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COMMITTEE ON FISCAL STUDIES

POLICY BRIEF NO. 5 OF 2022

TAXATION OF COMPUTER SOFTWARE: NEED FOR CLEAR GUIDANCE IN THE UN MODEL TAX CONVENTION

Abdul Muheet Chowdhary and Sebastien Babou Diasso

Summary:
Whether payments for the use or the right to use computer software also fall within the definition of royalties under article 12(3) of the UN Model Tax Convention remains unclear. It can, however, be implied from the construction of the article that such payments can be subjected to royalties. The guidance under the OECD is much more explicit. Software under the OECD framework are not subject to royalty payments. These two interpretations have led to confusion and have instigated judicial tax disputes all over the world. This has also resulted in the loss of revenue. Without clear guidance on the taxation of computer software, developing countries have been unable to retain at least a portion of the royalty outflows as tax revenues. This policy brief sheds light on the international taxation of royalties, highlighting current state practice on royalties and estimating the revenue that could have been mobilized from royalties but foregone due to ambiguity under the UN MTC.

Key words: computer software, royalties, United Nations Model Tax Convention

Introduction

Article 12(3) of the United Nations Model Tax Convention (UN MTC) defines royalties. However, whether payments for the use or the right to use computer software also fall within the definition of royalties, remains unclear.[1] It can be implied from the construction of Article 12(3) that such payments can be subjected to royalties. The guidance under the OECD is much more explicit. Software under the OECD framework are not subject to royalty payments. These two interpretations have led to confusion and have instigated judicial tax disputes all over the world.[2] It has also resulted in the loss of revenue. Without clear guidance on the taxation of computer software, developing countries have been unable to retain at least a portion of the royalty outflows as tax revenues.

This policy brief sheds light on the international taxation of royalties. It begins by outlining the scale of resource transfer from the Global South to the Global North, through royalties, for the South Centre's Member States and other developing countries. It then moves on to examine the UN and the OECD's contradictory guidance on the taxation of payments for computer software as royalties, and the ongoing reform efforts by the UN Tax Committee. The brief then shifts to examine state practice in taxing software/computer payments as royalties. An estimation of how much additional tax revenues developing countries could have collected in royalties generated from the taxation of software if international tax standards had

[1] https://www.southcentre.int/sc-submission-march-2021-2/

[2] https://www.internationaltaxreview.com/article/2a6a85hp03txpukdhy1a8/deep-dive-indian-supreme-courts-ruling-on-software-licensing-fees

provided clear and unambiguous guidance is made. Thereafter, the brief concludes.

Royalties: A transfer of resources from the South to the North

Developing Countries Pay Huge Sums in IP Payments. The concern remains that developing countries are net importers of technology paying billions of dollars in royalties to developed countries for the use of intellectual property. Table 1 illustrates this.

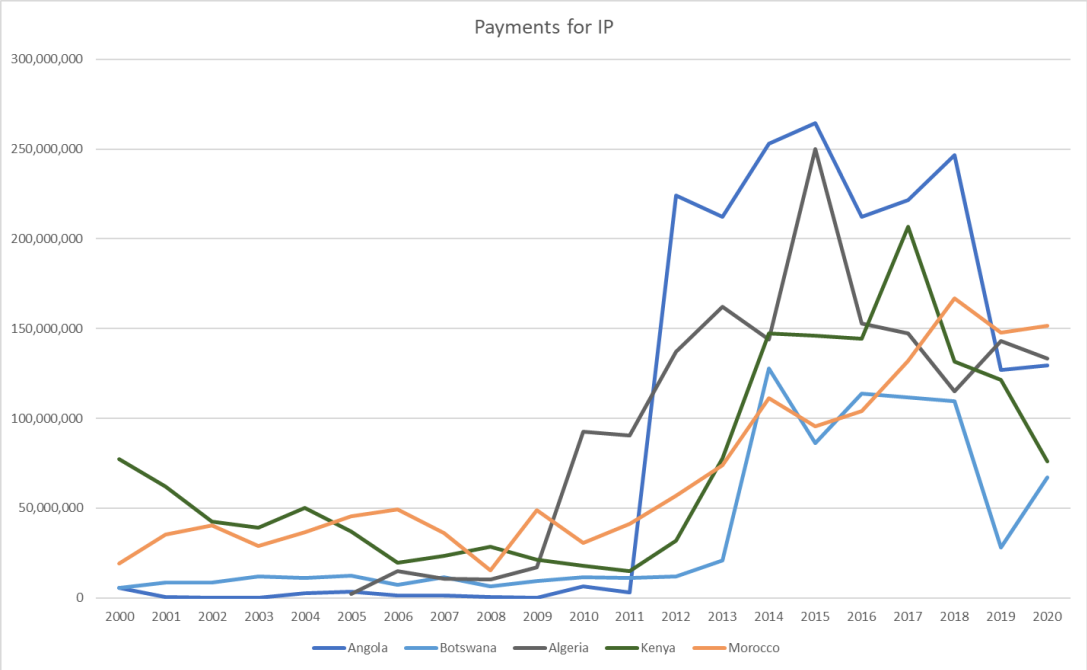
Table 1. Payments and receipts for intellectual property for some South Centre member states in 2020 (USD Million)

Region	Country	IP-Payments	IP-Receipts	Net IP-Payments (Outflows)
Africa	South Africa	1,197.536	126.359	1,071.177
	Morocco	151.547	10.377	141.170
	Algeria	133.393	1.226	132.167
	Ghana	156.695	46.229	110.466
	Mauritius	13.498	0.786	12.712
	Cabo Verde	3.695	0.040	3.656
	Tanzania	3.299	0.008	3.291
	Seychelles	1.982	1.375	0.607
	Namibia	0.942	2.185	-1.243
	Uganda	0.000	4.111	-4.110
Total		**1,662.588**	**192.696**	**1,469.892**
Asia	China	37,781.734	8,554.460	29,227.273
	India	7,241.108	1,253.655	5,987.453
	Malaysia	2,386.339	232.448	2,153.891
	Indonesia	1,530.061	83.576	1,446.485
	Philippines	519.252	15.258	503.994
	Pakistan	183.000	11.000	172.000
	Jordan	24.507	6.197	18.310
	Cambodia	20.901	9.332	11.569
Total		**49,686.902**	**10,165.927**	**39,520.975**
Latin America	Brazil	4,062.061	634.292	3,427.769
	Argentina	1,248.256	219.525	1,028.731
	Ecuador	139.640	4.260	135.381
	Jamaica	50.757	4.644	46.113
	Bolivia	44.528	5.633	38.896
	Panama	17.900	2.750	15.150
	Suriname	4.316	0.043	4.274
	Guyana	2.426	0.092	2.334
Total		**5,569.885**	**871.238**	**4,698.647**
Middle East	Iraq	4.900	0.100	4.800
Total		**56,924.276**	**11,229.961**	**45,694.315**

Source: Authors using World Bank data

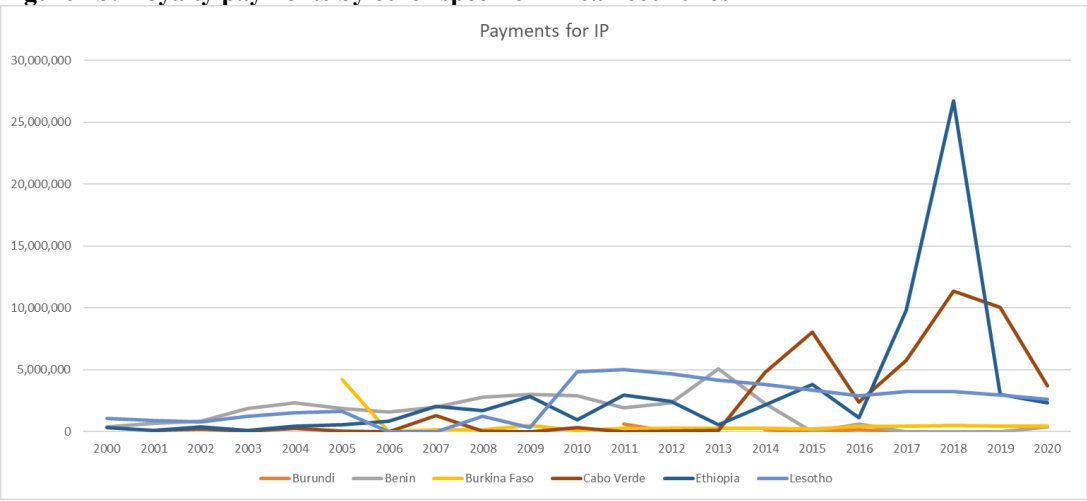
Table 1 lists the substantial payments made by the listed countries for the use of IP. These countries made a collective payment of USD 45.6 billion which represents ¼ of the total official development assistance (ODA) from all donors in 2020 and 2021 (this being USD 171.4 billion in ODA in 2020 and USD 178.9 billion in ODA in 2021).[3] Figures 1a and 1b further demonstrate the trends in IP (royalty) payments by specific African states. The indications are that from 2011 there has been a significant rise in royalty payments by Angola, Botswana, Algeria, Kenya and Morocco. The same trend is observed in Burundi, Benin, Cabo Verde, Ethiopia and Lesotho since 2013.

Figure 1a: Royalty payments by specific African countries



Source: Authors using World Bank data.

Figure 1b: Royalty payments by other specific African countries



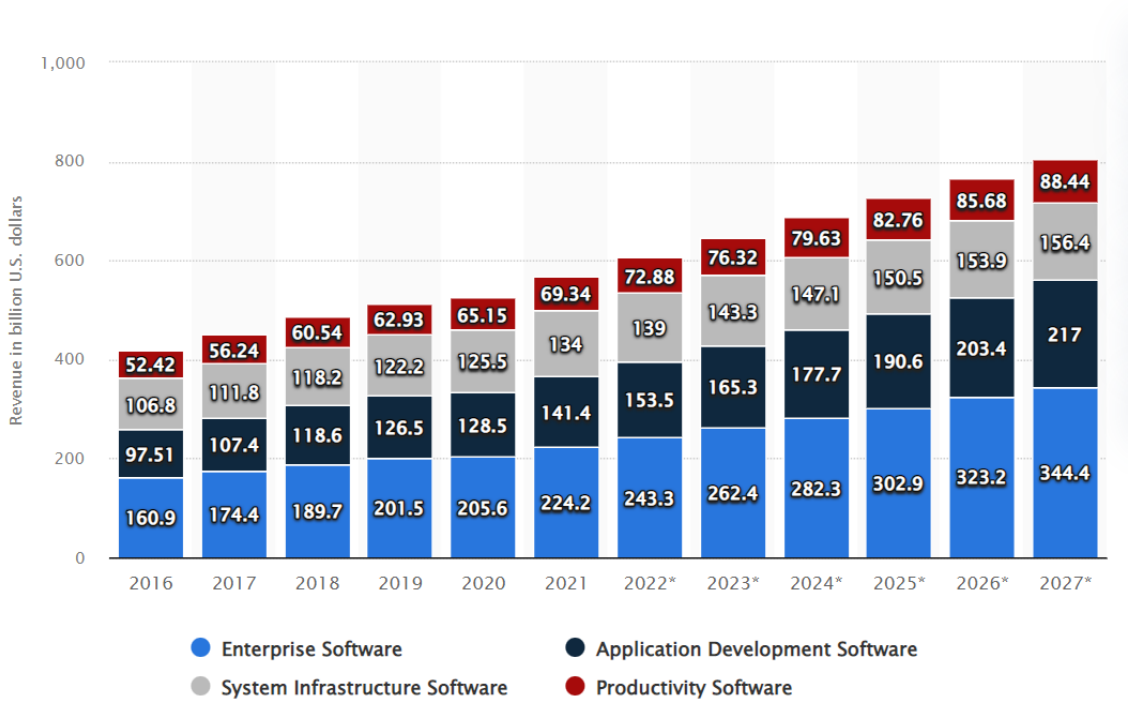
Source: Authors with World Bank data.

[3] https://www.oecd.org/development/financing-sustainable-development/development-finance-standards/official-development-assistance.htm

The data from the two figures demonstrates that developing countries are paying significant amounts for the use of IP. However, data is not available at a disaggregated level. It is not known how much is paid for patents, trademarks, copyrights, etc. The paucity of data reiterates the need for the WTO to begin systematically reporting IP payment statistics in its Trade Policy Reviews (TPR) at a disaggregated basis so it is known how much is paid for each kind of IP.

Computer Software Constitutes a Major Portion of the South's Royalty Payments. An important category of IP is computer software. Typically, when someone buys software such as MS Office, Zoom, or a video game, what they are paying for is the *right to use the software*. These are embodied, for example, in an "End User License Agreement" (EULA). Such payments are for the right to use intellectual property, in this case software, and are thus by definition royalty payments. As can be seen from figure 2, the software market worldwide generates tremendous volumes of revenue. In 2021, it generated USD 524 billion, and this amount is only set to increase in the future.

Figure 2: Revenue of the software market worldwide from 2016 to 2027, by segment



Source: Statista
https://www.statista.com/forecasts/954176/global-software-revenue-by-segment

Some portion of these revenues come from the royalty payments made by the Global South to the Global North. Given the large volumes of the software markets' revenues, the fact that most of the software companies are based in the Global North, where the overall flow of royalties is directed, it can be fairly surmised that the Global South must be paying a significant sum for the right to use computer software. The taxation of these payments could have provided the developing countries with substantial revenues. Unfortunately, the UN and OECD provide contradictory

guidance on this issue, which has hindered the developing countries' ability to effectively tax such payments.

Contradictory Guidance by UN and OECD Hinders Effective Taxation of Computer Software

OECD Guidance Prevents Developing Countries from Taxing Software Sales. Article 12 of the OECD Model Tax Convention defines royalties as "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, any patent, trademark, design or model, plan, secret formula or process, or for information concerning industrial, commercial or scientific experience."

Article 12 of the UN Model Tax Convention uses similar wording. Neither mentions computer software directly. However, the clear understanding in international law is that computer software is considered "literary work", and so payments for the use or the right to use any copyright of literary work also cover computer software. Article 4 of the WIPO Copyright Treaty of 1996[4] unambiguously says, "computer programs are protected as literary works within the meaning of Article 2 of the Berne Convention. Such protection applies to computer programs, whatever may be the mode or form of their expression."

In practical terms, to use software, one must download a copy of it onto their computer, phone, tablet or other device and install it. Thus, the essential requirement of "copying" the software to be able to use it brings in copyright protection. The ensuing payments are hence classified as payments for the use of copyright, and thus as royalties as mentioned in Article 12 of both Model Tax Conventions. The OECD, as the organization representing the interests of the developed countries where the software companies are headquartered, tried to negate this understanding because it would have meant the developing countries could start imposing withholding taxes on the software royalties. Accordingly, the following paragraph 14[5] was introduced in the OECD Commentary on Article 12:

> "Regardless of whether this right is granted under law or under a license agreement with the copyright holder, copying the program onto the computer's hard drive or random access memory or making an archival copy is an essential step in utilising the program. ***Therefore, rights in relation to these acts of copying, where they do no more than enable the effective operation of the program by the user, should be disregarded in analysing the character of the transaction for tax purposes. Payments in these types of transactions would be dealt with as commercial income in accordance with Article 7***." (emphasis added).

By classifying such transactions as commercial income in accordance with Article 7, they would be taxed as "business profits", which would require a physical presence through a permanent establishment in the source country under Article 5. As is well known, the digitalization of the economy has meant that increasingly such software companies can derive revenues from a jurisdiction without physical presence.[6] Even if they do have physical presence, such as a local subsidiary, there are a plethora of challenges in attributing profits when the income is derived primarily from intangibles such as software.[7] The practical effect is to prevent the developing countries from taxing the income from the sale of software.

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[4] https://wipolex.wipo.int/en/text/295157

[5] https://www.oecd.org/berlin/publikationen/43324465.pdf

[6] https://www.southcentre.int/wp-content/uploads/2021/07/SC-Statement-on-IF-Two-Pillar-Solution-FINAL.pdf

[7] https://www.ictd.ac/publication/taxation-digitalising-economy-africa-study/

This "guidance" in the OECD Commentary, which has no logic or rationale, was introduced purely to save the Global North's software corporations from paying taxes to the Global South. It has caused endless tax disputes across the world, and potential losses of billions of dollars of tax revenues to the developing countries. The OECD is relentless in its efforts, and the latest project on taxation of the digitalized economy, known as the Two Pillar Solution, continues this assault. The revenue sourcing rules for Amount A of Pillar One will likely add to the confusion in the future as they reiterate the separation between copyright and the right to use computer programs. To quote[8],"'Intangible Property' means property which is not in tangible form and which is capable of being owned or controlled for use in commercial activities ***but does not include*** *Real Property, financial assets, Digital Content, User data or* ***the right to use computer programs. It includes copyrights, trademarks, tradenames, logos, designs, patents, know-how and trade secrets***." (Emphasis added)

Efforts in the UN for Source Taxation of Computer Software. To ameliorate this problem, the developing countries through the UN Tax Committee (UNTC) sought to amend the UN MTC and introduce the words "computer software" in Article 12(3) which defines royalties. Given the confusion caused by the OECD's guidance, they also sought to de-link it from copyright, such that *any* payment for the use or the right to use computer software could be classified as a royalty.[9] This was fiercely opposed by the developed countries. However, in the 22nd Session of the UNTC in April 2021, the developing countries managed to achieve a breakthrough. While their demand for amending Article 12 was rejected, the Committee agreed to include a change to the Commentary which reads as follows:

> *15. In the view of a large minority of the Members of the Committee, Article 12 should allow for source State taxing rights even in cases where the user of computer software is not exploiting the copyright in the software. In their view, Article 12 is intended to cover payments for the letting of property, which is broader than use of the copyright. For example, if a company that is a resident of State S uses in its business human resources software that is owned by a company that is a resident of State R, payments made for that use would not be covered by the current definition of royalties in paragraph 3 of Article*
>
> *12. In their view, Article 12 should address circumstances in which the owner of the computer software earns profits from letting another person use that computer software, without having the owner establish any presence in the state where it is used, or where the user resides, which would satisfy the requirements of Article 5 for the existence of a permanent establishment. In the view of those Members, a person that is making payments for the use of, or the right to use, computer software is making a payment in consideration for the letting of that intangible property just as a person that is making payments for the use of industrial, commercial or scientific equipment (already included in paragraph 3) is making a payment in consideration for the letting of tangible property.*
>
> ***States sharing this view may want to include at the end of paragraph 3 the following sentence:***
> *The term also includes any consideration for the use of, or the right to use, any computer software, or the acquisition of any copy of computer software for the purposes of using it.*

[8] Progress Report on Amount A, page 82. https://www.oecd.org/tax/beps/progress-report-on-amount-a-of-pillar-one-two-pillar-solution-to-the-tax-challenges-of-the-digitalisation-of-the-economy.htm

[9] https://www.un.org/development/desa/financing/sites/www.un.org.development.desa.financing/files/2021-10/CRP.22%20UN%20Model%20Double%20Taxation%20Convention%20between%20Developed%20and%20Developing%20Countries.pdf

While this marked a victory for the developing countries and a step forward, it nevertheless remained a minor one. From a legal perspective, a change to the Commentary, that too recorded as that of a "large minority", does not carry as much weight as a change to the Article itself. Hence, the developing countries are continuing their effort to reform Article 12, while the developed countries are determined to prevent this from happening and to undo even the minor progress achieved. The issue continues to remain a high priority in the agenda of the UN Tax Committee.

Existing Treatment of Payments for Computer Software in Developing Countries' Treaties

Developing countries are trying to amend Article 12 to de-link computer software from copyright and make it clear that any payment for the use or the right to use computer software is a royalty payment. State practice is a well-established source of customary international law, and the more widespread a practice is, the stronger the rationale for it to become international law. This was what happened in the case of Article 12A (Fees for Technical Services), which was widely included in bilateral tax treaties and was eventually included in the UN MTC.[10]

In the case of the taxation of payments for computer software as royalties, it is worth conducting a similar examination. Preliminary research on the Tax Notes tax treaties database shows that 440 tax treaties, which is a large number, already specifically mention "computer software" in the Article on royalties. Of these, the majority are in-force. The details are in Table 2.

Table 2: Number of Tax Treaties Taxing Software as Royalties

Type of Treaty	**No.**
In-Force	404
Pending	31
Terminated	3
Abandoned	2
Total	440

Source: TaxNotes tax treaties database. Accessed September 2022.

This provides a strong rationale for inclusion of the words "computer software" in Article 12(3) of the UN MTC. Since developing countries want to de-link it from copyright, further analysis was carried out to find out which of these treaties follow the de-linked approach. From the set of 404 in-force treaties, 163 tax treaties were selected. Of these, 152 were randomly selected and the remaining 11 were between the South Centre's Member States and developed countries where major Automated Digital Service (ADS) companies are headquartered.[11] The results are in Table 3 below.

[10] https://www.ictd.ac/publication/at-table-off-menu-assessing-participation-lower-income-countries-global-tax-negotiations/

[11] https://www.southcentre.int/research-paper-156-1-june-2022/

Table 3: Treatment of Payments for Computer Software in Tax Treaties

Observation	Number
Treaties where payments for computer software are delinked from copyright.	53
Treaties where the link is not clear.	6
Treaties where payments for software are linked to copyright.	104

Source: Authors & allied researchers from the Graduate Institute of Geneva with data taken from TaxNotes tax treaties database.

From the above table it can be seen that the majority of treaties, 104/163 or almost 64% of the total, do link computer software to copyright. However, it is also seen that 53/163 or 33% follow the de-linked approach. Overall, it can be clearly said that there is enough state practice to justify the amendment of Article 12 to make it clear that payments for the use or the right to use computer software, whether or not they are linked to copyright, are taxable as royalties.

Reforming the IP system: a source of revenue mobilization

This section provides estimates of how much the developing countries *could have* collected as tax revenues in 2020 if clear guidance was provided by the UN and they imposed withholding taxes (WHT) on computer software payments and all royalty payments. Table 4 provides estimates for 34 South Centre Member States by applying a 9% and 15% WHT, respectively, to outgoing IP payments. 9% is the rate under the Subject to Tax Rule (STTR) in Pillar Two[12] while 15% tends to be the upper end of the rate on royalties in existing tax treaties of developing countries.[13] These countries have been selected because of data availability. As mentioned, disaggregated data is unavailable for royalty payments by category. Accordingly, it is assumed that 20% of the IP payments constitute software royalties. Further research is required in this area. However, it is a modest estimate, given the huge size of the software market.

Table 4. Potential tax revenues from royalties under different scenarios for some South Centre members in 2020 (USD Million)

Region	Country	IP-Payments	9% of Payments (STTR rate)	15% of Payments	Software Royalties (20% of STTR)
Africa	South Africa	1,197.54	107.778	179.6304	21.5556
	Egypt, Arab Rep.	297	26.73	44.55	5.346
	Nigeria	252.84	22.756	37.926	4.5512
	Ghana	156.695	14.103	23.50425	2.8206
	Morocco	151.547	13.639	22.73205	2.7278
	Algeria	133.393	12.005	20.00895	2.401
	Angola	129.608	11.665	19.4412	2.333

[12] https://www.southcentre.int/statement-october-2021-3/

[13] https://taxinitiative.southcentre.int/wp-content/uploads/2022/04/Presentation-Pillar-Two-Model-Rules-Subject-to-Tax-Rule.pdf

	Mauritius	13.498	1.215	2.0247	0.243
	Malawi	5.047	0.454	0.75705	0.0908
	Cabo Verde	3.695	0.333	0.55425	0.0666
	Zimbabwe	3.629	0.327	0.54435	0.0654
	Tanzania	3.299	0.297	0.49485	0.0594
	Seychelles	1.982	0.178	0.2973	0.0356
	Namibia	0.942	0.085	0.1413	0.017
	Nicaragua	0.6	0.054	0.09	0.0108
Total		2,351.315	211.619	352.69665	42.3238
Asia	China	37,781.73	3,400.36	5667.2601	680.0712
	India	7,241.11	651.7	1086.1662	130.34
	Malaysia	2,386.34	214.771	357.95085	42.9542
	Indonesia	1,530.06	137.706	229.50915	27.5412
	Philippines	519.252	46.733	77.8878	9.3466
	Pakistan	183	16.47	27.45	3.294
	Cambodia	20.901	1.881	3.13515	0.3762
Total		49,662.40	4,469.62	7,449.36	893.92
Latin America	Brazil	4,062.06	365.585	609.30915	73.117
	Argentina	1,248.26	112.343	187.2384	22.4686
	Ecuador	139.64	12.568	20.946	2.5136
	Honduras	62.388	5.615	9.3582	1.123
	Jamaica	50.757	4.568	7.61355	0.9136
	Dominican Republic	49.7	4.473	7.455	0.8946
	Bolivia	44.528	4.008	6.6792	0.8016
	Panama	17.9	1.611	2.685	0.3222
	Suriname	4.316	0.388	0.6474	0.0776
	Guyana	2.426	0.218	0.3639	0.0436
Total		5,681.97	511.38	852.30	102.28
Middle East	Jordan	24.507	2.206	3.67605	0.4412
	Iraq	4.9	0.441	0.735	0.0882
Total		29.407	2.647	4.41105	0.5294
					0
TOTAL		**57,725.088**	**5,195.258**	**8658.7632**	**1039.0516**

Source: Authors using World Bank data

The data shows that the 34 South Centre Members could have collected an additional USD 1 billion by imposing a 9% WHT on software royalties. If applied to all royalties, this could have generated USD 5.1 billion, and with a 15% rate up to USD 8.6 billion. To put them in perspective, the revenues generated from the 9% rate are compared to grants and ODA received. These could also be used to repay debt, and so are compared to debt service costs. The results for African countries are in Table 5 and for Asian and Latin American countries in Table 6.

Table 5: STTR revenue in percentage of Grants and official development aid for select African countries in 2020

Country Name	STTR revenue (% Total debt service)	STTR revenue (% of Grants)	STTR revenue (% of Net ODA received)	STTR revenue (% of Technical Cooperation Grants)	STTR revenue (% Total Inward Resources[14])
South Africa	0.4	10.9	9.0	71.2	4.6
Angola	0.1	9.7	10.5	27.1	4.2
Botswana	3.3	7.9	7.7	57.6	3.7
Algeria	6.9	9.8	5.7	7.5	2.4
Eswatini	4.7	2.9	2.8	48.0	1.4
Egypt, Arab Rep.	0.2	6.4	1.7	11.6	1.2
Morocco	0.3	1.7	0.7	4.6	0.5
Ghana	0.5	1.9	0.6	10.4	0.5
Nigeria	0.4	1.1	0.7	9.0	0.4
Mauritius	0.0	4.8	0.4	6.3	0.3
Cabo Verde	0.6	0.6	0.2	1.9	0.1
Kenya	0.2	0.5	0.2	3.1	0.1
Tunisia	0.0	0.3	0.2	0.7	0.1
Lesotho	0.3	0.2	0.1	5.3	0.1
Zambia	0.0	0.2	0.1	1.9	0.1
Madagascar	0.7	0.1	0.1	1.3	0.0

Source: Authors using World Bank data

Table 6: STTR revenue in percentage of Grants and official development aid for selected Asian and Latin American countries in 2020

Region	Country	STTR Revenue (% of Tech Coop Grants)	STTR Revenue (% of Net ODA)	STTR Revenue (% of Grants)	STTR Revenue (% of Total Inward Resources)
Asia	India	121.8	36.3	105.8	22.1
	Indonesia	47.9	11.2	22.0	6.4
	Philippines	28.8	3.2	11.3	2.3
	Pakistan	7.9	0.6	1.4	0.4
	Cambodia	2.0	0.1	0.4	0.1
	Jordan	1.0	0.1	0.1	0.0
Latin America	Argentina	276.8	110.9	245.1	59.9
	Brazil	185.9	59.7	130.6	33.6
	Jamaica	43.3	6.9	6.0	3.0
	Ecuador	19.8	3.7	7.3	2.2
	Suriname	11.6	1.4	1.7	0.7
	Bolivia	7.1	1.2	1.8	0.6
	Panama	7.6	0.4	4.4	0.4

[14] Total Inward = the sum of total grants and net official development assistance received

	Guyana	5.3	0.4	0.5	0.2
Middle East	Iraq	0.2	0.0	0.0	0.0

Source: Authors with World Bank data

The above data makes it abundantly clear that the taxation of royalties, even with a modest 9% rate, can provide significant revenues to the Global South. For some countries this equals or even exceeds the revenues received from grants and ODA. This adds urgency to the need for reform of this critical question of international taxation.

Conclusion

This policy brief has shown that developing countries pay significant amounts of revenue as royalties. There is a pressing need for the UN to provide clear guidance that payments for the use or the right to use computer software, whether or not linked to copyright, are royalties. This will enable developing countries to tax these payments as such, and reduce the chances of tax disputes. Preliminary estimates show a 9% rate applied to software royalties can generate up to USD 1 billion in 2020 for 34 of the South Centre's Member States. Given the large sum of revenue at stake, urgent reform is needed.

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This Policy Brief is part of a series of briefs published by the Committee on Fiscal Studies as part of its TOTHR project funded by OSIEA.

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