Haven Indicator 20: Double tax treaty aggressiveness

What is measured?

This indicator analyses the aggressiveness of a jurisdiction in their double tax treaties ("Double Taxation Convention") with other countries, as revealed by the withholding tax rates that apply to the payment of dividends, interests or royalties.

Aggressiveness is understood as the ability of country A to secure lower withholding taxes from country B in a double tax treaty.

The text of double tax treaties only includes the withholding tax rates applicable to both countries that signed the treaty but does not reveal which country asked or pushed the other into accepting lower rates. As such, the withholding tax rate itself does not reveal whether country A secured it from country B, or the other way around. To determine a country's overall responsibility for lowering withholding tax rates in tax treaties worldwide, we apply the following steps.

Step 1. Defining comparable rates to assess dividends, interests and royalties withholding rates

To determine if country A secured lower withholding tax rates from country B, this indicator compares the withholding tax rate present in the double tax treaty between country A and country B, with the withholding tax rates available in country B's treaties with other countries.

Let's consider a hypothetical example. In the tax treaty between country A and country B the withholding tax rate on dividends is 5 per cent. However, in all other tax treaties country B has signed, the average withholding tax rate on dividends is 20 per cent. That is, the average tax rate is 20 per cent in the treaties between country B and county C, country B and country D, and country B and country E, and so on.

Given that there is a withholding tax rate on dividends of 20 per cent on average in country B's treaties with countries C, D and E, while the withholding tax rate is 5 per cent with country A, the conclusion is that country A was the one to secure lower withholding tax rates from country B. As a result, this indicator reflects that country A was aggressive towards country B in by setting lower withholding tax rates.

Step 2. Calculating the aggressiveness for each type of payment (dividends, interests and royalties)

To determine how aggressive country A was against country B, this indicator subtracts the reference rate (the average rate in all other treaties of country B) from the rate in the assessed treaty of country B with country A. In other words, country A's aggressiveness against country B in relation to dividends will be calculated in the following way: 5 per cent - 20 per cent= -15. Country A's aggressiveness towards country B in dividends is -15.

This above calculation – the withholding tax rate available in the assessed treaty minus the average withholding tax rate in all other treaties – is then repeated for each type of payments: dividends, interests and royalties.

Let's continue the exemplary calculation with interests. In the double tax treaty between country A and country B the withholding tax rate on interest is 5 per cent. However, in all other double tax treaties country B has entered (i.e. with country C, D and E, and so on), the average withholding tax rate on interest is 10 per cent.

Country A's aggressiveness against country B in relation to interests will be calculated in the following way: 5 per cent - 10 per cent = -5. Therefore, country A's aggressiveness towards Country B in interests is -5.

Continuing with royalties in our example, the withholding tax rate on royalties is 5 per cent in the double tax treaty between country A and country B. However, in all other double tax treaties Country B has entered (i.e. with country C, D and E, and so on), the average withholding tax rate on royalties is 2 per cent.

Thus, in the case of withholding tax on royalties, country A is not considered aggressive towards country B because country B's average withholding tax rate on royalties with other countries is actually lower than the withholding tax rate that applies with country A. However, this indicator only considers "aggressive" values. Given that country A was not aggressive against country B in relation to royalties, country A's aggressiveness on withholding tax royalties is 0.

Step 3. Calculating the aggressiveness of each treaty

To calculate the total aggressiveness of country A in the tax treaty with country B, the aggressiveness of the withholding tax on each payment is simply added together in the following way:

> = Aggressiveness on dividends + aggressiveness on interests + aggressiveness on royalties

= -15 + (-5) + (0)

= -20

Country A’s total aggressiveness against country B = -20.

Step 4. Calculating the total aggressiveness of each country (the aggressiveness of all of a country’s treaties)

The next step would be to repeat the calculations for each of country A’s double tax treaties, for example with countries F, G and H.

The total aggressiveness of country A will be the sum of the aggressiveness of all its treaties.

For example:

1) country A’s total aggressiveness against country B = -20
2) country A’s total aggressiveness against country F = -10
3) country A’s total aggressiveness against country G = 0
4) country A’s total aggressiveness against country H = -30

Country A’s total aggressiveness = -60

Step 5. Transforming a country’s total aggressiveness into a country’s haven score for Indicator 20

The last step is to transform a country’s aggressiveness into a haven score for indicator 20. For this purpose, out of the 70 jurisdictions assessed by this indicator, the country with the highest level of aggressiveness (mathematically, the country with the lowest “negative” value, given that aggressiveness always refers to values below zero) will be given a haven score of 100 (the maximum haven score). All other countries will receive a haven score in proportion to that value.

For example, if country Z had an aggressiveness of –2000, and this was the highest aggressiveness when comparing all countries in our sample, then country Z will receive a haven score of 100 (the maximum haven score). Then, if country Y had an aggressiveness score of –500, it will receive a haven score of 25 because its aggressiveness is equal to one quarter of country Z’s aggressiveness.

In addition, countries that have no corporate income tax rate or whose statutory corporate income tax is zero (see haven indicator 1) will also obtain a haven score of 100 under indicator 20, regardless of the number of tax treaties and their aggressiveness. This is because Indicator 20 on tax treaty aggressiveness focuses on the network of bilateral and multilateral tax treaties that enables income to be shifted with minimum tax “obstacles”. However, one of the main reasons for multinationals to use conduit jurisdictions – intermediate countries with dense networks of very aggressive treaties – is to allow corporate profits to ultimately terminate at a zero or no tax jurisdiction.

Hence, the aggressiveness of all countries with treaties is largely conditional upon the existence of, and their responsibility thus shared by, jurisdictions with zero corporate tax. Otherwise, there would be no incentive for companies to engage in profit shifting among many countries' tax treaties only to terminate at a high tax jurisdiction.[1]

Table 20.1: Scoring Matrix Haven Indicator 20

Regulation	Haven Score [100 = maximum risk; 0 = minimum risk]
A jurisdiction has a statutory corporate income tax rate of zero per cent **or** it has the highest available value of aggressiveness	100
A jurisdiction has a value of aggressiveness which is higher than zero per cent and lower than the highest available level of aggressiveness	Proportionate, based on the value of aggressiveness
A jurisdiction has no double tax agreements **or** it has an aggressiveness of zero	0

All underlying data can be accessed in the Corporate Tax Haven Index database.[2] To see the sources we are using for particular jurisdictions please consult the assessment logic in Table 20.4 below and search for the corresponding info ID 571 in the database report of the respective jurisdiction. You may also consult treaty-by-treaty aggressiveness measurements in our data portal.

A detailed step-by-step guide for calculating the haven scores for this haven indicator 20 is found in Annex A and is available for download in Excel format here.[3]

Why is this important?

For more than a century, countries have entered bilateral tax treaties that distribute taxing rights between nations. This has significant implications for worldwide inequality. In recent decades, these treaties have increasingly become the bedrock of "treaty shopping", enabling tax avoidance strategies by multinational companies. As part of cross-border economic activity, legal provisions and lower tax rates of a particular set of treaties are often exploited for shifting income away from its source, where such income could otherwise be taxed or reinvested. Jurisdictions have been central actors in driving the race to the bottom in the taxation of passive income (dividends, interests and royalties) by conceding lower withholding rates during treaty negotiations or by lowering or abolishing their domestic withholding rates in treaties, or both.

In this section, we first discuss the current function and content of double tax treaties. Then, we explore how jurisdictions are driving a race to the bottom in corporate taxation before analysing how multinationals exploit tax treaties for tax avoidance and the implications of "treaty shopping" for domestic resource mobilisation and global development.

(1) The function and content of double tax treaties

The prevailing justification for bilateral tax treaties is that they are the most effective way to prevent the double taxation of the same income by two jurisdictions that have a trade or investment relationship. Preventing double taxation is essentially achieved by limiting the taxing rights of the country where profits are sourced. Because tax treaties are integrated into the national laws of the two jurisdictions, the common framework provided by the treaty is meant to provide a fixed legal environment creating certainty for companies engaging in business in both places. However, to avoid double taxation, countries can also choose to provide a unilateral tax credit in the destination country for tax paid in the source country. This can be done without having to expressly limit the right of the source country to tax domestic revenue.[4]

Until the recent development of multilateral tax conventions by the Organisation for Economic Co-operation and Development (OECD), key terms like "company", "permanent establishment" or "dividend" were defined in bilateral treaties for a pair of jurisdictions. The lack of globally agreed standards was attenuated by the relative success of "model" treaties; most prominently, the OECD model[5] and to a lesser extent the United Nations[6] model. As legal scholar Sol Picciotto found, the widely followed OECD model treaty gives "virtually all the exclusive rights to tax [...] to the state of residence".[7] That is, exclusive rights to tax are assigned to the state where the investor company resides, as opposed to the state where profits are generated. In the context of today's investment dynamics, the "state of residence" is often a tax haven or a developed "capital exporting" country.

With respect to passive investment income – dividends, interest and royalties – the OECD model treaty defines maximum tax rates that the source state can charge on passive income. For dividends, 5 per cent or 15 per cent (the lower rate applies to substantial holdings); for interests, 10 per cent; and for royalties 0 per cent.[8] In the UN model, rates are not specified, and thus left for negotiation between potential treaty partners. Overall, it appears that the taxing rights of source jurisdictions are better secured in the United Nations model treaty.[9]

(2) The race to the bottom

Tax war[10] dynamics have led to a wide diversity of loopholes and increasingly lower rates, which the more aggressive jurisdictions have secured through negotiations.[11] Apart from very low withholding rates, some tax treaties also include provisions like the "management and control" clause, allowing a company that is resident in two countries at the same time to only be considered tax resident in the jurisdiction where "effective management" is undertaken.[12] Other treaties exclude key activities from the definition of a "permanent establishment", allowing substantial economic activities to be carried out in a jurisdiction without triggering taxation.[13] Importantly, vague definitions of "dividend" and "interest" within a bilateral treaty may give rise to hybrid treatment of investment income, which may result in negative tax rates.[14]

Historical evidence from 1960 to 1980 indicates that European countries, such as the United Kingdom, insistently pushed developing countries to sign double tax treaties in order to secure a "competitive advantage" for UK businesses in those countries.[15] Frequent interactions with public officials, lobbyists and private sector tax experts were found to be very influential in ensuring negotiating priorities and securing advantages.[16] Research shows that the power imbalance between negotiating countries, through unequal technical expertise or higher dependence on foreign investment, result in treaties that are more favourable to the capital exporting country, which are usually developed countries and tax havens.[17]

Yet the idea that bilateral treaties increase foreign direct investment is not always supported by empirical evidence.[18] On the contrary, the International Monetary Fund's 2018 working paper finds that signing treaties with investment hubs is not associated with increased investment, and that those treaties "tend to come with non-negligible revenue losses".[19]

Pursuant to the dynamics of tax-war high income countries and jurisdictions with big "financial centres" have driven the treaty-making process with the objective of securing the lowest possible rates for resident investors.[20] The outcome of decades of tax treaty war is apparent with regards to withholding rates.

Table 20.2: Evolution of Average Withholding Rates[21]

The evolution of WHT [Withholding] rates					
Time Period	Dividend	Participating Dividend	Interest	Royalty	
Year	Average Domestic Law WHT Rates				No. Countries
2000	15.2	14.1	15.1	17.2	107
2013	13.1	10.7	14.0	15.7	179
Treaty Age	Average Treaty WHT Rates				No. Treaties
0-5 years	10.1	5.6	7.9	8	533
5-10 years	11.7	6.9	9.1	9.3	635
10-20 years	12.4	8.1	9.6	9.8	1554
20-30 years	14.2	11.2	10.8	11.5	529
>30 years	14.6	11.1	11.7	11.3	328

Source: International Bureau of Fiscal Documentation database, 2011.

According to the International Monetary Fund, since 1980 average withholding tax rates have fallen by 30 per cent for most types of income, while the average rates on qualifying dividends has fallen by almost 50 per cent.[22] The 2014 report points out that European Union directives have been a key driver of this change, eliminating dividend withholding tax within the European Union member states and limiting taxes on interest and royalty payments.[23] To a large extent, governments are responsible for negotiating and signing bilateral treaties that contribute to the race to the bottom in withholding taxes.

Haven Indicator 20 serves as a proxy to assess a country's role in pushing for lower withholding tax rates and reducing the taxing rights of source countries. This indicator measures the comparative aggressiveness of each jurisdiction's treaty network. By comparing each treaty rate to the average rate otherwise available at the partner jurisdiction, we measure the spillover effect that a jurisdiction creates when systematically agreeing to low or zero withholding tax rates with its treaty partners.

The assessment of whether a specific country should sign a tax treaty with another jurisdiction is beyond the scope of this indicator and would otherwise require a detailed analysis of the bilateral economic relations and potential treaty provisions. However, this Haven Indicator enables a comparison of different jurisdictions' tax treaty networks in relation to withholding rates for dividends, interest and royalty payments. Indicator scores measure the aggregate aggressiveness of a country's treaties. Both this metric and the average aggressiveness provide useful insights for civil society and government negotiating teams when considering prospective treaties (for more details, please consult the excel table available here).

(3) How multinationals avoid taxation through treaty shopping

In addition to treaty shopping, multinational companies have been engaging in "jurisdiction shopping" where they choose the most convenient countries or territories to minimise their tax. Google, for example, chose to set up a Bermuda resident holding company to receive royalty payments from a range of companies resident in higher tax countries,[24] draining the profits from places where employees or users generated value. Both Google and Apple use Ireland to shift offshore profits made in the European Union by taking advantage of Ireland's laws and its extensive network of bilateral treaties.[25] The fact that outbound royalty payments amount to 26.39 per cent of Ireland's gross domestic product between 2010 and 2015[26] shows the extent to which certain jurisdictions are used as conduits for profit shifting. For comparison, the average of outbound royalty payments in the European Union for the same period is just 2.16 per cent.[27]

The importance of tax treaties in the context of aggressive tax planning is evident by looking at statistics prepared by European Commission staff: for income from intangible assets, the Effective Average Tax Rate (EATR) resulting from profit shifting strategies that use royalty payments to offshore jurisdictions is 40.7 per cent in the absence of treaty; however, the EATR goes down to 2 per cent where tax-treaties are available.[28] In other words, if a multinational company would like to shift intellectual property profits offshore, doing so in the absence of treaty is more than 20 times more "costly". With regards to offshore profit shifting via interest payments, the effective tax rate is more than two times higher if there is no treaty.[29]

For instance, the treaty between France and Vietnam, signed in 1993, secures a 0 per cent withholding rate for interest payments. This means that even if Vietnam wants to reduce dependence on foreign creditors by increasing domestic withholding rates on interests, French lenders will still be able to repatriate interest tax free. On average, the other treaties signed by Vietnam set withholding tax rates of about 10 per cent with respect to interests.[30] Yet it may be the case that profits shifted from Vietnam through interest payments do not end up in France but are again shifted to lower tax countries like Switzerland, with which France has favourable treaties. The fact that France has negotiated these rates reveals an aggressive stance towards Vietnam that most likely benefits French banks and corporate investors.

Recently developed offshore financial centres like Mauritius have also been negotiating very aggressive treaties. For example, Senegal's treaty withholding tax rates are above 10 per cent on average for all types of income, but Mauritius and Senegal have signed a treaty ensuring 0 per cent withholding tax in all cases.[31] With these very aggressive treaty rates, Mauritius reduces the tax base of Senegal and sends a signal to multinational corporations that Mauritius is an advantageous destination to shift profits away from Senegal.

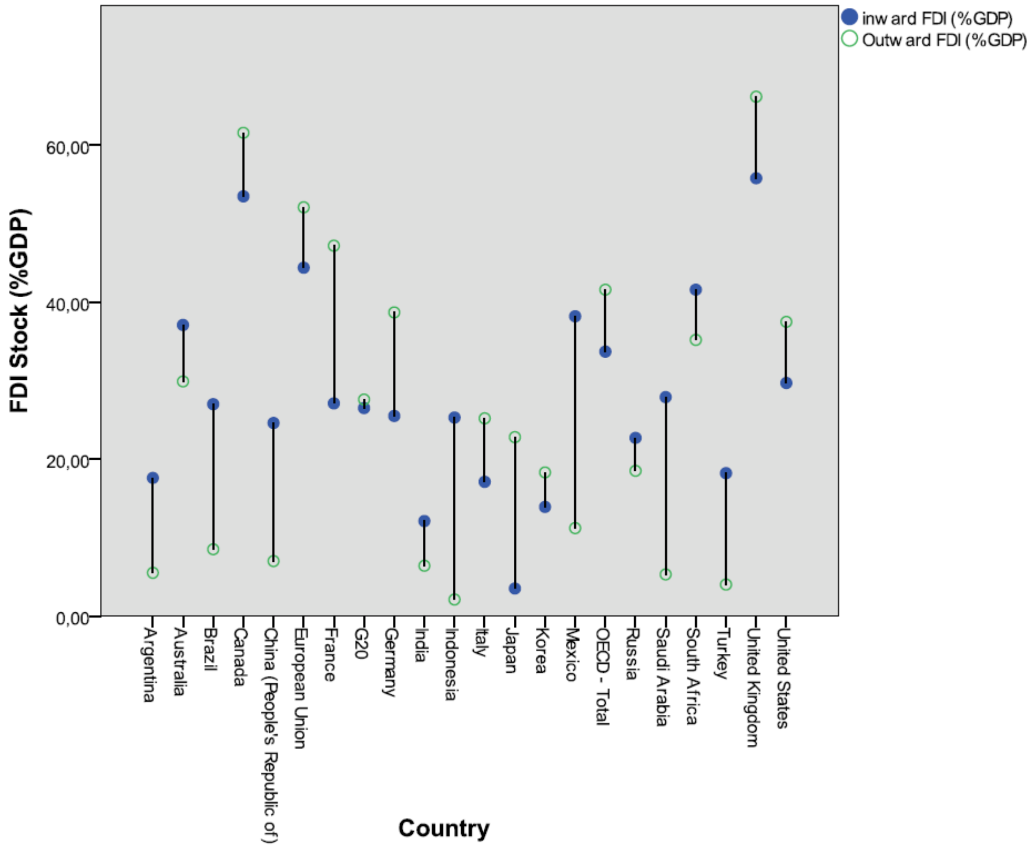
(4) Untaxed investment income, offshore accumulation and shortfalls in domestic revenue

The distributional conflict inherent in the allocation of taxing rights in double tax treaties goes back to the League of Nations when the first model for a double tax treaty was negotiated.[32] With the propagation of stateless international finance, tax treaties have become a tool to set up artificial economic relations in order to minimise tax on economic rents.

Although preventing double taxation has been the declared objective, double non-taxation has often been the result. Sharply declining withholding rates[33] together with widespread tax exemptions on investment activities[34] and falling statutory corporate income tax rates[35] have undoubtedly contributed to increasing global inequalities. The race to the bottom in corporate income tax rates harms virtually all countries with the exception of a few tax havens where most profits end up accumulating.[36]

With double tax treaties, the tax losses to developing countries are most problematic.[37] Even a single treaty can greatly affect a country's tax base,[38] as network externalities can arise when the treaty partner has various low or no tax treaties. More specifically, when double tax treaties are signed between a developed country (or a tax haven) and a developing country, the latter is usually the capital-importing party to the bilateral agreement. In other words, capital is expected to flow into the developing country as investment and the income resulting from the investment is expected to mostly flow out from the developing country to a tax haven or a developed country. Given that the function of double tax treaties in relation to dividends, interest and royalty payments is to restrict the tax that the source country can withhold on the outflows, then almost by definition developing countries will forego substantially more revenue than their capital-exporting counterparty.[39] The following graph (Figure 20.1) illustrates the strikingly different foreign direct investment (FDI) positions of G20 countries.

Figure 20.1: Comparison of G20 inward and outward FDI stock, 2012. (Lips 2019)[40]



Source: OECD (2015), FDI flows (indicator). Retrieved from https://data.oecd.org/fdi/fdi-flows.htm

The graph above sheds light on the countries that may suffer greater losses from low or no withholding taxes in treaties. For more accurate estimates in developing countries, a 2018 study finds that the potential revenue loss from lower treaty withholding tax rates can be significant. For the Philippines, Pakistan and Bangladesh alone, these losses amounted to almost US$800m in just one year.[41] A 2013 study found that the treaties Netherlands signed with developing countries led to more than €770m in lost revenue.[42]

Thus, by allowing a race to the bottom in terms of taxation of dividends, interest and royalties and by promoting "jurisdiction shopping", we consider that tax treaties with low or no withholding taxes are systemically harmful, predominantly for developing countries.

Results Overview

Figure 20.2: Double Tax Treaty Aggressiveness Overview

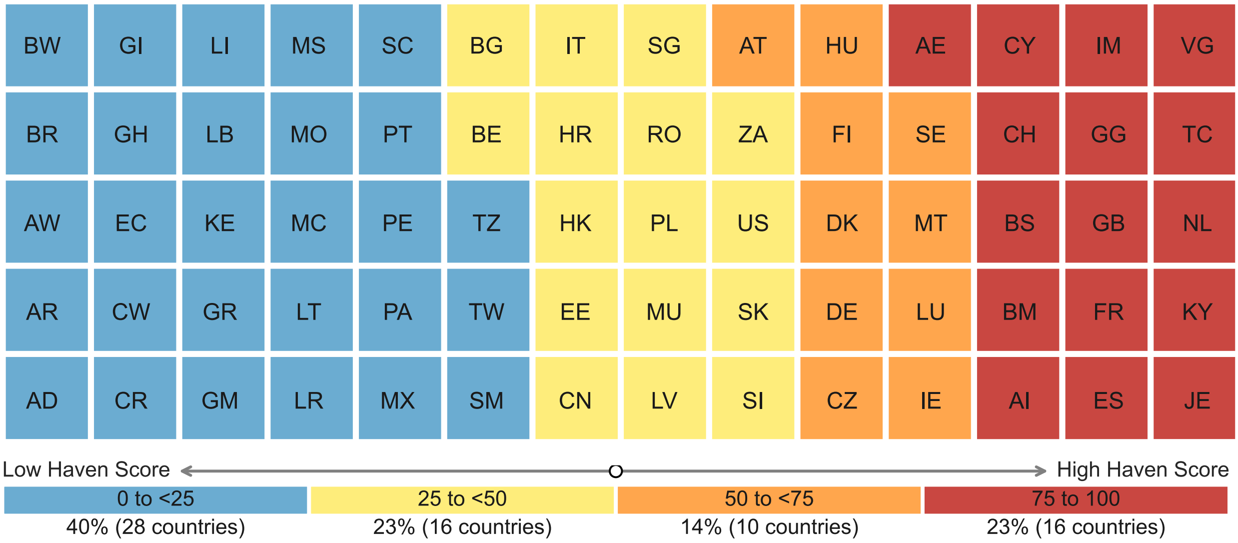


Table 20.3: Double Tax Treaty Aggressiveness – Haven Indicator Scores

Haven Score	ISO2: Country Name	
1	AW:	Aruba
100	AI:	Anguilla
5	AD:	Andorra
100	AE:	United Arab Emirates
2	AR:	Argentina
71	AT:	Austria
45	BE:	Belgium
37	BG:	Bulgaria
100	BS:	Bahamas
100	BM:	Bermuda
0	BR:	Brazil
3	BW:	Botswana
79	CH:	Switzerland
32	CN:	China
0	CR:	Costa Rica
3	CW:	Curaçao
100	KY:	Cayman Islands
83	CY:	Cyprus
53	CZ:	Czechia
64	DE:	Germany
61	DK:	Denmark
5	EC:	Ecuador
75	ES:	Spain
32	EE:	Estonia
60	FI:	Finland
97	FR:	France
87	GB:	United Kingdom
100	GG:	Guernsey
1	GH:	Ghana
1	GI:	Gibraltar
1	GM:	Gambia
25	GR:	Greece
31	HK:	Hong Kong
45	HR:	Croatia
62	HU:	Hungary
100	IM:	Isle of Man
68	IE:	Ireland
43	IT:	Italy
100	JE:	Jersey
1	KE:	Kenya
23	LB:	Lebanon
0	LR:	Liberia
21	LI:	Liechtenstein
20	LT:	Lithuania
60	LU:	Luxembourg
27	LV:	Latvia
1	MO:	Macao
12	MC:	Monaco
18	MX:	Mexico
62	MT:	Malta
2	MS:	Montserrat
40	MU:	Mauritius
75	NL:	Netherlands
5	PA:	Panama
0	PE:	Peru
35	PL:	Poland
24	PT:	Portugal
34	RO:	Romania
44	SG:	Singapore
19	SM:	San Marino
41	SK:	Slovakia
34	SI:	Slovenia
70	SE:	Sweden
19	SC:	Seychelles
100	TC:	Turks and Caicos Islands
7	TW:	Taiwan
4	TZ:	Tanzania
45	US:	United States
100	VG:	British Virgin Islands
38	ZA:	South Africa

Haven Score

Low Haven Score ← → High Haven Score

0 to <25	25 to <50	50 to <75	75 to 100

Table 20.4: Assessment Logic

Info_ID	Text_Info_ID	Answers (Codes applicable for all questions: -2: Unknown; -3: Not Applicable)	Valuation Haven Score
571	Haven Indicator 100 score: Result from the normalisation of total aggressiveness.	Score from 0 to 100	Please see above, and here.

Table 20.5: Comparative metrics of double tax treaty aggressiveness

Country	Score	Statutory CIT	Number of treaties	Aggressiveness per treaty
Aruba	1	25	4	0.00
Anguilla	100	0	1	N/A
Andorra	4	10	7	0.70
United Arab Emirates	100	0	89	1.12
Argentina	1	25	20	0.08
Austria	71	25	90	0.79
Belgium	45	25	95	0.48
Bulgaria	36	10	70	0.52
Bahamas	100	0	0	N/A
Bermuda	100	0	1	N/A
Brazil	0	34	33	0.01
Botswana	2	22	14	0.21
Switzerland	79	21.1	107	0.74
China	31	25	104	0.31
Costa Rica	0	30	3	N/A
Curaçao	2	22	4	0.67
Cayman Islands	100	0	0	N/A
Cyprus	83	12.5	69	1.21
Czechia	52	19	89	0.59
Germany	64	29.9	96	0.67
Denmark	61	22	81	0.76
Ecuador	4	25	22	0.22
Spain	75	25	94	0.80
Estonia	32	20	60	0.54
Finland	60	20	78	0.78
France	97	27.5	124	0.78
United Kingdom	86	19	131	0.66
Guernsey	100	0	13	7.69
Ghana	0	25	10	0.09
Gibraltar	1	10	1	N/A
Gambia	0	27	6	0.11
Greece	24	24	56	0.44
Hong Kong	30	16.5	41	0.75
Croatia	44	18	68	0.66
Hungary	61	9	81	0.76
Isle of Man	100	0	10	10.00
Ireland	68	12.5	73	0.94
Italy	42	27.8	101	0.42
Jersey	100	0	15	6.67
Kenya	0	30	15	0.07
Lebanon	22	17	29	0.78
Liberia	0	25	1	N/A
Liechtenstein	21	12.5	20	1.07

Country	Score	Statutory CIT	Number of treaties	Aggressiveness per treaty
Lithuania	19	15	56	0.35
Luxembourg	59	24.94	83	0.72
Latvia	27	20	62	0.44
Macao	1	12	5	0.23
Monaco	11	26.5	10	1.18
Mexico	18	30	60	0.30
Malta	62	35	77	0.81
Montserrat	1	30	2	N/A
Mauritius	40	15	43	0.94
Netherlands	75	25	95	0.79
Panama	5	25	17	0.30
Peru	0	29.5	10	0.05
Poland	35	19	83	0.42
Portugal	23	31.5	80	0.29
Romania	34	16	88	0.39
Singapore	44	17	87	0.51
San Marino	18	17	22	0.84
Slovakia	40	21	69	0.59
Slovenia	34	19	59	0.58
Sweden	70	20.6	87	0.81
Seychelles	18	30	28	0.66
Turks and Caicos Islands	100	0	0	N/A
Taiwan	7	20	32	0.23
Tanzania	3	30	9	0.43
United States	44	25.77	66	0.68
British Virgin Islands	100	0	1	N/A
South Africa	37	28	79	0.48

Note: As mentioned above, the score measures the total aggressiveness of a jurisdiction's treaty network. The aggressiveness "by treaty" is presented in this table for informative purposes.

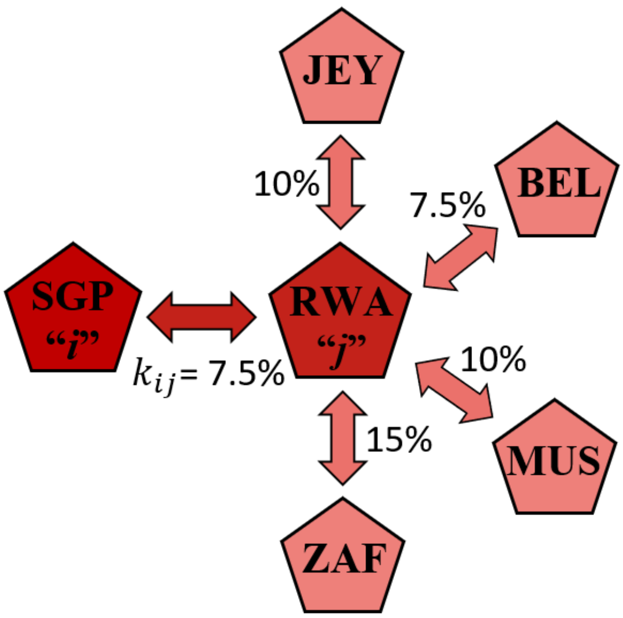
Annex 1: Detailed methodology

In order to assess the relative aggressiveness of a jurisdiction's (country *i*) treaty network, we compare the rates that a jurisdiction (country *i*) has accorded bilaterally with a treaty partner (country *j*, for example) with the average rates which that partner jurisdiction (j) has agreed with all its other treaty partners – that is, the jurisdictions (*k, l, m*, ...) with which *j* has concluded treaties, excluding *i*.

This comparison is made separately within each type of income covered: Dividends, Interest and Royalty (D/I/R) payments. If the rates between *i* and *j* are lower than the average rates available in *j*'s treaty network (excluding the treaty between *i* and *j*), then the difference between these rates is treated (and measured) as an indication of *i* treaty aggressiveness. The differential will thus increase the haven score of *i*.

For example, we assess the aggressiveness of Singapore in relation to Rwanda, for dividends withholding (Figure 20.3). We compare the withholding taxes agreed between Singapore and Rwanda, with those agreed between Rwanda and Jersey, Belgium, Mauritius and South Africa. In another step, this analysis is undertaken not only for dividends withholding, but also for interests and royalties withholding.

Figure 20.3. Example of the assessment of treaty aggressiveness in Rwanda's treaty network



Source: Tax Justice Network / ICTD working paper[43]

In mathematical terms, the aggressiveness, *D*, with regards to WHT on dividends (component *k*) of Singapore (country *i*) on Rwanda (country *j*) can be defined as

$$D_{ij}^{k} = \begin{cases} k_{i,j} - \overline{k_{j,\iota}} & if\ k_{i,j} - \overline{k_{j,\iota}} < 0 \\ 0 & otherwise \end{cases}, \qquad (1)$$

with k_{ij} the withholding tax rate on dividends agreed between Singapore and Rwanda, and $\overline{k_{J,l}}$ the average withholding tax rate on dividends in all treaties between Rwanda (country *j*) and all its treaty partners, excluding Singapore (country *i*) — that is, the average withholding tax that would be applicable in Rwanda if it had not signed its tax treaty with Singapore.

We note that k_{ij} corresponds to a quantity for which higher values are beneficial to the source country – the country from which dividends, interests or royalties are paid out. That is, with Singapore as the country whose aggressiveness is assessed, the higher the withholding taxes applicable under the Rwanda-Singapore treaty, the more tax rights Rwanda keeps on subsidiaries of Singaporean companies.

Importantly, we only consider negative differentials for the assessment of a jurisdiction's overall aggressiveness. That is, if the value $k_{i,j} - \overline{k_{J,l}}$ is positive (i.e., when the treaty in question does not offer lower taxes in comparison to the average treaty signed by *j*), we set aggressiveness to zero ($D_{ij}^k = 0$). In this indicator, we disregard positive differentials because treaties respecting source tax rights (by potentially allowing high withholding taxes) do not have a clear compensatory and mitigating effect with regards to jurisdiction shopping and the race to the bottom in withholding taxes.[44] In any case, simulations show very similar results when considering all differentials (sum or average), as opposed to considering only negative differentials.

The example above is detailed in the table below. For instance, the aggressiveness of Singapore towards Rwanda is -3.125, that is, the difference between the average withholding rate for all treaties of Rwanda excluding Singapore (10.625) and the withholding of the treaty Rwanda-Singapore (7.5).

Table 20.6. Treaty aggressiveness with regard to withholding taxes on dividends for Rwanda

Country i	Country j	WHT on dividends (k_{ij})	Average WHT, excluding *i* ($\overline{k_{J,l}}$)	$k_{i,j} - \overline{k_{J,l}}$	D_{ij}^k
Singapore	Rwanda	7.5	10.625	-3.125	-3.125
Jersey	Rwanda	10	10	0	0
Belgium	Rwanda	7.5	10.625	-3.125	-3.125
Mauritius	Rwanda	10	10	0	0
South Africa	Rwanda	15	8.75	+ 6.25	0

Next, we explain the calculation steps leading to the Haven Indicator 20 score.

Step A: defining average 'DTA rates'

As mentioned above, we define a "DTA rate" with respect to a bilateral relation (and for a specific type of income) as the average of the applicable rates under the DTA in force, as

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amended by subsequent protocols, if any. We assess each treaty with regards to three different components "k": withholding taxes on dividends, interests and royalties.

As you will see, there is a slight difference in the calculation of the "DTA rate" for dividends.

Table 20.7: Definition of "DTA" rates

DTA rate for Dividends	$Div_{i,j} = \left(\frac{\sum r_{main}}{n_{main}} + \frac{\sum r_{qualifying}}{n_{qualifying}}\right)/2$	(2a)
	► r_{main} refers to dividend WHT tax rates that are shown on the "Individuals, companies" column of IBFD withholding rate tables. ► $r_{\text{qualifying}}$ refers to dividend WHT tax rates that are shown on the "Qualifying companies" column of IBFD withholding rate tables. ► n_{main} and $n_{qualifying}$ refer to the number of rates available in the "Individuals, companies" (main) and the "Qualifying companies" (qualifying) columns of the IBFD WHT tables of countries "i" and "j".	
DTA rate for Interests	$Int_{i,j} = \frac{\sum r}{n}$	(2b)
	► r refers to interest WHT tax rates that are shown on the "Interest" column of IBFD withholding rate tables. ► n is the total number of rates available in the "Interest" column of the IBFD WHT tables of countries "i" and "j".	
DTA rate for Royalties	$Roy_{i,j} = \frac{\sum r}{n}$	(2c)
	► r refers to royalty WHT tax rates that are shown on the "Royalties" column of IBFD withholding rate tables. ► n is the total number of rates available in the "Royalties" column of the IBFD WHT tables of countries "i" and "j".	

As shown above, the "DTA rate" for dividends is the average of two averages: (i) the average of main rates, and (ii) the average of qualifying rates (following the categorisation in IBFD withholding rate tables). For interests and royalties, the "DTA rate" is simply the average of rates shown in the relevant columns of IBFD WHT tables.

In principle, if countries *i* and *j* have signed a bilateral tax treaty that is currently in force, such treaty (and its corresponding tax rates) should appear in the withholding tax table of *i*, as well as in the withholding tax table of *j*. Moreover, because the vast majority of treaties are symmetrical (equally applicable for companies from *i* engaged in *j*, and companies from *j* engaged in *i*), we would expect that the tax rates appearing in the withholding tax table of *i* are the same as the tax rates shown in the withholding tax table of *j*. Regretfully, this is not always the case, and we have observed a significant number of asymmetries across the IBFD withholding tax tables.

Moreover, certain jurisdictions (such as the United Arab Emirates and Bahrain) do not have a withholding tax table in the IBFD database, probably because the withholding tax rate applicable is always zero per cent no matter the destination country.

In the Corporate Tax Haven Index 2019, we considered withholding tax rates presented in each jurisdiction's table at face value, and we manually included treaties for jurisdictions that did not have a withholding tax table. In this 2021 edition of the Corporate Tax Haven Index, we have automated to a large extent the verification and matching of treaties that appear in different withholding tax tables. Moreover, when the tax rates shown in the tables of two treaty partners differ, we systematically retain the set of rates that presents the highest number of tax rates, in each category (Dividends, Interests and Royalty payments). Thus, where in 2019 we used a semi-manual method to resolve the inconsistencies found across IBFD withholding tax tables, in 2021 we have developed an automated data treatment method, which we combine with punctual verifications performed manually. Manual verifications have been undertaken to ensure that the automated “imputation” of tax rates (or whole treaties) that are partially or fully absent from IBFD withholding tax tables is correct.

For example, in the withholding tax table of Nigeria, the treaties in force with Spain and Sweden are not shown, although they are presented in the withholding tax tables of the two European countries. In 2019, we took such data at face value and considered that treaties where only applicable to payments from Spain or Sweden. In 2021, we “impute” the existence of a treaty onto the table of the treaty partner if such treaty is not shown. The two treaties are indeed in force both for Nigeria, and for Spain and Sweden (respectively).

Otherwise, for instance, the Luxembourg-Panama treaty appears in the withholding tax tables of both jurisdictions. However, with respect to interests, Luxembourg’s withholding tax table shows two rates (zero per cent / 5 per cent), while Panama’s table presents only one rate (5 per cent). Using the 2019 methodology, we would have taken IBFD tables at face value, assessing the treaty differently for Panama and Luxembourg. With 2021 methodology, we impute the highest number of rates in each category (considered the most nuanced, “best quality” data) for both treaty partners. Thus, in this case, we consider that although the zero per cent rate does not appear in Panama’s withholding tax table, it is applicable to interest payments from Panama to Luxembourg.

Checking treaty language, we observe that the article concerning interests is neutral with respect to the contracting country, and that the zero per cent rate is indeed applicable for both Panama and Luxembourg (in addition to the 5 per cent rate). This sort of manual check has been conducted at random across our sample, and we observe that the vast majority of treaties have neutral language providing for symmetry. Thus, we consider that the imputation of tax rates on the basis of treaty partner data is appropriate. A minor caveat should, however, be noted: this data treatment may bias available data for the very few treaties with asymmetrical provisions (those that do not apply in the same way to each treaty partner). In general, the imputation of missing treaties and missing tax rates in the Corporate Tax Haven Index 2021 data treatment has only marginally affected the scores for haven indicator 20.

Otherwise, additional data treatment is necessary for EU Member Sates. Two directives relative to withholding tax are in force in the European Union, which limit the withholding tax applicable to dividends, interests and royalties to zero per cent in cases where a parent company receives such payments from a subsidiary owned or controlled at 10 per cent or more (25 per cent for interests and royalties). The Parent-Subsidiary

Directive (2003/123/EC)[45] and the Interests and Royalties Directive (2003/49/EC)[46] are multilateral treaties entered into by sovereign states in relation to withholding tax rates. However, instead of including the rates applicable under the directives among the treaty withholding tax rates. IBFD presents such rates among the “domestic” rates, even if those rates are only valid for payments destined to a subset of countries. This is unfortunate in terms of analysis of bilateral and multilateral treaty rates, because withholding tax rates under the directive have to be included for each European dyad (each pair of EU countries). Importantly, Switzerland is also covered by the directives.

In the Corporate Tax Haven Index 2019, we took IBFD withholding tax tables at face value, and thus the falsely categorised “domestic” rates stemming from a multilateral treaty were excluded from our assessment of haven indicator 20. In the Corporate Tax Haven Index 2021, we have considered the tax rates applicable under the above-mentioned directives for all 27 EU member states. This more accurate assessment of applicable withholding taxes between EU member states has had the effect of increasing their aggressiveness (to a different extent for each member state), and has also marginally decreased the aggressiveness of non-EU countries towards EU member states.

Subsequently, we will refer to this average of available (treaty and/or protocol) rates as the ‘DTA rate’ with respect to dividend ($\boldsymbol{Div_{i,j}}$), interest ($\boldsymbol{Int_{i,j}}$) or royalty ($\boldsymbol{Roy_{i,j}}$) payments.

Step B: defining the two comparable metrics (A and P) each of the assessed jurisdictions

Table 20.8: defining comparable metrics

Type of income	$\boldsymbol{A}$ is the DTA rate of Assessed jurisdiction ($\boldsymbol{i}$) with regards to a Partner jurisdiction ($\boldsymbol{j}$)	$\boldsymbol{P}$ is the average of DTA rates otherwise available (excluding $\boldsymbol{i}$) at a Partner jurisdiction ($\mathbf{j}$)
Dividend	$\boldsymbol{Div_{i,j}}$ (2a)	$\overline{Div_{j,\iota}}$ (3a)
Interest	$\boldsymbol{Int_{i,j}}$ (2b)	$\overline{Int_{j,\iota}}$ (3b)
Royalty	$\boldsymbol{Roy_{i,j}}$ (2c)	$\overline{Roy_{j,\iota}}$ (3c)
Definitions	► We use $\overline{Div_{j,\iota}}$, $\overline{Int_{j,\iota}}$ and $\overline{Roy_{j,\iota}}$ to define the average value of DTA rates on dividends, interests and royalties (respectively), in all treaties available at the partner country “j”, excluding the DTA rates in the treaty between country “I” and country “j”.	

Step C: comparing the withholding tax rates agreed between a jurisdiction and its treaty partner, to the average withholding tax rates available through the partner’s other treaties

Then, within each type of income and for each partner jurisdiction j in country i’s DTA network, we compare the withholding rate in the DTA

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between country i and j, to the average withholding rate in *j*'s other DTAs, as follows:

Table 20.9: Calculating differentials

Treaty aggressiveness for Dividends WHT	$D_{ij}^{Div} = \begin{cases} Div_{i,j} - \overline{Div_{j,\iota}} & if\ Div_{i,j} - \overline{Div_{j,\iota}} < 0 \\ 0 & otherwise \end{cases},$	(4a)	$\forall\, \boldsymbol{i}\,;\ \forall\, \mathbf{j} \in \mathbf{P}_i$; where $\mathbf{P}_i$ is the group of jurisdictions that are country i's treaty partners
Treaty aggressiveness for Interest WHT	$D_{ij}^{Int} = \begin{cases} Int_{i,j} - \overline{Int_{j,\iota}} & if\ Int_{i,j} - \overline{Int_{j,\iota}} < 0 \\ 0 & otherwise \end{cases},$	(4b)	$\forall\, \boldsymbol{i}\,;\ \forall\, \mathbf{j} \in \mathbf{P}_i$
Treaty aggressiveness for Royalties WHT	$D_{ij}^{Roy} = \begin{cases} Roy_{i,j} - \overline{Roy_{j,\iota}} & if\ Roy_{i,j} - \overline{Roy_{j,\iota}} < 0 \\ 0 & otherwise \end{cases},$	(4c)	$\forall\, \boldsymbol{i}\,;\ \forall\, \mathbf{j} \in \mathbf{P}_i$

For each of the three types of income, the assessment of country i results in as many values of D_{ij}^{Div}, D_{ij}^{Int}, and D_{ij}^{Roy} as the number of treaty partners of country i. If a particular DTA does not impose a limit on withholding rates with regards to a specific type of income (Div, for example), then we cannot define D_{ij}^{Div}, since there is no withholding rate limitation applicable to dividends and instead, domestic rates of i or j apply alternatively. In these cases, we consider that $Df_{(Div;\, J_a,\, J_p)}$= 0.

Step D: Aggregating differentials, by treaty

Importantly, in order to assess the overall aggressiveness of country i's treaty network, only the negative differentials are considered.

Table 20.10: Aggregating differentials

Aggregating by treaty	$D_{i,j}^{treaty} = D_{ij}^{Div} + D_{ij}^{Int} + D_{ij}^{Roy}$	(5)	► With $D_{i,j}^{treaty}$, the aggregate value of the aggressiveness of a single treaty. The subscript indicates the assessed jurisdiction and the partner jurisdiction.
Aggregate aggressiveness by assessed country $\boldsymbol{i}$	$A_i = \sum_{\forall\, j\, \epsilon\, P_i} D_{i,j}^{treaty}$	(6)	► With A_i, the aggregate value of differentials. The subscript indicates the assessed jurisdiction (here, country i). ► $\forall\, \mathbf{j} \in \mathbf{P}_i$; where $\mathbf{P}_i$ is the group of jurisdictions that are country i's treaty partners

Using, the previous example, note that $D_{Singapore,\ Rwanda}^{treaty}$ is a different metric than $D_{Rwanda,\ Singapore}^{treaty}$, because although the withholding taxes in the Rwanda-Singapore treaty are the same for both jurisdictions, the average treaty rates "otherwise available" in Rwanda are significantly different from those available in Singapore (see Table 20.6)

Step E: Normalisation to obtain haven indicator score

Table 20.11: Normalisation of aggregate negative differentials

Haven Indicator 20 Score for country $\boldsymbol{i}$	$\boldsymbol{HI20}_{(i)} = \frac{A_i}{A_{max}} \times 100$	(6')	► Where, A_{max} represents the maximum aggregate aggressiveness observed among those jurisdictions included in our sample.

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the flow is considered "interest" in country A (deductible), potentially subject to no withholding tax, and then considered "dividend" income in country B, where such income is tax-exempt. As a result, not only can hybrid treatment result in non-taxation of certain amount of income, but it can also result in having that amount considered deductible (interest); effectively lowering the tax paid on other income.

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