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TAXATION OF THE DIGITAL ECONOMY

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Abstract

As globalisation has pushed through complex inter-State trade in goods and services, in parallel there is a growing complexity in determining the taxation of Multinational Enterprises (MNEs) in an increasingly digitalized economy. This report reviews existing bilateral tax treaties between South Centre's Member States and States where most digitalised MNEs are headquartered, using a threshold of EUR 750 million in annual turnover to limit the number of in-scope MNEs in the study. This analysis produced primary data on South Centre Member States' source taxing rights scores and the implications of this on tax treaty negotiations to enable effective taxation in the digital economy through the inclusion of the United Nations (UN) solution for digital taxation, Article 12B of the UN Model Tax Convention. Further, the study sought to identify 'weak' tax treaties with low source taxing rights which merited a comprehensive renegotiation beyond the inclusion of Article 12B. Furthermore, the reports examined the treatment of "Computer Software" in the tax treaties under study, and concluded with recommendations going forward.

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1. Introduction

As globalisation has pushed through complex inter-State trade in goods and services, in parallel there is a growing complexity in determining in which jurisdictions Multinational Enterprises (MNEs) are to be taxed. Should taxation occur in the country in which the MNE is resident or the source country where the income is generated?

Especially relevant in the contemporary political and economic landscape is dealing with the extra complexity that new digital technologies create. As the economy has become increasingly digital, many MNEs headquartered in one country provide services to consumers situated in other countries, leading to the complex question of taxing rights of the digital services provided. Our work, made in collaboration between the Geneva Graduate Institute and the South Centre, utilises the Centre's research and expertise to promote the common interests of developing countries in the global arena, and deals with this issue of particular importance. The analysis provided here could provide opportunities for the South Centre's Member States to increase their tax revenues, which in turn could allow them to increase government expenditures on projects directly related to further development, such as education, human capital, infrastructure and so forth.

In the current international deliberations on taxation rights related to the digital economy, two plans – one by the Organisation for Economic Co-operation and Development (OECD) and one by the United Nations (UN) Tax Committee – have been proposed which will essentially rewrite the rules on how some aspects of international taxation are to be addressed.

In 2011, the OECD, mandated by the Group of Twenty (G20) ministers of finance, began negotiations to combat tax avoidance through the Inclusive Framework on Base Erosion and Profit Shifting (IF-BEPS), which now counts 141 jurisdictions (as of the time of writing) included in the discussions. A basic premise of this initiative was that the rules governing where taxation will take place neglected the digitalization of the economy. BEPS Action 1 brought attention to the taxation of the digital economy and sought solutions to the tax issue. Its defining feature in its current form is the creation of a multilateral agreement based on the definition of a threshold to identify in-scope companies which will be charged a tax in the source countries.

In the negotiations and talks on the redistribution of taxes on profits of in-scope MNEs, differing interests of developed and developing countries have played a central role in shaping the outcome of the OECD proposal. However, the OECD proposal, essentially promoted by its high-income Member States, has met resistance from some developing countries as the method of determining reallocation of taxable profits have been critiqued for both its complexity and limited scope.

In considering an alternative to this solution, the UN Tax Committee Members serving from 2017 to 2021, focused on the reworking of the UN Model Tax Convention to address the issue of taxing the digital economy. By the end of their term, they managed to produce two relevant proposals:

i) the amendment of the Commentary on the definition of royalties to include the possibility of taxing "computer software"; and

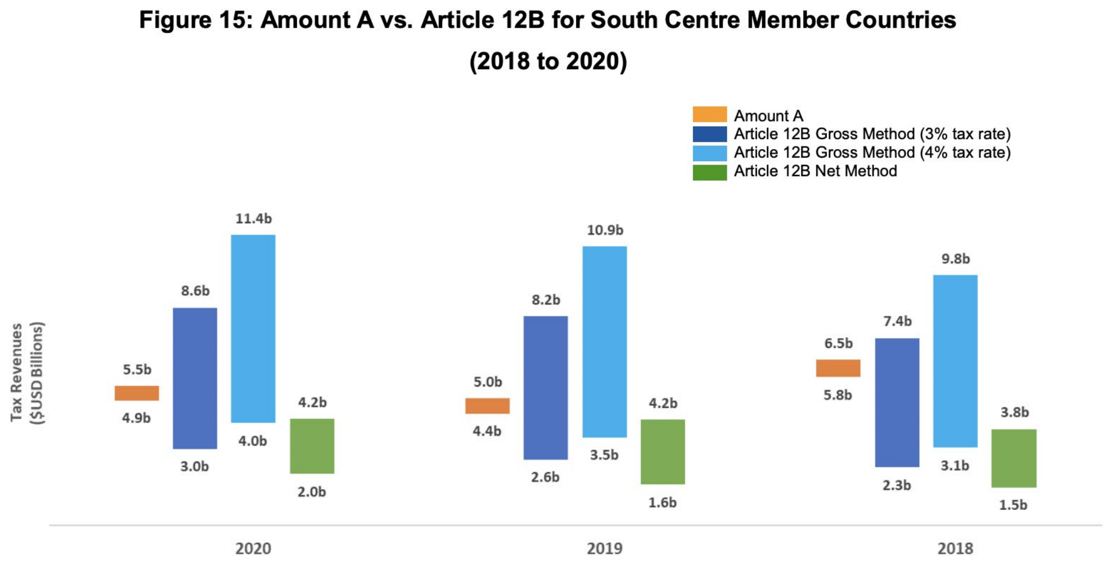
ii) the inclusion of a whole new Article 12B to deal with the digital economy.

These two changes provide a counterproposal to the IF-BEPS solution proposed by the OECD which may have direct implications for its implementation.

At an initial stage, the research aim was to measure the revenue generated by Article 12B. However, the analysis soon lost relevance since external consultants engaged by the South Centre and the Coalition for Dialogue on Africa tackled the issue in depth in a report titled *A Tough Call? Comparing Tax Revenues to be Raised by Developing Countries from Amount A and the UN Model Treaty Article*

12B Regimes (Starkov and Jin, 2022). We based parts of this work on their findings and decided to focus instead on the novel and urgent issue of Article 12B as it proved favourable for South Centre Member States compared to Amount A in the OECD proposal as shown in Figure 1.

Figure 1: Amount A vs. Article 12B for South Centre Members



Source: Starkov and Jin, 2022

Our new aim was to assess the feasibility of including a new article in already existing tax treaties. We wanted to focus on three main issues: the strength of existing tax treaties, to assess how flexible they would be to absorb changes like the new Article 12B; the different ways in which they can be legally changed; and the case for taxation of computer software and royalties, which gave rise to one of the most heated debates surrounding Article 12 of the UN Tax Convention.

This report has been built around these three points. Structurally, this work is composed of an initial section laying down our research question in the form of our tripartite investigation. This is followed by a section reviewing the existing literature regarding legal instruments to modify tax treaties, indices to assess tax treaty strength, and discussions about whether payments regarding computer software should be taxed or not as a royalty. After the debate has been laid down for each of our approaches, we have incorporated a section on methods to tackle each of the edges of our research sphere of interests. We chose simple methods: chronological analysis, cross country analysis and comparative tax treaty analysis are some of them. We then move on to a section where we study these results, aided by a set of graphs we have built with the data gathered. We have included in this report a specific case: that of Nigerian tax treaties, to which we applied our tripartite analysis integrally. We close this study with a section discussing our conclusions on the work undertaken.

2. Research Question and Objective

The objective of this research is to provide analytical inputs to inform the decision on how South Centre Member States and other developing countries should proceed with regards to the inclusion of UN's Article 12B in their existing tax treaties or how to proceed in cases where no bilateral tax treaty exists. Providing information on the current situation of existing bilateral tax treaties may illustrate where gaps exist; as South Centre Member States face similar issues, a common framework could provide guidance on how they may work together and strengthen their collective bargaining power going forward.

We did not tackle the issue from a single perspective, but rather from a set of exploratory frameworks.

The first concerned the legal viability of including new articles in already existing tax treaties, preferably in all these treaties at once through a Multilateral Instrument (MLI) without resorting to renegotiations on a bilateral basis, which would add additional complexity and be a time-consuming process.

The second one refers to the current shape of South Centre Member States' bilateral tax treaties. We have examined how restrictive these agreements are, and how Article 12B would alter those treaties. In that process, we also examined how some of these tax treaties currently address the digital dilemma, analysing whether their provisions treat payments related to the use of computer software as royalties.

The third one deals with a particular analysis of the case of computer software. The discussion about considering payments for computer software as royalties has been ongoing for a long period, and has gained traction and importance in recent years, given that almost every business nowadays runs on software. Observing what is the current state of South Centre Member States' tax treaties about the treatment of payments for computer software will help us nurture the analysis about the negotiating positions of the South Centre's Member States in the potential scenario of Article 12B's inclusion in tax treaties.

The aim of our exploratory analysis is to provide answers regarding how likely it is to have countries embark in a multilateral legal tool that will allow them to add new articles to existing treaties collectively (not just Article 12B but other articles in the Model Tax Convention as well); what is the power balance between treaty signatory parties, in case the option of an MLI fails?; and what is the current understanding of software under international taxation law for the purpose of digital taxation? This is because considering software payments as royalties would have significant implications for tax purposes by allowing source jurisdictions to tax such transactions as nationally sourced income.

Furthermore, the analysis of existing bilateral treaties, or the lack thereof, between South Centre Member States and countries where MNEs are taxable under Article 12B provides useful insight as to where re-negotiations may need to occur. Moreover, the analysis brings attention on the Member States that have adequate existing treaties, and Member States that are not bound by treaties and thus have full freedom to shape their tax policy. This includes the freedom to include Article 12B or continue without a bilateral treaty with the residence States.

3. Literature Review

3.1. The current analyses on tax revenue estimates

On June 1st, 2022, the South Centre published what was the world's first country level economic analysis comparing governmental tax revenues under the application of the OECD's proposal for digital taxation, and of the newly added Article 12B of the UN Model Tax Convention (Starkov and Jin, 2022). This was for 84 developing countries that are members of either the South Centre and/or the African Union. Although, as a disclaimer, the authors state that their analysis is conservative —a most responsible statement, given the great complexity of calculating such figures—this is the first effort undertaken to measure the impact of both options. Although not the case for every country analysed, the analysis alludes to the fact that a clear majority of the developing countries would receive a larger total of tax revenue from the UN option, as opposed to the OECD proposal. The OECD proposal would, in turn, reduce tax revenues for the countries in which the MNEs are headquartered as well as the overall post-tax profits of the MNEs.

A voluminous body of literature has been developing over time regarding the OECD proposal, of which the most salient is the Economic Impact Assessment research (2020) undertaken by the same organisation. Multiple articles, either academic or opinion pieces, comment on the implications of this taxation option. Such prominence is not the case for the UN proposal, partly due to its novelty (the Article 12B was approved only in April 2021). Apart from the South Centre's work, no economic analysis has been undertaken for the implementation of Article 12B.

As of writing this report, Article 12B has become an integral part of the UN Model Tax Treaty, yet there remains a technical legal issue regarding implementation, which can be formulated as follows:

Do tax treaties need to be renegotiated individually to add Article 12B, or is there a possibility to use multilateral tools for countries to add the article without undergoing renegotiations on a bilateral basis?

The new Membership of the UN Tax Committee, selected last year, has decided to work on this issue by analysing the possibility of a Multilateral Instrument (MLI) to add Articles such as 12A and the proposed Subject to Tax Rule into existing treaties, which would both speed up the process and allow for some homogeneity on an international scale. However, the functioning of the MLI would still be essentially bilateral, as it would involve match-making between interested parties. That being said, it can nevertheless bring about greater strength to the negotiating table as it will restrict the scope of negotiation only to the selected provisions, and not necessarily reopen the entire treaty for renegotiation.

One of the aims of our project was to analyse gaps in the current tax treaties in view of Article 12B and the political drivers that would lead to its implementation. We expect this project to provide information that can be used to make informed decisions for Member States of the South Centre as well as for the UN Tax Committee.

3.2. Legal instruments for tax treaty renegotiation

This section will examine existing tools for tax treaty negotiations between advanced economies and lower to middle income countries (LMICs).

The United Nations provides a Manual for the Negotiation of Bilateral Tax Treaties Between Developed and Developing Countries. The manual underlines technical guidelines and assistance to expand the capacities of developing countries. However, the manual is utilised in parallel with the articles of the UN and/or OECD Model Tax Conventions.

Thus, tools are available for the negotiation of a bilateral tax treaty. What tools are available for renegotiating multiple existing tax treaties simultaneously?

The OECD Multilateral Convention to Implement Tax Treaty Related Measures to Prevent Base Erosion and Profit Shifting, more commonly known as the Multilateral Instrument (MLI), developed under the

OECD Base Erosion and Profit Shifting (BEPs) project, allows signatory States to amend their existing tax treaties concurrently (Tandon, 2018). However, renegotiation is only triggered if the other State has ratified the instrument (Tandon, 2018). The use of a multilateral instrument would ease the costly endeavour of individual renegotiation of bilateral treaties.

However, the lack of a UN version of the MLI is a prevailing gap in the legal instruments as the BEPS MLI only modifies tax treaties with the BEPS Actions. There is no MLI which deals with the articles of the UN model. The absence of an MLI means that countries have to enter re-negotiations bilaterally for each treaty, a more time-consuming method. Rawal argues that a UN multilateral instrument would provide a more favourable framework for incorporating provisions of the UN Model Tax Convention into the bilateral tax treaties of developing countries such as South Centre Member States (Rawal, 2021). The UN Tax Committee has now commenced work on developing precisely such a UN MLI.

Tatiana Falcao draws attention to the expansion of the draft tool kit produced by the Platform for the Collaboration on Tax (PCT). The PCT is a collaboration between the International Monetary Fund (IMF), World Bank, OECD, and the UN (Falcao, 2021). Falcao proposes to expand the tool kit to include a provision on renegotiations. Unfavourable tax allocation rules based on bilateral treaties may trigger the need for a renegotiation (Falcao, 2021).

As argued by Dagan, a large swath of bilateral treaties reshuffle revenue from developing countries to advanced economies (Dagan, 1999). Irish complements the work of Dagan, by noting that through tax treaties, tax revenue shifts from source countries to resident States. Irish refers to this phenomenon as an anomaly (Irish, 2008). Thus, less favourable treaties are grounds for States to engage or seek renegotiation. Renegotiation however is dependent on both States' willingness to engage (UN Manual).

3.3. Tax treaty bargaining power for LMICs

Extensive literature points to the looming effect of the prevailing negotiation asymmetries that exist between LMICs and advanced economies. These imbalances may tip treaty negotiations towards a less favourable outcome for LMICs. However, the literature also illustrates that bargaining power is present for LMICs and certain thresholds can guide concessions in negotiations.

Previous literature affirmed the use of rationality in treaty negotiations (Hearson, 2018). Studies conducted by Chisik and Davies (2004) affirm asymmetrical relationships in foreign direct investment (FDI), that higher FDI activity is followed by a higher tax rate. As FDI increases from one country to another, the tax rate of the country receiving the FDI will increase in the negotiation process. Rixen and Schwarz further complement Chisik and Davies' argument by asserting tax treaties redistribute tax revenue in a favourable manner towards both source and residence countries. The authors drew upon the case of Germany and drew a similar conclusion to Chisik and Davies, as FDI asymmetries increased so did the tax rate for the source country (Rixen and Schwarz, 2009).

Hearson describes the importance of "power politics, knowledge asymmetries, and negotiating capability" on the bargaining power for LMICs. The asymmetrical power distributions place LMICs at a disadvantage as they hope to attract foreign investment (Hearson, 2018). Hearson advances the notions that an LMIC government's revenue size and its dependence on corporate taxes drive the concessions a State pursues in negotiations (Hearson, 2018). Barthel and Neumayer demonstrate that LMICs are placed in a prisoners' dilemma when negotiating tax treaties. According to the authors, these States would collectively benefit from not signing double taxation treaties, yet individually they may obtain a competitive advantage over other LMICs for foreign capital (Barthel and Neumayer, 2012).

LMICs' ability to exercise bargaining power in negotiations stems from their gained experiences in previous negotiations. As LMICs obtain experience, their capacity to negotiate a more favourable treaty increases (Hearson, 2018). Furthermore, strengthening domestic tax laws bolsters the bargaining power for LMICs (Hearson and Kangave, 2016). The improvement of the technical knowledge and strengthened internal tax codes ensure a more favourable treaty outcome.

3.4. Framing the debate about royalty payments for computer software

One of our initial observations is that the international tax treaties under the scope of this study appear to be respectful of the UN Model Tax Convention. To pin down the analysis and frame it in a pertinent discussion, the study focused on the treatment of computer software in Article 12 (Royalties), as computer software plays an integral role in the digital economy.

The interpretation of payments for computer software as either a sale of a good or service, or a payment for the right to use the software determines whether developed countries such as the headquarter jurisdictions for software producers or source countries such as South Centre Member States will collect the tax revenue.

The discussion about taxing payments for computer software as a royalty is anything but new. Some authors record the beginning of the argument by the mid 1950s, when it was impossible to foresee the great impact computer software was to have in international trade. In the seventies, the bifurcation in the understanding of taxation over software was already laid down. Bryant and Mather (1973) break it down simply as this:

"With the rapid expansion of computer use in the last fifteen years, taxation of computers and related property has become increasingly important to state and local governments (...) A major controversy exists, however, as to whether states may lawfully impose ad valorem property taxes on computer "software", the package of programs which control the operations of computers, together with associated documents and support services. A number of state taxing authorities have contended that software is taxable personal property, since it has

tangible manifestation in the cards, tapes, or discs used to store software operating instructions for use in the computer. However, computer manufacturers and users have taken the position that software is "intangible" property, which under most states [are not taxable]".

At heart, the issue of software taxation, as recognized by Kuo (1987) lies beyond Kuo's dichotomy of tangibility, rather if the sale of the software is considered payment for a good or service, or the right to use the intellectual property. The contrast drives a wedge between advanced economies and LMICs. If payments for software are regarded as payments for goods or services, then the revenue from these sales would be classified as business profits and hence may only be taxed if there is a physical presence in the source countries through a so-called permanent establishment. This is increasingly unnecessary for software companies who do not need a physical presence in countries to make sales. Further, even if there is a physical presence such as through an office or branch, there are many difficulties in allocating profits to the permanent establishment owing to the heavy use of intangible assets such as algorithms and source codes in the generation of profits.

The Berne Convention, signed in 1886 and revised and amended multiple times up until 1979, handles protection of literary and artistic works (WIPO, 2023). To date, 180 countries have signed onto the convention (Cornell Law School, 2021). The Berne convention describes computer software as literary work, however that has not prevented court disputes over the interpretations and where taxation ought to occur.

Several domestic courts have tried to settle the issue, with disparate results. Kuo continues by saying that in the US, "states and federal taxing entities have not relied on coherent policies or rationales in their approach to software taxation. Rather, each taxing entity has construed and classified software in the manner most advantageous to its own coffer. The result is a hodge-podge of incongruous standards for tax treatment which vary not only within a state but also from state to state and from the state and the federal levels". Kuo refers to the case of the

US, but this disagreement also occurs domestically in other States, as he shows.

Currently, this discussion is of the utmost importance since software is pervasive and present in all industries. This has been a preoccupation that, at least since the early 2000s, the UN Tax Committee has treated it as an important issue. The issue was considered again in meetings as recent as the one held in October 2022. The arguments considered by the UN Tax Committee stemmed from the various actors involved in the negotiation (headquarter countries of software companies, source countries, and the software companies themselves) already considered by Bryant and Mather in 1973. Concisely, as expressed by one commentator (Tata Consultancy, 2022) in the round of comments opened by the Committee this year, the matter at hand can be expressed as follows:

"*The issue of taxation of cross border software licensing transactions has been a bone of contention between the tax authority and the taxpayer over the years. The controversy is pursuant to the difference between the definition of royalty under the various domestic tax laws of respective countries, and the definition under the tax treaties*".

We were able to observe this through several "technical notes" released by the US with regard to tax treaties signed with India, Sri Lanka and South Africa, and we will mention this more in depth below.

The aforementioned commentator continues: "*The principal issue relates to the characterization of software, which leads to the determination of what is being procured when payment for software is made and what rights are granted to a user*".

4. Methodology

The methodology employed for this project is data-exploratory in nature, while also requiring an extended look at highlighted parts of specific bilateral tax treaties. As described in the previous section, the nature of the UN Article 12B plan requires implementation into existing treaties through bilateral negotiations which, as is in the works in the UN Tax Committee, can be accelerated through a UN multilateral instrument (UN MLI).

To advise the process of Article 12B implementation, we were tasked with identifying the current nature of bilateral tax treaties. As such, our methodology follows the process detailed below:

4.1. Methodology for the assessment of tax treaty strength and feasibility of change implementation

4.1.1. Step one: Identifying the headquarter 'hubs' of MNEs affected by Article 12B

Our first task was to identify where the most relevant MNEs are headquartered. The rationale for this was that these were the countries who would most likely push for a tax treaty based solution for relieving double taxation, if South Centre Member States and other developing countries imposed unilateral measures like digital service taxes. This is especially relevant, as the implementation of a UN Article 12B provision into existing tax treaties is relevant for agreements between South Centre Member Countries and countries in which these MNEs are headquartered.

Upon the advice of the South Centre, we drew on the existing dataset provided in their previous report (Starkov and Jin, 2022), which can be seen below. The dataset applies an arbitrary threshold of EUR 750 million in annual turnover to limit the number of MNEs in scope of the study and keep it manageable. This is because Article 12B has no thresholds and even a single in-scope transaction, namely a payment for an Automated Digital Service to a non-resident company, is taxable.

The countries of residence of the in-scope companies, after the application of the EUR 750 million threshold, can be seen below:

Table 1: Countries that Headquarter the Most In-scope Companies for UN Article 12B (applying an EUR 750 m turnover threshold)

#	Country	Number of Article 12B Companies
1	United States	144
2	Canada	23
3	China*	15
4	Japan	14
5	United Kingdom	13
6	France	12
7	Switzerland	2
8	Bermuda	8
9	Netherlands	5
10	Germany	3
11-43	Rest of the Countries*	66
		305

Source: excerpt from Starkov and Jin (2022)

Table 1 illustrates the importance of the South Centre Member States effectively negotiating their tax treaties with the listed countries, as they are the main countries in which in-scope MNEs are headquartered and would be affected by unilateral measures like digital service taxes, whose possible double taxation can be relieved through the Article 12B provisions. The listed countries in Table 1 would provide the majority of tax revenue accumulated through Article 12B provisions. Article 12B implementation is thus especially important for bilateral tax treaties with countries such as the United States (144), Canada (23) and China (15) as they have a large chunk of the 305 MNEs that would be affected by the Article 12B proposal.

4.1.2. Step two: Identifying the existence (or lack thereof) of bilateral tax treaties between residence countries and South Centre Member States & the treaties' Index of Overall Source Taxing Rights

In step two, we collected data on bilateral tax treaties between South Centre Member States and the countries identified in Table 1. The purpose of this section was to adequately identify each South Centre Member State's current bilateral tax treaties with the aforementioned countries, henceforth known throughout this paper as the ‘headquarter countries’. This would inform whether the South Centre Member State was constrained by a tax treaty or had full freedom of action in the absence of a treaty.

4.1.3. Step three: Measuring the negotiating position of South Centre Member States’ tax treaties

Having identified whether the relevant countries had treaties between them or not, the next step was to identify to what extent the treaty needed to be renegotiated. If it was a relatively balanced treaty in the allocation of taxing rights, then the renegotiation could be limited to only including Article 12B. However, if the treaty was weak and inadequately allocated taxing rights to the State of source, then it could be comprehensively renegotiated and many other Articles could be re-examined.

This task provided new primary data on bilateral tax treaties between South Centre Member States and the countries with in-scope MNEs. To do so, we utilised the publicly available Tax Treaties Explorer website https://www.treaties.tax/en/. This website allowed us to select specific countries and effectively identify which tax treaties they are currently bound by, and with whom. A limitation of this data collection is the fact that the tax treaty database does not include tax treaties concluded after January 1st, 2020. However, to combat this limitation, we utilised the Tax Notes treaty database to determine if there were missing bilateral tax treaties. Furthermore, the South Centre provided further clarification if the tax treaties do indeed exist.

For the identification of which of the aforementioned tax treaties may need an overhaul in order to become more beneficial to the South Centre Member States, we drew on the existing ratings which are provided by the Tax Treaties Explorer database. The Index of Overall Source Taxing Rights of the Explorer provides this information on a scale from 0.0-1.0. As the score ranges closer to 1, then the source taxing rights of the respective Member State are favourable, and vice versa as it ranges closer to 0.

Source taxing rights allow the State to tax a foreign entity for the income they accumulated within their borders. The closer the value is to 0, the weaker the source taxing rights and the less beneficial the treaty is for the respective South Centre Member State. On the other hand, the closer the value is to 1, the stronger the source taxing rights and the more advantageous the treaty is for the South Centre Member State.

In this step, it was necessary to identify a specific value in which to create a cut-off. This report utilises a score of 0.5 as a baseline of significance and strength. The treaties that fall under the 0.5 rating are considered as having weak source taxing rights, unfavourable to the South Centre Member State and hence requiring scrutiny and are strongly considered to require a more comprehensive re-negotiation beyond the addition of Article 12B. The treaties that are between 0.5 and 0.6 are deemed as favourable, but certain aspects may be re-negotiated. However, it is at the full discretion of the Member State and how they should proceed with treaties in the value range. Finally, treaties that are above 0.6 for the purpose of this study are not necessary to be considered for re-negotiation as the treaties show a reasonable favourability for the South Centre Member State to retain their source taxing rights.

4.2. Computer software methodology

There is a substantial controversy as well on the phrasing chosen by countries that decide to include clauses related to computer software in their tax treaties. The OECD's Commentary on Article 12 argues that if a payment for computer software is linked to copyright, then in effect it should be treated as a payment for a good or service. Therefore, the source countries, i.e., South Centre Member States, cannot tax this revenue owing to the problems previously mentioned, namely the fact that the income is then classified as business profits, which triggers the requirement of physical presence based nexus through a permanent establishment.

However, source countries may tax revenue from payments for computer software more easily if it is clearly mentioned in Article 12 and de-linked from copyright in the treaties, as it would avoid the confusion caused by the OECD's Commentary. If there is no clear distinction whether computer software is linked or de-linked to copyright, then South Centre Member States can carry out the re-negotiation to ensure it is de-linked.

Including computer software in the definition of royalties within Article 12 has an immense potential to raise government revenues in developing nations.

Our method involved scanning 155 tax treaties which included computer software in the definition of royalties with the index of source taxation rights available in the Tax Treaties explorer. Additionally, we complement this with an additional 32 tax treaties that were not included in our original database as they were not allocated a source taxation value yet are treaties between South Centre members and the residence countries.

For this group of 187 tax treaties, we wanted to identify their current classification of computer software as linked or de-linked to copyright. As mentioned earlier, if computer software is linked to copyright, there is the possibility of the OECD's Commentary being used to treat the income as business profits rather than a royalty.

5. Data Results

5.1. Which bilateral tax treaties are the least beneficial to South Centre Member States?

This report examined 155 bilateral tax treaties and their respective scores between South Centre Member States and countries with the in-scope MNEs for Article 12B with an EUR 750 million threshold. The total possible number of treaties within this scope lies at 432, but only 155 were examined thoroughly enough to obtain a score for their source taxing rights. The study was limited due to time and resources to fully examine the 432 treaties. The trends were noted and provided a glass door view of particular patterns and asymmetry among the treaties.

The average value for the source taxing rights amongst all of the South Centre Member States lies at 0.41. This indicates that most of the bilateral tax treaties have low source taxing rights for the South Centre Member States. Figure 2 (see next page) illustrates the average source taxation right score for each South Centre Member. The trend is below 0.5, which indicates a low allocation of tax revenue from headquarter countries to South Centre Members. The implications of this spread of scores is as follows: if a country has a low score, then there is stronger reason to opt for a comprehensive renegotiation of the treaty in addition to the inclusion of Article 12B.

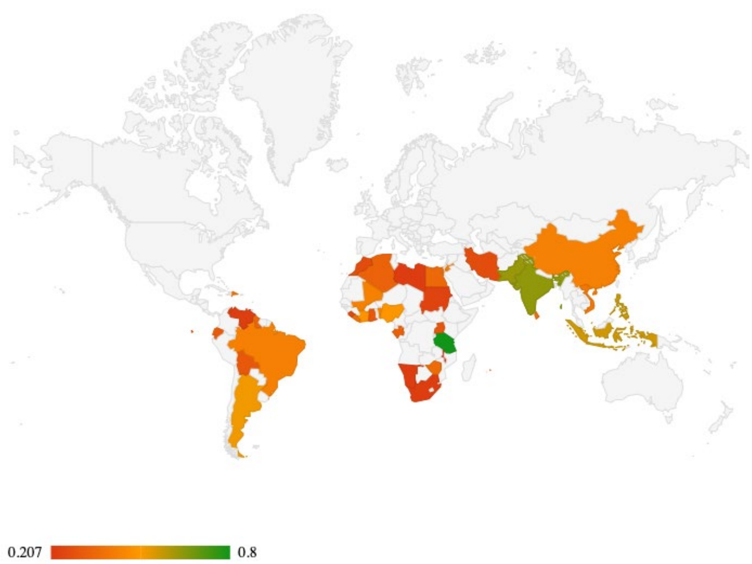
Other observations made apparent by Figure 2 are that Tanzania has the highest average source taxation right, although this number is largely skewed by the fact that the South Centre Member State has just one bilateral tax treaty with the headquarter countries. Malawi's scores rank the lowest, indicating that in the case of source taxation rights, Malawi may be bound by the least beneficial bilateral tax treaties of all the South Centre Member states. This is a subject of concern where Malawi may need to consider new rounds of negotiations with the in-scope States.

Figure 2: Average Source Taxation Rights Score per South Centre Country

Raw data collected from Tax Treaties Online (2020). Tax Treaties - Tax Treaties Explorer [online]. Available at: <https://www.treaties.tax/en/> [accessed 8 July 2022].

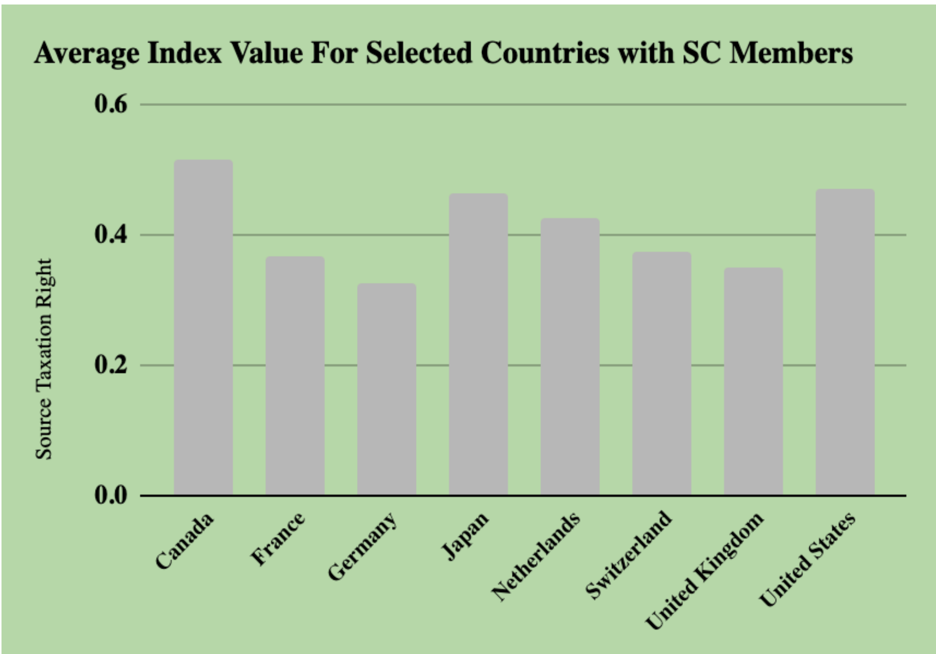
Figure 3 (see below) is a constructed geospatial representation of the average scores between headquarter countries and South Centre Members. Apparent from this visualisation is the overall trend for South Centre Members to have bilateral treaties that fall well below the 0.5 source taxation rights score. On the other hand, the headquarter countries such as the United States, Canada and others as identified in Table 1, are deemed to benefit from this unequal relationship. These countries' taxation rights scores are illustrated in Figure 4. All the headquarter countries' treaties with South Centre Member States have low source taxing rights, implying that the bulk of the revenue goes towards the headquarter countries.

Figure 3: South Centre Members' Average Source Taxation Rights Score vis-a-vis Headquarter Countries



Raw data collected from Tax Treaties Online (2020). Tax Treaties - Tax Treaties Explorer [online]. Available at: <https://www.treaties.tax/en/> [accessed 8 July 2022].

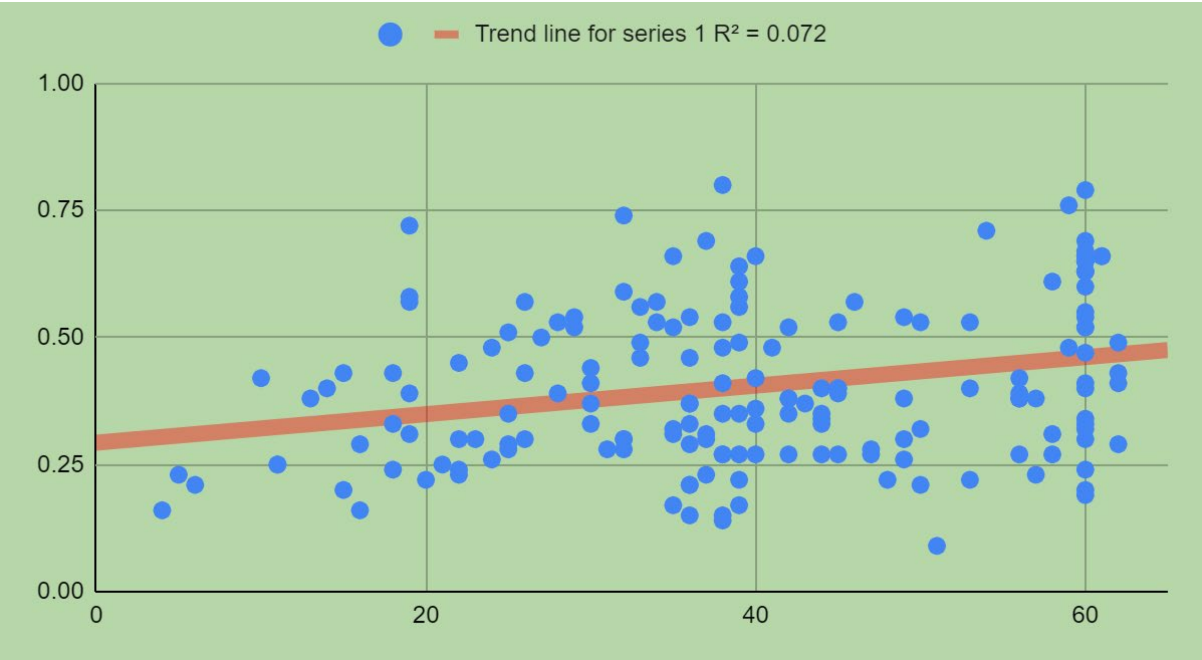
Figure 4: Headquarter Countries' Average Source Taxation Rights Score with South Centre Members



Raw data collected from Tax Treaties Online (2020). Tax Treaties - Tax Treaties Explorer [online]. Available at: <https://www.treaties.tax/en/> [accessed 8 July 2022].

With our data on index source taxation rights in bilateral tax treaties, we also tested our assumption that more recent bilateral tax treaties may prove to have higher index source taxation rights. This assumption was based on the belief that developing countries may have increased their bargaining power on the bilateral stage. To do so, we used linear regression to test whether index source taxation scores are becoming more favourable (higher value) the later (more recent) the bilateral tax treaty was negotiated and entered into force. However, the results (see Figure 5) show we could not confirm a positive relationship, as the R^2 value was only 0.072. So, even with the passage of time it appears developing countries have been unable to improve their situation in bilateral treaty negotiations.

Figure 5: Linear Regression – x = years after 1957 y =Index Source Taxation Right



Raw data collected from Tax Treaties Online (2020). Tax Treaties - Tax Treaties Explorer [online]. Available at: <https://www.treaties.tax/en/> [accessed 8 July 2022].

The ability to tax foreign firms in the digital realm provides ample opportunities for the South Centre Member States. As the digital realm is a growing industry that provides high potential for tax revenue collection, it is crucial to note what alternatives may take place to fill the holes in national budgets.

One possibility is for South Centre Member States and other developing countries to increase their taxes on their populace to fulfil the State's functions. This proves to be costly as average income levels are not high, and it not only produces a lacklustre ability to raise revenue, it also harms the citizenry as more money is expunged from their personal lives. Thus, imposing taxation on MNEs in the digitalised economy is crucial as these in-scope firms can pay their fair share of taxes.

More advanced economies do not struggle with raising revenue as they are able to tap into multiple revenue streams. However, it is more difficult for developing countries to raise revenues from domestic firms as they are not as profitable as multinational firms (Fuest, Devereux and Maffini, 2010). Furthermore, the tax revenue raised from multinational enterprises makes up a significant portion of the total revenue generated for developing countries, as opposed to the domestic tax revenue sources (Mattheson *et al.*, 2013). Thus, as mentioned previously, by not effectively taxing the MNEs, the capacity of the State to provide public services and engage in economic growth is limited by the lack of revenue. Furthermore, the source taxing rights scores indicate which South Centre Member States struggle and/or will struggle to raise revenue. Increasing their source taxing rights in their existing tax treaty network will garner a larger share of revenues.

Another area of concern is the misuse of transfer pricing by multinational firms. Here firms move profits from the state where they conduct business to a tax haven. The firm purchases its own product at a high price and employs its subsidiary for the purchase. This transaction lowers the tax burden of the firm (Tax Justice Network, 2022). Indeed, this is an area of concern for both advanced economies and low-income economies. However, this poses a greater threat to developing countries as the policies and existing treaties to combat this manoeuvre may not be advanced enough and the potential tax revenue from these sources is notable (Fuest, Devereux & Maffini, 2010).

Hence, the need for enhancing tax revenues, including through measures such as the incorporation of Article 12B in the current discussions of global taxation is critical. Starkov and Jin (2022) reveal that the inclusion of the United Nations proposal of Article 12B to tax the digital economy may result in larger revenue streams compared to the OECD proposal. Article 12B provides an avenue for obtaining additional revenue for South Centre Member States.

5.2. Computer software data and discussion

5.2.1. The South Centre's briefing before the UN Tax Committee's October 2022 meeting

We had the chance to attend one of the Pre-Briefing Meetings that the South Centre organises before the UN Tax Committee biyearly meetings and here we presented our work to UN Tax Committee members, key negotiators and scholars on the topic. We received clarificatory comments by Emeritus Professor Sol Picciotto, an expert in international taxation who is working as coordinator of the BEPS Monitoring Group (BMG). He briefed us on the history of these negotiations and mentioned lobbyists from the tech industry as a crucial part of the misunderstanding regarding the taxation of computer software that lasts till today. In the 1950s, computer software was considered an indivisible part of the hardware that contained it, thus it should be taxed as a good. Later on, when the definition of computer software changed to a set of instructions that produced an outcome and was formally separated from the definition of computer software, it was easier to enclose software as a service, yet this standing point was not definitive, as has been illustrated by the case of several national courts' interpretations. Thus, the confusion only deepened, because now computer software could be offered in a set of physical devices, such as pen drives and CDs, or it can be directly downloaded.

The latest discussions, those that can be evidenced after the amendment to the Commentary of Article 12 to the UN Model Tax Convention, try to de-link computer software from copyright, and applying the provision to any kind of software. This is of great relevance to all industries, since most digital operations occur through some sort of software intermediation. So far, the South Centre itself has come out with preliminary estimates on what is the amount of tax revenue that is lost by its Member States by being unable to tax software royalties effectively.

5.3. Results of the analysis of computer software provisions in the tax treaties

We analysed which tax treaties had an explicit mention of computer software in their article on royalties, and if they did, what was the phrasing that had been used to include it. This exercise was done because, as mentioned earlier, taxation of computer software forms an intrinsic component of taxation of the digital economy. Hence, an analysis of its treatment in existing treaties could identify which treaties needed to be renegotiated.

In an initial screening, we identified that all 54 South Centre members have signed a total of 1052 tax treaties with partners from all over the world. We focused, nonetheless, on the treaty partners that headquarter most multinational enterprises in-scope of Amount A, since these are likely to be the same companies affected by Article 12B. We have drawn on the work of Starkov and Jin (2022) to determine the list of countries. The final selection included Canada, China, France, Germany, Japan, The Netherlands, Switzerland, The United Kingdom, and The United States. Since China is a Member State of the South Centre, we have excluded it from the analysis.

We found that very few tax treaties had included computer software in their definition of royalties. Out of 187 tax treaties analysed, 12 did include a direct mention to computer software. Of these 12, 6 were included in tax treaties with Canada, with the following countries as partners: Algeria, Ecuador, South Africa, Sri Lanka, Venezuela, and Vietnam.

Canada was followed by Japan and the Netherlands, which had each two tax treaties with the pertaining provision included (the first with Malaysia and Vietnam; the second with Argentina and Panama); and France and Switzerland each had one tax treaty with the mention of computer software (the first with Panama, the second with Argentina).

In our research, we have included three technical notes, mostly clarificatory, that the US government released with regard to Article 12 for Sri Lanka, South Africa, and India. However, since there is no mutual agreement between the parties about these definitions, they do not count as binding. This is equally important for other nations, since clarificatory notes unilaterally emitted should not be considered as part of the treaty, nor in any case binding to the parties.

On the recommendation of the South Centre, we focused on the treatment of computer software in the tax treaties of Nigeria. We treat it in a separate section as a case study, which is useful because it allowed us to extract important observations, and at the same time it showed us the limitations of the analysis that we were undertaking.

The final part of our research dealt with the phrasing of the provision. Once the twelve treaties including direct mention to computer software were identified, we wanted to look into how the provision was treated, and most importantly, if royalties were linked to copyright for computer software. Now, based on our own observations, and on a typology designed by the South Centre, we analysed three separate distinctions of computer software and its relationship to copyright in the individual treaties as linked, de-linked, or unclear.

Before proceeding further, it is helpful to revisit the text of the royalties' article in the UN Model.

Article 12, in the UN Model Tax Convention, has this form:

"The term "royalties" as used in this Article means payments of any kind received as a consideration for the use of, or the right to use, any copyright of literary, artistic or scientific work including cinematograph films, or films or tapes used for radio or television broadcasting, any patent, trademark, design or model, plan, secret formula or process, or for the use of, or the right to use, industrial, commercial or scientific equipment or for information concerning industrial, commercial or scientific experience."

When the link was direct, the expression computer software was linked to copyright. This direct linkage could sometimes prevent source States (States where the income was generated) to tax the revenues from the payment as it could be considered, using the OECD interpretation in case a tax dispute arose, a sale of goods or services, unless the firm had a physical presence within their borders.

When computer software was delinked from copyright, the phrase was typically included alongside patents and trademarks in the text of the provision and it was interpreted as being separate from copyright. Thus, potentially making it easier for source States to collect tax revenue for the payment, as it is considered as a payment for the right to use the software. In practice this meant withholding taxes could be applied on each payment. Finally, some tax treaties contained formulations that made it unclear whether computer software was linked or delinked from copyright.

In our research, we found that, out of the 12 cases, 5 showed a link between copyright and computer software (this was the case of Netherlands-Panama, Japan-Malaysia, Japan-Vietnam, France-Panama, and Canada-Algeria). Cases of delinkage were 3 (Switzerland-Argentina, Netherlands-Argentina, and Canada-Ecuador). The remaining 4 cases did not show a direct link or delinkage to copyright. This occurred because negotiators included provisions related to computer software either elsewhere in the treaty, or as counter-provisions to other clauses. This was the negotiation strategy devised by Canada, since all four tax treaties with ambiguities were signed by this country with South Africa, Sri Lanka, Vietnam and Venezuela.

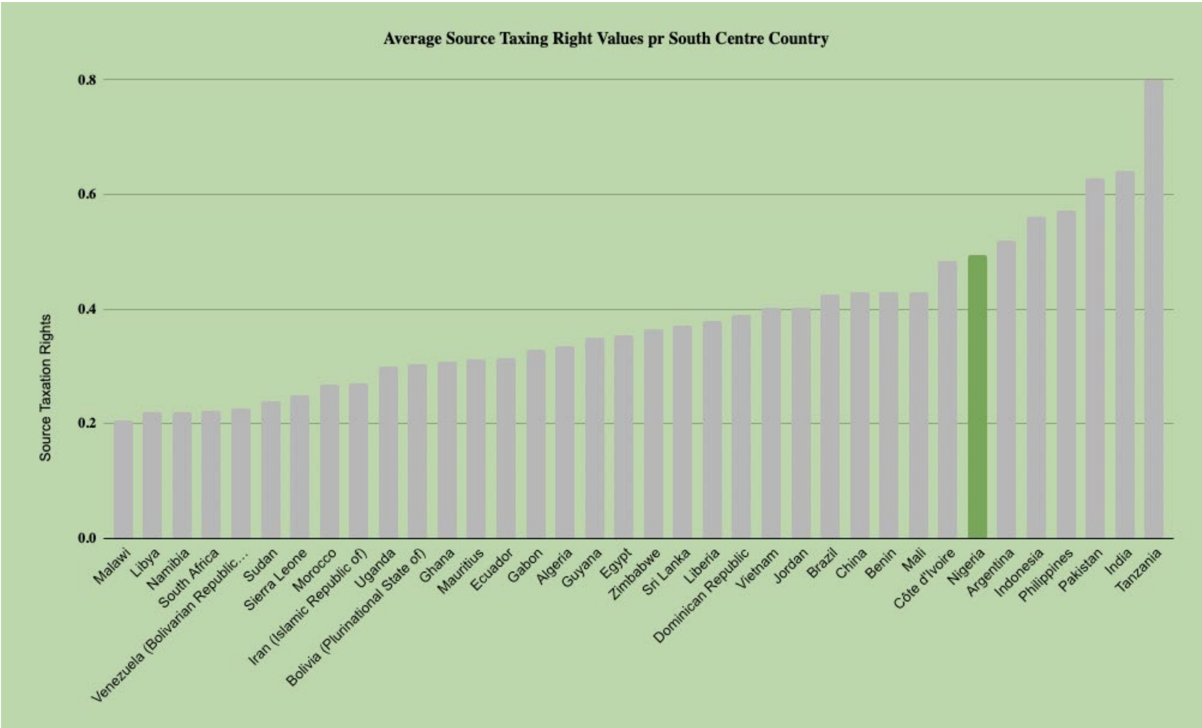
6. The Case of Nigerian Tax Treaties

The case of Nigeria was a South Centre priority, since the country was to send a delegation to attend the UN Tax Committee for the October 2022 session. Its importance, and further inclusion in this analysis as a separate and individual case study, comes from the relevance of its economy in the African continent, as well as from the different negotiating strategies the country had regarding tax treaties in the past. The Nigerian case study provides an in-depth examination of the source taxing rights scores and the treatment of computer software in its existing bilateral tax treaties.

What we did was to apply the same framework used for the tax treaty analysis for South Centre Member States but in the case of Nigeria. The Index of Scores for the Tax Treaties were considered, an analysis of signed tax treaties (in force and yet to be ratified) was undertaken along with that of computer software provisions in Article 12 of their tax treaties and comments were received from a member of the Nigerian delegation to the UN Tax Committee.

What we discovered was a very interesting case. Nigeria had signed 22 tax treaties, the earliest having been negotiated and ratified in 1987. Nigeria demonstrates a unique position amongst other South Centre Member States. They boast an overall higher average in their source taxation rights score compared to the other Member States (see Figure 6). This indicates that most of the treaties Nigeria currently has implemented are favourable for collecting revenue in comparison to other South Centre Member States.

Figure 6: Index of Source Taxation Rights Averages Between South Centre Members and Headquarter Countries. Nigeria Highlighted in Green.



Raw data collected from Tax Treaties Online (2020). Tax Treaties - Tax Treaties Explorer [online]. Available at: <https://www.treaties.tax/en/> [accessed 8 July 2022].

The scores for Nigeria were generally high, in comparison to other South Centre members, being only surpassed by India, and Tanzania (Tanzania was a special case, considering it had only signed one tax treaty). After speaking to their delegation, we understood that Nigeria had set up a tax treaty policy, and that it had worked on a specific strategy to negotiate tax treaties. They were even as advanced as to consider the taxation of all software, not just computer software, a provision that was being closely studied by the UN Tax Committee, given its comprehensiveness. Conversations with some of the experts also shed some light over the differences between ratification processes among African countries and other countries in the world.

For the analysis of Nigeria, we decided to focus on their treaties with the countries that contained the greatest number of headquarters of MNEs in-scope of Amount A, for which the prior analysis with other South Centre members had been carried out. After checking, Nigeria had signed tax treaties with some of them. Yet, since our interest was also in the treatment of computer software in the tax treaties, we looked for it in these treaties. The results were as expected: there was no mention in them.

It is of importance to note that all the treaties Nigeria currently holds with the headquarter countries were put into effect between 1988 and 2000. Conversely, Nigeria only holds treaties with four headquarter countries. The following States and their sourcing rights scores with Nigeria are as follows: The United Kingdom 0.37, Canada 0.52, France 0.56, and The Netherlands 0.53. Conversely, Nigeria does not have any bilateral tax treaties with the United States, Japan, Germany, and Switzerland.

In order to get a better understanding of the role of computer software in this debate, we widened our scope to analyse how computer software was treated in each of Nigeria's bilateral tax treaties. However, we must note that not all of these agreements have come into force, although they have been signed. We noticed during this search that for computer software provisions, they were clearly novel and related to newer tax treaties as is only logical given the contemporary nature of computer technologies.

For example, provisions related to computer software were negotiated and included mostly in tax treaties negotiated in the decade of the 2010s, with Spain being the earliest in 2009, and the United Arab Emirates (UAE) being the latest, in 2016. Some of these have not yet been ratified, yet the provisions are still accorded. We also observed that 4 out of 5 countries had linked the taxation of computer software to copyright, the only exception being Mauritius. It was also interesting to observe that computer software was a provision that was more and more negotiated, especially with countries from the Gulf and South Korea. Table 2 (see below) illustrates how computer software was classified for each of the identified bilateral tax treaties with Nigeria.

Table 2: Nigerian Tax Treaties & Computer Software

Nigeria's Tax Treaties (taken from Tax Notes)			
Party	Counterparty	Mention to computer software?	Year of signature
Nigeria	Singapore	No mention	2017
Nigeria	Kuwait	No mention	2011
Nigeria	Tunisia	No mention	2009
Nigeria	Sweden	No mention	2004
Nigeria	China	No mention	2002
Nigeria	South Africa	No mention	2000
Nigeria	Poland	No mention	1999
Nigeria	Philippines	No mention	1997
Nigeria	Canada	No mention	1992
Nigeria	Romania	No mention	1992
Nigeria	Netherlands	No mention	1991
Nigeria	France	No mention	1990
Nigeria	Belgium	No mention	1989
Nigeria	Czechia	No mention	1989
Nigeria	Pakistan	No mention	1989
Nigeria	Slovakia	No mention	1989
Nigeria	United Kingdom	No mention	1987
Nigeria	Spain	Mention	2009
Nigeria	Republic of Kor	Mention	2006
Nigeria	Mauritius	Mention	2012
Nigeria	Qatar	Mention	2016
Nigeria	UAE	Mention	2016

Raw data from Taxnotes.com

Within those five, four of the treaties linked computer software to copyright, i.e. The Republic of Korea, Spain, Qatar, and the United Arab Emirates. The final treaty with Mauritius de-links computer software from copyright. For example, the treaty between Spain and Nigeria states as follows:

"The term "royalties" as used in this Article means payments of any kind received as a consideration for the use of, or the right to use, any copyright of literary, artistic or scientific work including cinematographic films, or films, tapes and other means of image or sound reproduction, and for the use or the ***right to use of computer software****, any patent, trade mark, design or model, plan, secret formula or process, or for the use of, or the right to use, industrial, commercial or scientific equipment, or for information concerning industrial, commercial or scientific experience." (emphasis added)*

On the other hand, Nigeria's treaty with Mauritius reads as follows:

"In this Article the term "royalties" means payment of any kind received as consideration for the use of, or the right to use any copyright of literary, artistic or scientific work including cinematograph film and films or tapes used for radio and television broadcasting, any patent, trade mark, design, model, ***computer program****, plan, secret formula or process or for the use of, or the right to use industrial, commercial or scientific equipment or for information concerning industrial, commercial or scientific experience." (emphasis added)*

The phrasing of this provision places computer software after 'patent, trade mark' etc, clearly indicating it is no longer linked to copyright. Therefore, computer software is de-linked from copyright in this treaty.

Our aim with this work was to see if the current tax treaty situation of South Centre members (this is, the joint status of the scoring in the tax treaty index and the phrasing of computer software and its linkage to copyright in existing tax treaties) positioned them to push for a comprehensive or narrow renegotiation of their tax treaties if and when the possibility of including Article 12B came up.

7. Recommendations

We have seen that a very small number of MNE headquartering countries have signed tax treaties with South Centre Member States with the provision of taxing computer software. Adding to that, from the extrapolation of the Nigerian case, and considering the limitations of the framework that we chose for research, it is also safe to assume that South Centre Member States have signed treaties with computer software provisions with countries that are not "traditional MNE-headquarters" but that might have potential to become so, as is the case with the countries of the Gulf, or South Korea. We have also seen that, as of the 2010s, it is a trend to consider software, and not just computer software, in the negotiation of bilateral tax treaties, and that this becomes a weightier item in the negotiation strategies.

Our first recommendation follows: given the disparities within each South Centre Member State's status on tax treaty renegotiation strength, the main strategy should be to push at the UN Tax Committee a formal inclusion of the word "computer software" in the definition of royalties in Article 12 to provide uniformity in understanding of the term. The commonality of definitions may provide more ease at the negotiating rounds and more clarity on how to treat the status of computer software, such that it is de-linked from copyright. The payment received may be taxable at source and in this way countries where the software is being used also receive tax revenue.

The second recommendation is to conduct additional research and look into the 1051 tax treaties of South Centre Member States, assessing the same variables that we have considered. This will allow us to get an overview of the possible alliances that exist between South Centre members.

8. Conclusion

Tackling the issue of the feasibility of including new articles to existing tax treaties for South Centre Member States from three different perspectives (strength of current tax treaties; feasibility of legal modification through international law tools; and the analysis of taxation of the digital economy) has provided us with insight on the intricacies of the international tax arena, and the politics and economic implications behind it.

Throughout this research, we have seen that individually, it will be strenuous for South Centre Member States to renegotiate their tax treaties, yet, doing so by using multilateral instruments such as the UN Multilateral Instrument being developed by the UN Tax Committee, might increase the likelihood of enacting the newly devised Article 12B. A noteworthy observation were the disparities in the construction of existing bilateral tax treaties, even within the group of South Centre Member States, indicating that there may be room for subgroups aligning within. This is a discovery that could be subject to further study.

Finally, observations about computer software and the tense discussions regarding it show the reality of an almost fully digitised economy. Computer software has shown to be pervasive in all industries, and thus its taxation represents a central issue for States. It is likely that the digital hubs of the future will try to preserve the revenue they generate through sales of computer software by the most convenient taxation schemes. The Nigerian case also serves to illustrate how countries might start aligning internally to face discussions of a more digital nature in a strategic manner, considering it now a transversal issue rather than a debate happening in the realm of technology only.

This report has allowed us to observe the different sides to a debate that is too complex to be fully analysed in this report. We have explored many questions regarding the strength and durability of tax treaties, along with the importance of international tools to modify tax accords, and to adapt to a digital economy that is more and more dependent on the use of software. Yet many questions remain about how countries should benefit from what was achieved through Article 12B. We hope our study will be useful in moving forward with negotiations within the UN Tax Committee and that more work on the topic will bring clarity on a fairer model for international taxation.

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Appendix

MEMBER COUNTRIES

The South Centre currently has **54 developing country Members** coming from the three developing country regions of Africa, Asia, and Latin America and the Caribbean. They include many of the biggest developing countries, middle-income developing countries, least-developed countries and small island developing states.

The Member Countries of the South Centre are:

Algeria	Ghana	Nicaragua
Angola	Guyana	Nigeria
Argentina	Honduras	Pakistan
Barbados	India	Panama
Benin	Indonesia	Philippines
Bolivia (Plurinational State of)	Iran (Islamic Republic of)	Seychelles
Brazil	Iraq	Sierra Leone
Burundi	Jamaica	South Africa
Cabo Verde	Jordan	Sri Lanka
Cambodia	Liberia	State of Libya
China	Malawi	State of Palestine
Côte d'Ivoire	Malaysia	Sudan
Cuba	Mali	Suriname
Democratic People's Republic of Korea	Mauritius	Uganda
Dominican Republic	Micronesia (Federated States of)	United Republic of Tanzania
Ecuador	Morocco	Venezuela (Bolivarian Republic of)
Egypt	Mozambique	Viet Nam
Gabon	Namibia	Zimbabwe

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