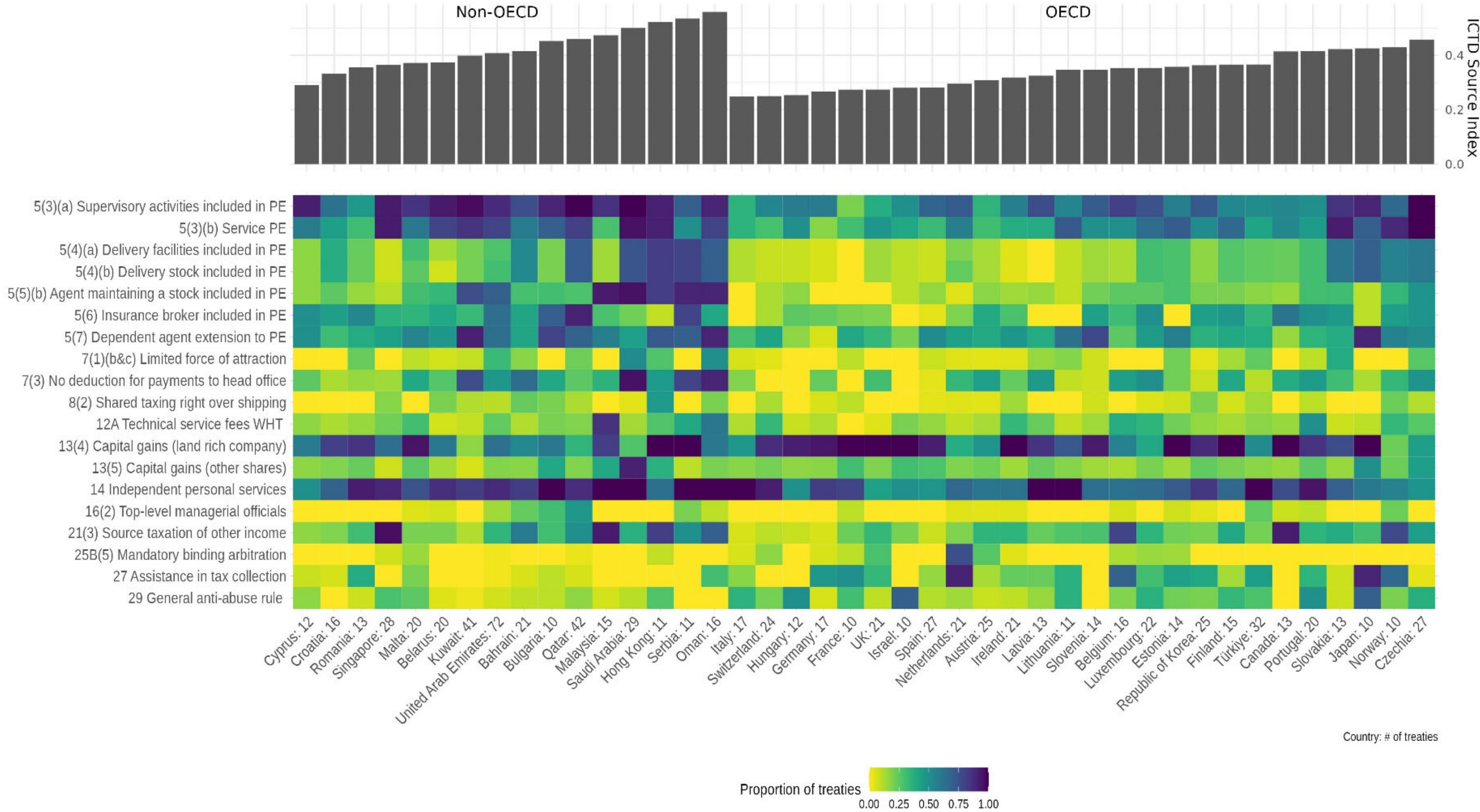
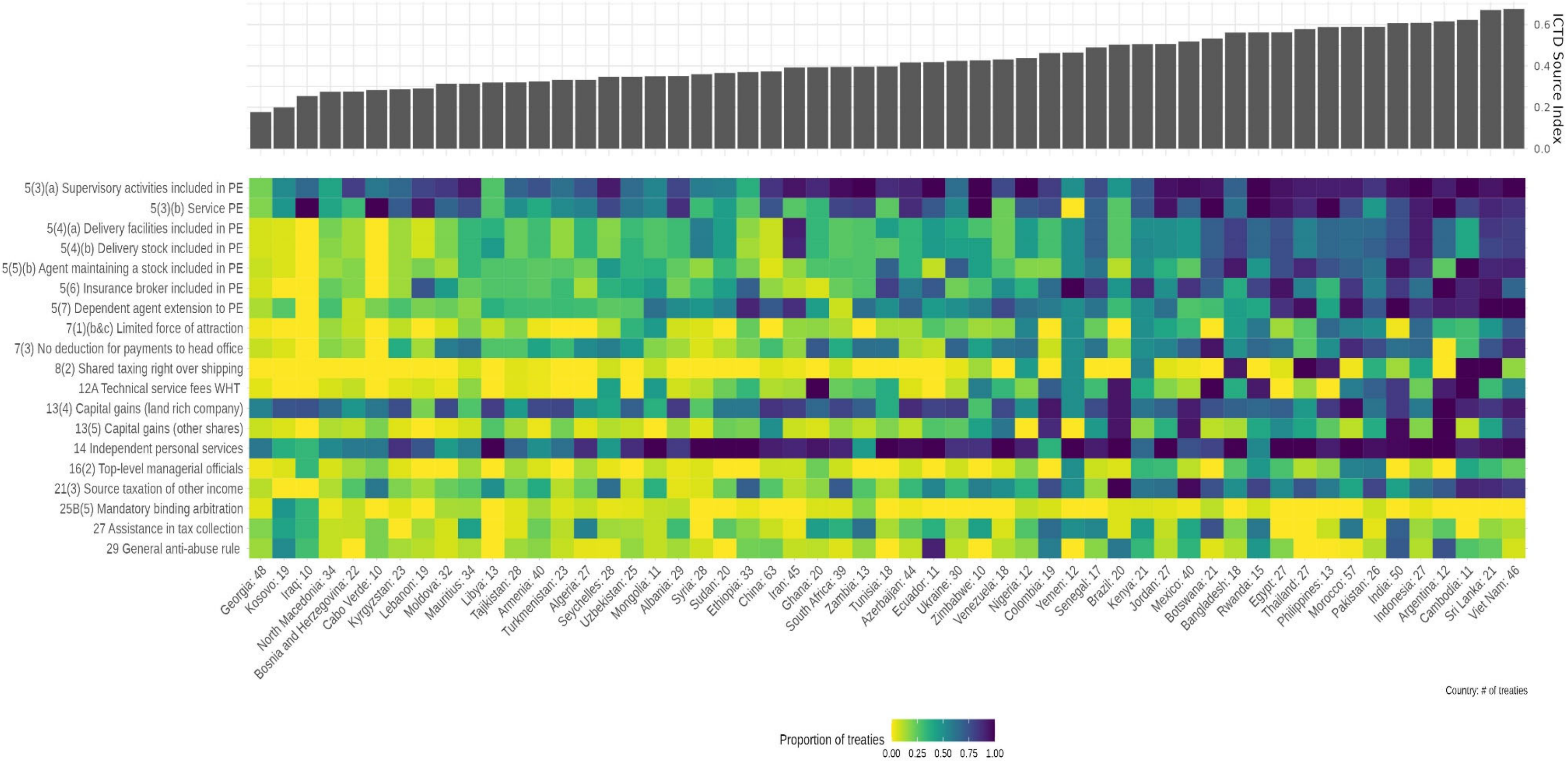


Figure 7 Heatmap of treaty clause prevalence by sample country, 2000-2023

Ordering is by overall source index. After each country name is the total number of treaties signed.



5.1.1 Preferences of partner countries

The following UN provisions have been accepted at least once by every treaty partner that has signed ten or more agreements with sample countries since 2000 – supervisory activities included in article 5(3)(a), article 5(3)(b), the dependent agent extension in article 5(7), as well as articles 12A, 13(4), 13(5), 13, 21(3). In contrast, the most challenging areas, in which several partner countries have firm red lines, are UN provisions in articles 5(6), 7(1)(b&c), 8B(2), 16(2) and 27.

Looked at country-wise, it is interesting to note that some of the most prolific negotiators in the past two decades appear to have very few red lines on articles 5-21. Of the 16 countries that signed 20 or more agreements with sample countries since 2000, there are very few firm red lines:

- No red lines at all: UAE, Qatar, Bahrain, Türkiye, Netherlands, Austria, Portugal and Republic of Korea
- Only 16(2): Czechia, Kuwait, Saudi Arabia and Spain
- Only 8B(2): Malta
- 7(1)(b&c) and 16(2): Singapore
- Dependent agent extension in 5(7), 7(1)(b&c) and 16(2): UK
- No deductions for payments to head office [article 7(3)] and 16(2): Switzerland

An implication is that consensus may theoretically be possible covering a majority of UN clauses in the dataset, and a large proportion of total treaties, since they have been agreed to by every major partner country at some point in the last two decades.

The heatmap for treaty partners is grouped according to membership of the OECD. It reveals that the major substantive difference between the two groups is found in articles 5 and 7, where OECD members have generally entered into agreements with less expansive source taxing rights. That said, aside from Latvia, there are no firm red lines against UN PE provisions other than 5(6) and the dependent agent extension in article 5(7). The latter is surprising given its inclusion in the OECD model since 2017. For most other provisions, there is not a notable difference between OECD members and non-members, with the exception of article 27, which is found in a considerably higher proportion of agreements signed by OECD members than others.

5.1.2 Preferences of sample countries

Looking at the heatmap for sample countries as well as that of partners, we can divide the provisions into three categories. First, those that seem to be diffuse within the treaty network and can be found in most or all countries' treaty networks, including those of partner and sample countries. This applies, in particular, to the article 5 and 7 provisions, 13(4), 14 and 21(3). Most of these provisions are, however, clearly a very strong preference for some countries.

Second, there are provisions that are less evenly distributed, and therefore may be more difficult concessions to win from partner countries. These provisions tend to be concentrated in the treaties of just a few countries:

- Article 8B(2): Close to a red line for Bangladesh, Thailand, Sri Lanka and the Philippines; common also for Nigeria, Kenya, Pakistan and Indonesia.
- Article 12A: close to a red line for Ghana, Brazil, Argentina, India, Botswana, Pakistan and Rwanda.
- Article 13(5): concentrated in treaties concluded by India, China, Argentina, Mexico, Vietnam, Colombia and Brazil.

Third, there are some provisions that appear in some treaties concluded by most countries, but they are neither very common overall, nor very strong preferences for any sample countries. Among these, we count 7(1)(b&c), 16(2) and 27.

A final observation is that the presence of some provisions – 7(1)(b&c), 8B(2), 13(5), 21(3) – seems closely correlated with the overall balance of taxing rights in a treaty, while some others – 5(3)(b), 13(4), 14 – seem independent of it. Where provisions are largely absent from a country's treaty network, and that network is overall more residence-based, it may be more likely that they could be obtained in a programme of renegotiations whose explicit aim is to shift the overall balance of taxing rights. In contrast, where a provision is missing from a treaty that is overall quite source-based, it is more likely that a quid pro quo concession will be expected by the treaty partner. It may be in these instances that a multilateral mechanism would be most helpful to lower-income countries.

5.1.3 Comparison of reservations and observations to model treaties

While the UN model does not have a formal option for countries to lodge reservations or make observations expressing disagreement with its content, some other models do. Here we have studied the OECD and ATAF models. It is interesting to note that these official positions on the models are frequently inconsistent with countries' revealed negotiating positions in practice. As Craig West notes, interpretation is difficult because there is inconsistency between African countries' reservations to the ATAF model and their reservations to the MLI, as well as observations on the OECD model for the few countries that have made them (West 2021). Furthermore, many countries have simply not lodged reservations and observations at all.

We begin with two examples from partner countries. Finland, Germany, Luxembourg, Sweden and Singapore all have reservations/observations on an OECD provision equivalent to the dependent agent extension in article 5(7) of the UN model [adopted in the OECD model in 2017, it is numbered there as 5(6)]. Yet all have a considerable proportion of treaties with sample countries since 2000 that include this provision – aside from Germany, which nonetheless has some. Belgium, Lithuania, Luxembourg, the Netherlands and Switzerland have reservations against another UN model-type article adopted by the OECD, article 13(4), but again they have signed plenty of treaties including it in recent years.

Turning to sample countries, and the 2019 ATAF model, the largest number of reservations concerning source taxing rights - 9 and 10 reservations respectively – is in favour of UN model-type positions over 7(1)(b&c) and 8B(2). The latter is interesting, because several countries with reservations, notably Ghana and Senegal, have not signed any treaties since 2000 including such a provision. Some 29 non-OECD countries have made official observations on the OECD model, in which many express support for UN-type alternatives. Observations on article 5 show support from half of these for each of the key UN model-type PE provisions, and similar numbers for articles 12A and 21(3). There are notably smaller levels of support (4 to 8 observations) for 7(1)(b&c), and 8B(2), 13(5) and 16(2), while the

highest number other than those on withholding tax rates is 20 for the retention of article 14. These numbers largely reflect the prevalence of these provisions in the treaty networks, and, unlike the ATAF model, the countries with observations on a provision have by and large included it in a significant share of their treaties. We might conclude that such provisions are a priority for only a small number of countries.

5.2 Renegotiation index

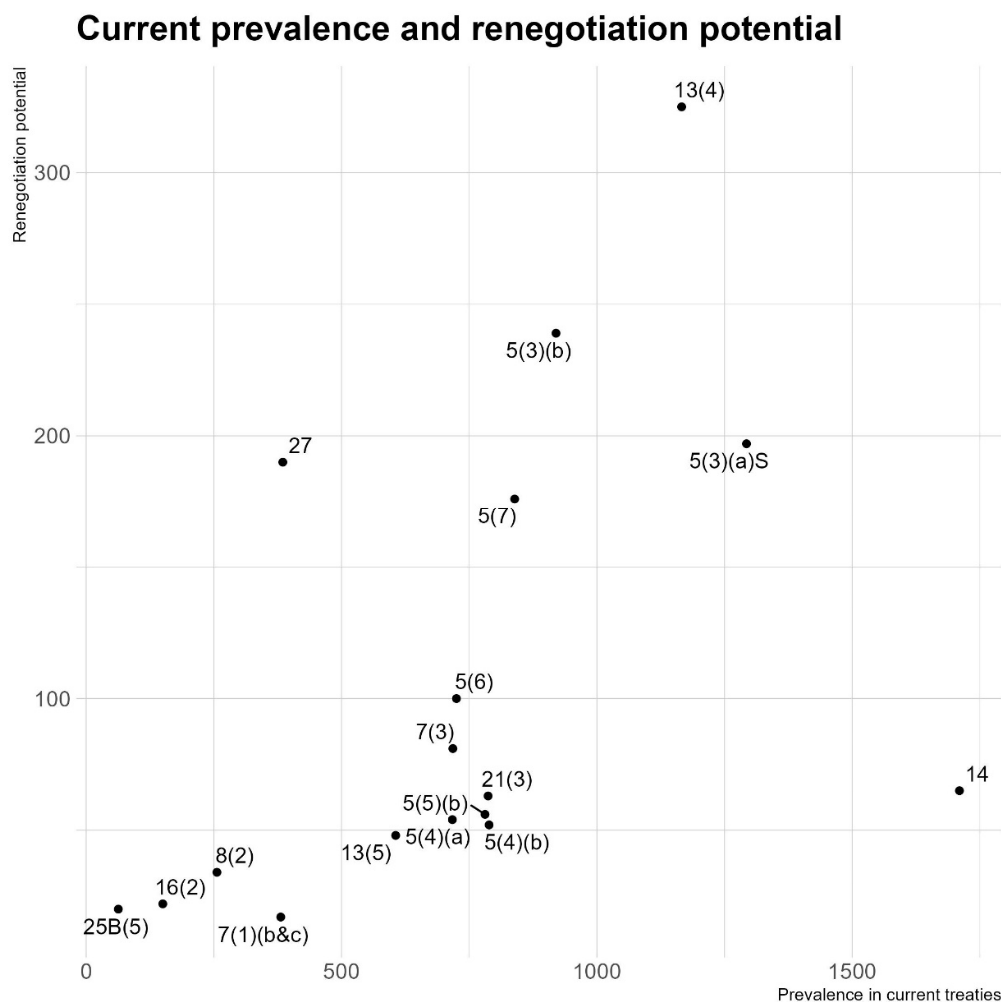
For all binary variables in our dataset (excluding withholding rates), we constructed an index for the renegotiation potential. For each treaty currently in force concluded by a sample country with a country of a higher income class (according to World Bank classification) that does not contain a source-based provision, we calculate the share of the partner countries' treaties signed with sample countries since 2010 that contain the provision. For example, a UN article 12A is missing from the Mozambique-Portugal treaty. Of Portugal's treaties with sample countries since 2010, eight out of eleven include this article, which gives a renegotiation potential of 72 per cent.

To summarise the results, we then classified UN treaty provisions that are absent from a given treaty and have a renegotiation index equal to or higher than 0.67 – meaning that the partner country has signed twice as many treaties with this provision than without it since 2010 – as having renegotiation potential. Annex 1 contains a table with the number of treaties per provision and per country that have a renegotiation index higher than 0.67. This threshold is arbitrary, and so the absolute number of individual treaty provisions assessed to have renegotiation potential is also arbitrary. The ranking of the provisions according to the number of treaties having renegotiation potential is, however, robust at different threshold values, and so it is the relative numbers that are most informative here.[11] Figure 8 compares current prevalence of each UN provision – a count of its occurrences – with its renegotiation potential across treaties in force in the dataset. Among provisions with the biggest potential to change in lower-income countries' favour, some – the dependent agent extension in article 5(7) and articles 13(4), 27 and 29 – are part of a consensus within the regime complex since they are also found in the 2017 OECD model or the BEPS MLI (for articles 13(4) and 29). Among these four, the need to renegotiate to reflect this new consensus varies considerably, indicated by the large range of prevalence values. For example, in contrast to article 27, article 13(4) is already prevalent in a relatively large number of treaties. Of the others, it is 5(3)(a) and 5(3)(b) – supervisory activities and service PE – that show the greatest potential for a widespread introduction into treaties, with the need strongest for service PE.[12]

[11] For example, the composition of the top 7 clauses is the same if 0.5 or 0.8 are chosen as cut-off values.

[12] If the renegotiation index is calculated based on partner countries' treaties that are currently in force (as opposed to those signed since 2010), articles 14 and 27 change places in the ranking. This reflects the fact that article 14 was very common historically but has now been removed from the OECD model, while article 27 is a recent addition to it.

Figure 8 Renegotiation potential compared to current prevalence in sample countries' treaties



6 Conclusion

The purpose of this paper is twofold. First, to document the influence of 'UN model-type provisions' in tax treaties concluded by lower-income countries (with other lower-income countries or with higher-income countries), and thus identify the provisions that are most clearly established norms within the UN-led tax treaty regime. Second, to highlight where there is the potential to update the treaty network with a view of better protecting their source taxing rights. In light of current discussions on a potential UN mechanism to quickly update countries' tax treaty networks,[13] our article-specific analysis sheds light on where such a mechanism could be effective, and where it is most necessary.

We find that several tax treaty provisions of the type found in the UN model – whether or not they follow specific UN wording – are established, or becoming increasingly common, in our

[13] In the October 2022 session of the UN Tax Committee, a so-called 'Fast-Track Instrument' was first discussed.

sample countries' treaties. This confirms our contention that it is indeed more appropriate to talk about an international **regime complex** of international tax than **the** international tax regime. Nevertheless, while the trend points upwards for almost all clauses, some of them are still not very prevalent in countries' networks. Therefore, we conclude that only a part of UN model provisions can be considered as core of the UN-led regime.

Tables 3 and 4 synthesise insights of the different types of analysis conducted in previous sections for the most important individual provisions in terms of current prevalence in sample countries' treaties. We differentiate between provisions that are unique to the UN Model Convention, and provisions that have also been included in the OECD model but are of interest for developing countries.

The first three provisions displayed in Table 3 are those that could be considered as currently forming the core of the UN regime, based on the number of treaties in which they have been included: article 14, supervisory activities included in article 5(3)(a) and article 5(3)(b). However, the table shows that the potential to mainstream these clauses in a greater number of treaties varies. It is highest for article 5(3)(b), which has seen a recent surge in treaties, and in favour of which 24 countries have expressed reservations on the OECD model. Moreover, based on partner countries' treaty negotiations since 2010, no country appears to have a red line with respect to the clause's inclusion. The provision on supervisory activities in article 5(3)(a) follows a similar pattern. However, for article 14, the most prevalent UN clause, the potential for further inclusion seems somewhat lower, as the renegotiation index and a moderate decline (though from a very high level) of the share of inclusion in recent trends demonstrates.

Subsequently, Table 3 shows a set of UN provisions that are part of the PE definition, in addition to articles 21(3) and 7(3), which are relatively prevalent. Most of them have good potential for further expansion, but they do not form part of the core yet.

The UN may also play a role in further mainstreaming clauses that are now part of a global consensus due to their inclusion in both models, but are not yet omnipresent across all treaties. These clauses are displayed in Table 4. As more countries are ratifying the Multilateral Instrument of the BEPS Project (BEPS MLI), the share of treaties in force that contain article 29 (and to a lesser extent article 13(4)) is likely to increase organically. However, our analysis shows that, in addition, the dependent agent extension in article 5(7) and article 27 could form part of a UN-led effort to update countries' treaty networks. For article 27 this seems particularly urgent, since only a relatively low share of investment is covered by it.

Of the remainder, it is important to note that while UN-type articles 7(1)(b&c), 12A and 13(5) do not have strong enough across-the-board prevalence to be considered core UN regime norms, they appear nonetheless to be strongly held preferences for a few countries.

Finally, it is worth stressing that across all provisions we find there are few red lines by partner countries. There are several hundred treaties that may have a good chance of being successfully updated with specific UN provisions in case of a renegotiation.

Table 3 Summary per provision (top unique UN provisions in terms of prevalence)

Clause	**Included in treaties**	**Share of investment covered**	**Treaties with renegotiation index above 0.67**	**Recent evolution**	**Observed red lines**	**OECD/ATAF model reservations In favour**
14 Independent personal services	1710	52%	65	Moderately decreasing	0	28*
5(3)(a) Supervisory activities included in PE	1293	72%	197	Moderately increasing	0	21*
5(3)(b) Service PE	920	59%	239	Strongly increasing	0	24*
5(4)(b) Delivery stock included in PE	789	17%	52	Moderately increasing	2	15
21(3) Other income	787	66%	63	Moderately increasing	0	25*
5(5)(b) Agent maintaining a stock included in PE	781	21%	56	Stable	0	15
5(6) Insurance broker included in PE	725	22%	100	Moderately increasing	1	12*
7(3) No deduction for payments to head office	718	49%	81	Moderately decreasing	3	0*
5(4)(b) Delivery facilities included in PE	717	17%	54	Moderately increasing	2	15

*These clauses are part of the ATAF model, therefore there are naturally only reservations in favour in the OECD model.

Table 4 Summary per provision (top source-based provisions that are also part of the OECD model)

Clause	**Included in treaties**	**Share of investment covered**	**Treaties with renegotiation index above 0.67**	**Recent evolution**	**Observed red lines**	**OECD/ATAF model reservations Against**
13(4) Capital gains (land rich company)	1166	70%	325	Strongly increasing	1	6
5(7) Dependent agent extension to PE	839	54%	176	Strongly increasing	0	5
29 General anti-abuse rule	627	66%	223	Strongly increasing	1	1
27 Assistance in tax collection	347	16%	190	Moderately increasing	6	1

Share of investment covered: this is the share of inward investment into a sub-sample of 47 countries that is currently covered by a treaty with the provision.

Red line: a partner country that has concluded at least 10 treaties since 2010 years and has not included it in any of these treaties.

Annexes

Annex 1 Renegotiation potential by country and clause

The following table displays for each country the number of treaties that have a renegotiation potential of 0.67 or higher for a specific clause. For an explanation of the calculation of the renegotiation potential, see section 5.2.

Table 1 number of treaties that have a renegotiation potential of 0.67 or higher for a specific clause by country

Country	5(3) (a)S	5(3) (b)	5(4) (a)	5(4) (b)	5(5) (b)	5(6)	5(7)	7(1) (b&c)	7(3)	8B(2)	12A	13(4)	13(5)	14	16(2)	21(3)	25B (5)	27	29	Total
Moldova	8	9	3	3	3	6	9		1	2	3	14	2	5	1	2		8	11	90
China	1	4	8	8	9	10	7	4	4	2	7	3			1	4	1	6	2	81
Georgia	17	11	4	4	3	3	6		4	1	2	6	2	4	1	1		4	3	76
North Macedonia	10	8	3	3	3	4	6		3	1	1	12	1	3	1	1		4	7	71
Ukraine	11	10	2	2	3	6	9		1	1	2	4	2	1	1	5		6	2	68
Tunisia	5	14	2	2	2		5	1	1	1	2	16	1			3	1	6	5	67
Morocco	9	7	1	1	2	3	2		2	2	1	10	2		1	2	1	5	9	60
Pakistan	4	9	2	2	1	5	5	1	1	1	1	9		1		3	1	7	2	55
Syria	6	4			1	2	2		6	1	3	14	2		1	3		5	5	55
Uzbekistan	6	5	1	1		2	7		2	2	3	6	1	2	1	3		3	9	54
South Africa	1	7	1	1	1	4	12	1	2	2	3	7	2	1	1	3		4	1	54
Armenia	5	7				1	7		2	1	2	3	2	8	1		1	4	9	53
India	2	13	1	1	1	6	5	2	2	1		5	1		1	2	1	6	2	52
Tajikistan	4	4	3	3	2	2	5		2		2	9	1	3		2		3	5	50
Bosnia & Herzegovina	5	7	3	3	3	3	7		2			7	1	1		1	1	3	1	48
Sri Lanka	9	3	1		1	2	3		2		1	14		2		1	1	4	4	48
Thailand	4	3				2	2	1	2		1	16	1	3	1		1	7	1	45
Bangladesh	9	7				1	5		2		1	4	1	1			1	6	5	43
Iran	1	6			1	6	2	1	4	2	2	5	1	1	1	1		4	4	42
Indonesia	1	1			1	2	1		2	1	4	14	3		1	1	1	4	3	40

Country	5(3) (a)S	5(3) (b)	5(4) (a)	5(4) (b)	5(5) (b)	5(6)	5(7)	7(1) (b&c)	7(3)	8B(2)	12A	13(4)	13(5)	14	16(2)	21(3)	25B (5)	27	29	Total
Brazil	8	9	1	1	1	2	3					2				1	1	3	7	39
Vietnam	2	4	1	1	1		2		2	2	1	4	1		1	1	1	4	9	37
Azerbaijan	4	1					5		4	1	2	1	2	2	1	1	1	4	7	36
Mauritius	1	3	1	1	1	3	4	2	1	1	3	7		3		1		3	1	36
Philippines	1		1	1	1	2	4		1		1	4	2	4			1	4	9	36
Egypt	4	7			2		3		2	1	2	4	1			1		6	2	35
Turkmenistan	4	5	1	1			3				1	3		3		3		4	6	34
Kyrgyzstan	3	2	2	2	1	1	6		1			4	2	1		1		3	4	33
Albania	3	2	2	2	1	3	1		3	1	1	7	2		1	1		1	1	32
Mexico	1	8			1		8	1			3	1		3			1	3	2	32
North Korea	3	2	3	3	4	3	2		2	1		3	2		1			1	2	32
Lebanon		1	1	1	1		4		2	1	2	8	2		1			2	4	30
Mongolia	2	2							2	1	1	9	2		1			3	5	28
Zimbabwe	2	3				1	1		2	1		4	1	1	1	1	1	5	3	27
Ethiopia	4	6	2	2	2	1	1					3				1		1	3	26
Algeria	1	2				2	1			1	2	5	1		1	1		1	5	23
Venezuela	6	5							1			2					1	4	4	23
Seychelles	1		1	1		3	3	2	1	1	1	2		1		1		2		20
Ecuador	1	1					3				1	6				1		2	3	18
Zambia	2	2					1					4		2				3	4	18
Jordan						1	1		1	1	1	6	1			2		2	1	17
Nigeria		3	1	1	1		1					2	1				1	2	1	14
Trinidad & Tobago	4	2					1					1						3	3	14
Kosovo	2	1				1			1			3		1		1		2	2	14
Laos	1	1	1	1	1		2		2			3				1				13
Uganda		4	1						1			4						1	2	13
Argentina	1											2				1	1	3	4	12
Tanzania	2	3									1	3							2	11

Country	5(3) (a)S	5(3) (b)	5(4) (a)	5(4) (b)	5(5) (b)	5(6)	5(7)	7(1) (b&c)	7(3)	8B(2)	12A	13(4)	13(5)	14	16(2)	21(3)	25B (5)	27	29	Total
Côte d'Ivoire	1	1										4				1		1	2	10
Senegal	2	3										2				2			1	10
Ghana	1	2					1									1		2	2	9
Kenya		1					1					4						2	1	9
Mozambique						2	1				2	1						1	2	9
Sudan	1	1				1	1		1			3		1						9
Namibia	1				1				1			1						2	2	8
Paraguay	1	1					1					3		1					1	8
Bolivia	1											2						2	2	7
Papua New Guinea						1			1			2	1					1	1	7
Gambia		2										4								6
Botswana								1										2	2	5
Cape Verde						1			1		1	1							1	5
Libya	2	1																1	1	5
Mali	1	1										1							2	5
Malawi	1	1										1						1	1	5
Peru							1				1	1							2	5
Congo, Rep.	1	1																	2	4
Colombia							1							1					2	4
Nepal											1	2						1		4
Guinea-Bissau						1					1								1	3
Liberia	1											1						1		3
Madagascar		1																1	1	3
Mauritania							1					1							1	3
Samoa							1						1	1						3
Benin		1																	1	2
Gabon																1			1	2
Guinea												1							1	2

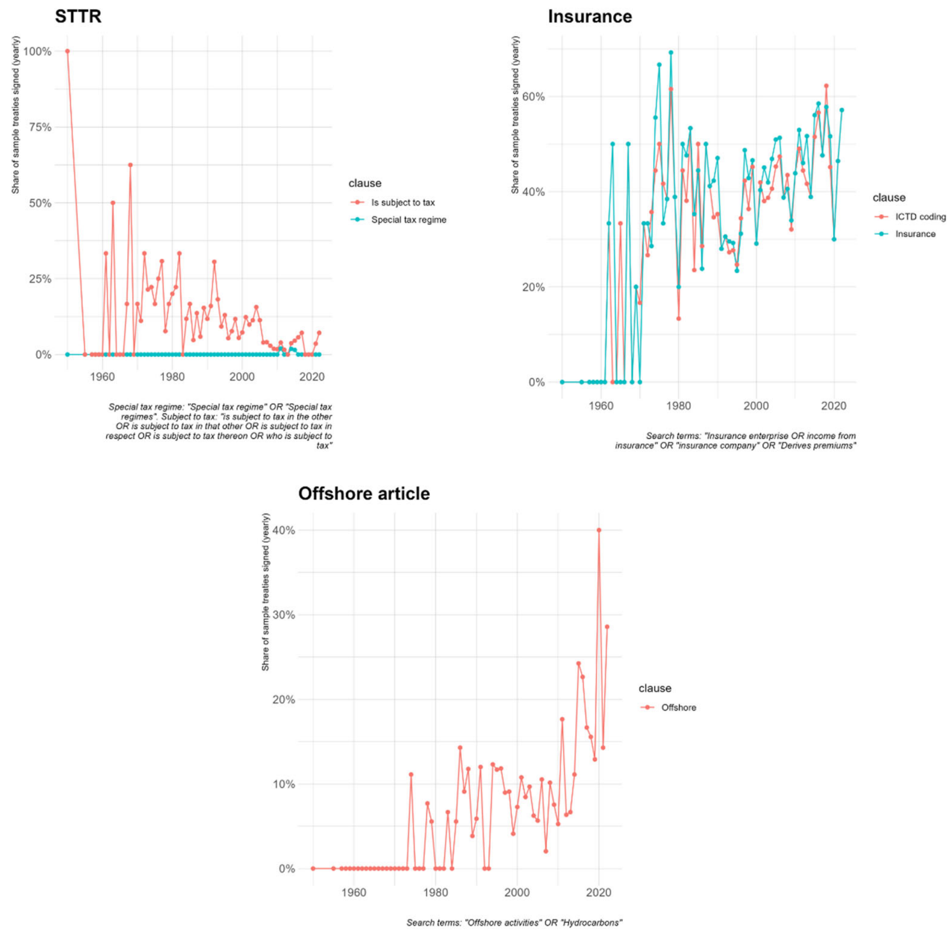
Country	5(3) (a)S	5(3) (b)	5(4) (a)	5(4) (b)	5(5) (b)	5(6)	5(7)	7(1) (b&c)	7(3)	8B(2)	12A	13(4)	13(5)	14	16(2)	21(3)	25B (5)	27	29	Total
Cambodia		1										1								2
Myanmar		1							1											2
Rwanda														2						2
Sierra Leone		2																		2
Eswatini												1						1		2
Timor-Leste											1								1	2
Yemen	1											1								2
Angola														1						1
Burkina Faso	1																			1
Central African Republic																			1	1
Cameroon												1								1
Maldives														1						1
Niger																			1	1
Sao Tomé & Principe						1														1
Chad												1								1
Togo																			1	1

Annex 2 Provisions not currently found in the UN model

We experimented with text searches using text markers to identify provisions not currently found in the UN model. As noted earlier, this data should be treated with caution. We have attempted to remove common false positives (e.g. use of the word 'offshore' with a different meaning in treaties concluded by Brazil), and to refine text markers to exclude noise in the data (e.g. a search of PE articles for the term 'natural resources' alone is impossible because it occurs in article 5(2)(f) of the model conventions). As well as some residual false positives, some false negatives will remain (where our search omits another term that is substantively equivalent, as well as treaties not available in English). Figure 9 shows three examples:

- For insurance, we searched the entire text of treaties for phrases to identify instances in which a source taxing right is provided for, including but not limited to the UN article 5(6). It appears from the overlapping lines that a small number of treaties may include provisions elsewhere to retain this taxing right.
- For the subject to tax rule, we use two different types of text markers. First, we search for provisions on 'special tax regimes', such as described in the Commentary to article 1 of the UN model. Here, we find only two treaties signed in the first half of the 2010s in which text markers occur (Denmark-Ghana signed in 2014 and Germany-Mauritius signed in 2011). Second, we search for clauses that posit that benefits of one of the articles (e.g. on a reduced withholding tax) are only available if the payment is subject to tax in the other state. Such clauses are more frequent, but their use has declined over the last decades.
- We searched for text markers relating to the inclusion of a stand-alone article related to the extractive industries (an 'offshore' article) across all treaty texts, and noted a steady growth. A good discussion of extractive industries-specific language that might be included in a standalone article or within the definition of PE was produced by the International Institute for Sustainable Development and Intergovernmental Forum on Mining (Readhead and Taquiri 2021). Of a sample of 82 treaties concluded by resource-rich states, they found that 5 (6 per cent) had a standalone extractives article, 6 (7 per cent) had a self-standing extractives PE within article 5, and 17 (19 per cent) referred to extractive industry activities (e.g. exploration and exploitation) in their PE definition. Our results suggest that 173 (9 per cent) have an offshore article.

Figure 9 Share of new treaties signed each year that include specific phrases



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