POLICY BRIEF

Pillar 2: Rule Order, Incentives, and Tax Competition

Michael Devereux, John Vella, and Heydon Wardell-Burrus

OXFORD UNIVERSITY CENTRE FOR BUSINESS TAXATION

14 January 2022

Pillar 2: Rule Order, Incentives, and Tax Competition

Michael Devereux, John Vella, and Heydon Wardell-Burrus

1. Introduction

Two of the most controversial questions relating to Pillar 2 are the extent to which it will allow countries to engage in tax competition, and which countries will collect the tax revenues it generates. The former remained an open question even after political agreement was reached on 1 July 2021,[1] but the latter seemed to have been settled for some time. The Model Rules[2] published by the OECD/G20 Inclusive Framework on 20 December 2021 provide somewhat unexpected answers to both questions.

This Policy Brief focuses on two critical elements of Pillar 2: the Substance-Based Income Exclusion (SBIE)[3] and the Qualified Domestic Minimum Top-up Tax (QDMTT). The QDMTT was introduced in the Model Rules and, to our knowledge, had not been previously discussed in publicly available documentation. However, the QDMTT has a significant impact on each of the controversial questions identified above.

In answering these questions it is useful to distinguish between three tax variables in relation to income arising in a particular country (the "source"[4] country, for ease of reference): (a) the Total Tax paid by a company on that income (including tax paid to the source country and elsewhere),[5] (b) the Corporation Tax collected by the source country on that income, and (c) the Total Tax (both Corporation Tax and QDMTT) collected by the source country on that income.[6]

This Policy Brief makes three main points.[7]

---

[1] OECD/G20 Base Erosion and Profit Shifting Project, *Statement on a Two-Pillar Solution to Address the Tax Challenges Arising from the Digitalisation of the Economy* (1 July 2021).

[2] OECD (2021), *Tax Challenges Arising from the Digitalisation of the Economy – Global Anti-Base Erosion Model Rules (Pillar Two): Inclusive Framework on BEPS*, OECD, Paris. See also the Draft Directive released by the EU Commission on 23 December 2021: *Proposals for a Council Directive on ensuring a global minimum level of taxation for multinational groups in the Union* COM (2021) 823, and the Consultation Document released by UK authorities on 11 January 2022: HMT and HMRC, *OECD Pillar 2: Consultation on Implementation*.

[3] Previously called the 'substance-based carve-out'. This is a formulaic substance carve-out that will exclude an amount of income that is equal to 5% of the carrying value of eligible tangible assets and payroll from the operation of the minimum tax, with more generous rates during a long transition period.

[4] We refer throughout this Policy Brief to the jurisdiction where the profit is declared for both tax and accounting purposes as the "source country". We acknowledge that this is rather loose terminology. It is not a "source" country in a strict legal sense, since we are considering a subsidiary resident in that country. It is closer to a broader understanding of the term "source", although there may, or may not, be real economic activity in the form of functions and activities taking place in that jurisdiction.

[5] This is the variable Becker and Englisch focused on in a recent blog. Becker and Englisch, *GloBE Minimum Taxation: Calculating the Local ETR with Carve-Outs*, 17 December 2021.

[6] That is, references to Corporation Tax would not include any amounts of QDMTT regardless of whether the QDMTT was administered through the Corporation Tax return or not.

[7] The first two points were set out in a blog we published on 23 December 2021: Devereux, Vella, and Wardell-Burrus, *More on Pillar 2 and Tax Competition*.

i. *The addition of the QDMTT effectively alters the rule order of Pillar 2.* It moves "source" countries to the head of the queue to collect the top-up tax generated by Pillar 2.

ii. *Pillar 2 effectively creates a floor on "source" country tax competition, but it does so in a roundabout manner*. The specific design of the SBIE was unclear prior to the publication of the Model Rules, and several options were possible within the constraints of the political agreement reached on the matter. As we explained in a recent Policy Brief,[8] all the possible options would have placed a floor (equivalent to 15% of "Excess Profit" - broadly financial accounting profit less the SBIE) in terms of the Total Tax paid by a company (i.e. (a)). However, only one of the options we considered in the Policy Brief would have placed a floor on competition over Corporation Tax collected by the source country (i.e. (b)). The Model Rules have now clarified this matter. Following the introduction of Pillar 2 countries will still have an incentive to compete by reducing the Corporation Tax liability they impose on companies (i.e. (b)), perhaps even down to zero. However, countries now have an incentive to collect a QDMTT equivalent to 15% of Excess Profit. Critically, introducing a QDMTT does *not* worsen the source country's competitive position once Pillar 2 is in place. So Pillar 2 places an automatic floor on the Total Tax paid by a company (i.e. (a)), and it also effectively places a floor on competition over the Total Tax (Corporation Tax and QDMTT) collected by source countries on corporate income (i.e. (c)) by providing them with an incentive to introduce a QDMTT. However, it does not create a floor on competition over the Corporation Tax collected by source countries (i.e. (b)). We distinguish between "Total Tax" (Corporation Tax and QDMTT) and "Corporation Tax" throughout this Policy Brief.

iii*. Pillar 2 increases the incentives for (at least some) countries to reduce the Corporation Tax liabilities they impose on companies (i.e. (b)), thus increasing the probability that countries reduce Corporation Tax liabilities perhaps even all the way to zero*. Importantly, however, and as noted in point (ii) above, these countries have an incentive to impose a QDMTT and thus collect 15% of Excess Profit in tax. The substitution of Corporation Tax with the QDMTT would be a significant development and the creation of these incentives merits careful consideration.

2. Calculation of the Top-Up Tax and the Impact of Pillar 2

2.1. Pillar 2 Top-Up Calculation and the Distribution of Pillar 2 Revenues

Simplifying somewhat, the calculation of the top-up tax under Pillar 2 involves two main steps.

1. Calculate the Effective Tax Rate (*ETR*) for the jurisdiction as:

$$ETR = \frac{Adjusted\ Covered\ Taxes}{Adjusted\ GloBE\ Income}$$

2. Calculate the Pillar 2 top-up as:

$$max(15\% - ETR, 0) * (Adjusted\ GloBE\ Income - SBIE) - QDMTT$$

[8] See Devereux, Simmler, Vella, and Wardell-Burrus, *What is the Substance-Based Carve-Out under Pillar 2? And How Will it Affect Tax Competition?* , EconPol Policy Brief 39, 17 November 2021.

Up to the publication of the Model Rules, there was uncertainty as to whether the SBIE would be deducted in the first step (from the denominator) as well as in the second step. This would have made a difference to the impact of Pillar 2 on tax competition, as we explained in a previous Policy Brief.[9] It is now clear that the SBIE is only used in the second step when determining the "Excess Profit", (defined as Adjusted Globe Income – broadly financial accounting profit - less SBIE).[10]

The Model Rules also introduced the QDMTT. Note that if the QDMTT is equal to the top-up rate multiplied by the Excess Profit (as it would be in most cases) it will cancel out the top-up tax entirely. In other words, by introducing a QDMTT a country collects the revenue that would otherwise have been collected by another country under Pillar 2 through the Income Inclusion Rule (IIR) or the Undertaxed Payment Rule (UTPR). Critically, a country can introduce a QDMTT in the safe knowledge that this would not impinge on its competitive position because the top-up tax would be collected by another country if it is not collected through the QDMTT. Countries thus have a strong incentive to introduce a QDMTT, and in this Policy Brief we assume that they will.[11] For simplicity, we also set to one side circumstances where there is a mismatch between the allocation of income or taxes for domestic tax, accounting or Pillar 2 purposes.

The QDMTT thus changes the politically sensitive rule order of Pillar 2. If a MNE is taxed below the minimum tax rate in a particular country, the missing revenue will now be collected through the QDMTT, the IIR or the UTPR, in that order. The addition of the QDMTT should significantly alter the distributional impact of Pillar 2 among countries and should go some way to address concerns that previous versions of Pillar 2 would have primarily resulted in revenue gains for a handful of countries where large MNEs are headquartered.

2.2. Creation of a Floor on Total Tax Collected by "Source" Countries

Our starting point in thinking about tax competition is that the decision for a country about competition balances the marginal benefit and marginal cost of a change in the domestic tax liability. Without Pillar 2, a reduction in the domestic tax liability of $1 would have (a) a marginal cost of reducing potential revenue by $1, and (b) a marginal benefit to the multinational of reducing its tax liability by $1, which may make it more likely that the

[9] Devereux, Simmler, Vella, and Wardell-Burrus, *What is the Substance-Based Carve-Out under Pillar 2? And How Will it Affect Tax Competition?* , EconPol Policy Brief 39, 17 November 2021.

[10] Model Rules, 5.2 and 5.3.

[11] We note that Benjamin Angel, the director of direct taxation at the European Commission's Directorate General for Taxation and Customs Union, has been reported as saying that EU Member States face three choices under Pillar 2. They can 'elect to increase their corporate tax rate to at least 15 percent; increase their corporate tax rate to 15 percent only for in-scope companies; or not increase their tax rate at all and instead have the member state of the parent company collect a top-up tax on a company doing business in a low-tax jurisdiction'. (see Paez, *EU Member States Will Have Flexibility in Implementing Pillar 2*, Tax Notes International, 12 January 2022). Leaving aside the question as to the adequacy of increasing the Corporation Tax rate to at least 15% as a response (see discussion at the end of Section 2.2 below), we note that the QDMTT gives states a fourth option - maintaining a Corporation Tax rate below 15% and collecting any required top-up tax due with respect to the jurisdiction themselves.

multinational may choose to locate investment in that country, with the direct and indirect benefits that may be bring. How does Pillar 2 affect this trade off?

Suppose that Country X and Country Y compete to attract an investment from a multinational (MNE) resident in W. Currently, X and Y both levy a tax on corporate profit at 15% of financial accounting profit. Assuming the investment generates financial profit of 1000, X or Y would levy a tax of 150 on MNE if it chose to invest in either of them. No further tax liability would be due under Pillar 2 as MNE's ETR in either country would be 15% (150/1000). To explore the impact of Pillar 2 on countries' incentives to compete to attract investment, we consider the extent to which a reduction in X's Corporation Tax rate improves its competitive position relative to Y.[12] For the purpose of this example, we assume that of MNE's 1000 in financial profit, 400 is covered by the SBIE, thus leaving 600 in Excess Profit.

Table 1 shows MNE's tax liability if it chooses to invest in X following a reduction in X's Corporation Tax rate to 14% (columns 2 and 3) and to zero (columns 4 and 5). The tax liability is shown under two Pillar 2 designs: with the SBIE but without the QDMTT (columns 2 and 4), and with the SBIE and QDMTT (columns 3 and 5). The former is set out to illustrate more clearly how the addition of the QDMTT in the Model Rules alters countries' incentives.

We start with the case where X reduces its Corporation Tax rate to 14%. If Pillar 2 were adopted with the SBIE but without the QDMTT (column 2), MNE's ETR in X is 14%. The top-up rate of 1% is applied to the Excess Profit, i.e. profit net of the SBIE (600), yielding a top-up of 6 to be paid to W. Therefore, under this Pillar 2 design, X gives up 10 of revenue (as it collects 140 rather than 150 in domestic tax from MNE) but only provides MNE with a tax benefit of 4 (as MNE also pays 6 in top-up tax to W). MNE pays 146 in total tax if it invests in X compared to 150 in total tax if it invests in Y. Clearly, the incentive for X to compete under this design is weaker than it would be in the absence of Pillar 2 as $1 forgone by X in revenue, benefits MNE (and therefore X's competitive position relative to Y improves) by only $0.4 (which is equal to SBIE/Profit). In contrast, in the absence of Pillar 2, $1 forgone by X in revenue, benefits MNE by $1. Still there does remain some incentive to compete, even possibly all the way to zero, as seen in column 4. If X reduces its tax rate to zero, it forgoes 150 in revenue and provides 60 of benefit to MNE (which pays 90 in top-up tax to W). X's competitive position relative to Y is thus improved, as MNE pays 90 in tax overall if it invests in X compared to 150 in total tax if it invests in Y.

The addition of the QDMTT to Pillar 2 does not alter the total tax paid by MNE relative to the design just considered (i.e. Pillar 2 with the SBIE but without the QDMTT), but, crucially, it does increase the Total Tax collected by X, and hence its incentive to compete. If X reduces its Corporation Tax rate to 14% it collects 140 in Corporation Tax and 6 in QDMTT (column 3). It thus foregoes 4 in tax overall (150 less 146) and provides 4 in benefit to MNE. The benefit

[12] It should be pointed out at the outset that Pillar 2 liabilities depend only on the total domestic covered tax liability – not separately on the domestic tax rate and tax base. In the example below we consider competition through a reduction in the tax rate for ease of illustration, but we could equally well consider an increase in allowances. Furthermore, although the domestic tax liability includes liability from all "covered" taxes, for simplicity, we narrow our reference to domestic corporate tax. For simplicity, we also assume in our example that financial accounting profit is equal to GloBE Income.

to MNE and thus the improvement in X's competitive position relative to Y is the same as it would have been had Pillar 2 been introduced with a SBIE but without a QDMTT. But the marginal cost of this change to X is lower as it now only forgoes 4 in revenues to provide MNE with a benefit of 4; this is a 1:1 relation, as in the absence of Pillar 2. This continues to be the case as X reduces its tax rate all the way down to zero, as seen in column 5. If X reduces its tax rate to zero, it provides a benefit of 60 to MNE, which pays 90 in tax overall. This improves X's competitive position relative to Y as MNE would pay 150 in tax if it invested there. But crucially, under this design, despite reducing its Corporation Tax rate to zero X still collects 90 in QDMTT, representing a fall in overall revenue of only 60.

Table 1.

Domestic Tax Rate	**14%**		**0%**	
P2 Design	**SBIE**	**SBIE & QDMTT**	**SBIE**	**SBIE & QDMTT**
ETR				
Numerator	140	140	0	0
Denominator	1,000	1,000	1,000	1,000
ETR	14%	14%	0%	0%
Top-Up Rate	1%	1%	15%	15%
QDMTT	/	6	/	90
Top-Up Tax	1% of 600 =6	0	15% of 600 =90	0
Total Tax Paid by MNE	146	146	90	90
Tax in W (Parent's Residence)	6	0	90	0
Tax in X	140	146	0	90
X's trade off in reducing its tax rate from 15%				
Total tax forgone by X	10	4	150	60
Total tax saved by MNE	4	4	60	60
Ratio	1:0.4	1:1	1:0.4	1:1

This analysis shows that following the introduction of Pillar 2 countries still have an incentive to reduce Corporation Tax liabilities (through a lower rate or higher allowances), even possibly down to zero. But the QDMTT permits countries to tax companies up to 15% of Excess Profit without affecting their competitive position. This is the floor introduced by Pillar 2 – it is a floor on competition over Total Tax rather than Corporation Tax in the source country. As explained in our previous Policy Brief, without the QDMTT Pillar 2 would have weakened the incentive for countries to compete by reducing the Corporation Tax liability imposed on companies (relative to not having Pillar 2), but it would not have introduced a floor on tax competition in source countries.[13] Countries would have continued improving their competitive position by reducing the tax liability they imposed all the way to zero. On the other hand, the incentive to compete by reducing their Corporation Tax liability would have been weaker than it is with the addition of the QDMTT because of the higher revenue cost.

Note that the outcomes that follow from the adoption of the QDMTT cannot easily be replicated by countries through other seemingly similar routes.

- If a country with a Corporation Tax rate below 15% were to simply increase its rate to 15%, top-up taxes may still be due if the country's Corporation Tax base for any particular multinational is narrower than the Pillar 2 base (Adjusted GloBE Income, which is broadly financial accounting income – henceforth "P" for ease of reference).

- By adopting P as a Corporation Tax base with a tax rate of 15%, the country would ensure that no top-up tax liability will arise. But, critically, this would place the country at a competitive disadvantage relative to countries which impose ETRs that are lower than 15% of P. This is because the sum of the tax paid in such countries and any top-up taxes paid to other countries through the IIR or the UTPR will be lower than 15% of P where the multinational has Excess Profit. To see this, note that in column 2 of Table 1 the Total Tax paid by MNE is 146, which is less than 15% of P (150).

- Finally, the country cannot replicate the outcomes that follow from the removal of the Corporation Tax and the adoption of the QDMTT by simply setting its Corporation Tax to 15% of Excess Profit (i.e. P minus the SBIE). This may be counterintuitive because in the absence of Corporation Tax, the QDMTT itself will be 15% of Excess Profit. The difference in outcome is most easily seen by returning to our example. If Country X maintained a 15% Corporation Tax rate, but narrowed its base to Excess Profit, MNE would pay 90 in Corporation Tax implying an ETR of 9% and therefore a top-up tax of 36 ((15%-9%)*600). MNE's total tax paid would thus be 126, compared to 90 if Country X imposed no Corporation Tax and adopted a QDMTT.

To sum up, therefore, countries cannot replicate the outcomes that follow from the adoption of a QDMTT by increasing their Corporation Tax rate to 15%, even if they also replace their

[13] As noted in our previous Policy Brief, it would introduce a floor to the total amount of tax paid by the MNE on profits in each jurisdiction. Devereux, Simmler, Vella, and Wardell-Burrus, *What is the Substance-Based Carve-Out under Pillar 2? And How Will it Affect Tax Competition?* , EconPol Policy Brief 39, 17 November 2021.

Corporation Tax base with Adjusted GloBE Income or Excess Profit. One can expect this to be a factor in countries' response to Pillar 2.

2.3. Stronger Incentive to Compete on Corporation Tax

Following the introduction of Pillar 2, countries may have a stronger incentive to compete on Corporation Tax. Countries with MNEs with local ETRs below 15% and some Excess Profit (i.e. liable to a top-up) may have to reduce the Corporation Tax rate liability they impose on companies just to *retain* the same competitive position they currently enjoy relative to competitor countries. To *improve* their competitive position over competitors they will have to reduce the Corporation Tax liability they impose by *more* than they would have had to do in the absence of Pillar 2. This implies that following the introduction of Pillar 2 there is an increased probability that some countries will compete down the Corporation Tax, perhaps even all the way to zero.

Suppose that an investment by MNE would generate 1020 in income in Country Y but only 1000 in income in Country X. Y taxes the income at 15% leaving MNE with 867 in after-tax income (column 2 of Table 2). In the absence of Pillar 2, X would have to tax the income at 13% to allow MNE to earn a higher after-tax income (870) and thus attract the investment (column 3 of Table 2). In the presence of Pillar 2, X has to offer an *even lower* Corporation Tax rate (11%) to allow MNE to earn the *same* after-tax return (870) and thus attract the investment (column 4). This additional reduction in the Corporation Tax rate (11% rather than 13% of Table 2) will come at no additional revenue cost for X, as X can offset the further reduction in Corporation Tax revenues with QDMTT revenues.

Table 2.

	Country Y	**Country X**	
		No P2	**P2**
Income	1020	1000	1000
Excess Profit	500	500	500
Rate	15%	13%	11%
Total Tax	153	130	130 (CT of 110 + QDMTT of 20)
After-Tax Income	867	870	870

3. Conclusion

This Policy Brief does not cover all the considerations that will be taken into account by countries when determining their response to the introduction of Pillar 2. For example, the increase in the Total Tax liability imposed by some (currently low tax) countries following the introduction of Pillar 2 may lead others to increase the Corporation Tax liability they impose.[14] Nor does it consider other possible channels of competition that may still be open to countries following the introduction of Pillar 2. This Policy Briefly simply identifies two incentives that countries may be expected to have following the introduction of Pillar 2. Countries are expected to still have an incentive to compete by reducing their Corporation Tax liability, perhaps even down to zero. Indeed, this incentive is expected to be stronger following the introduction of Pillar 2. But countries are also expected to have an incentive to introduce a QDMTT which will thus act as a floor to competition over the Total Tax imposed by source countries.

Both incentives point towards the substitution of the Corporation Tax with the QDMTT, at least in certain countries for companies above the Pillar 2 size threshold. This change in the taxation of these companies comes as by-product of Pillar 2, but it is momentous and merits further thought.

[14] See Hebous and Keen, *Should low tax countries learn to love a minimum tax rate?*, Oxford University Centre for Business Taxation Blog, 1 November 2021, and their accompanying paper Hebous and Keen, *Pareto-Improving Minimum Corporate Taxation*, IMF Working Paper, WP/21/250.

Appendix: A more formal analysis

1. Define the top-up tax

OECD (2021) sets out the procedure for calculating the Pillar 2 top-up in two stages.

1.1 Determine the effective tax rate

To keep the analysis straightforward, assume that there is only one constituent entity in the relevant jurisdiction. The effective tax rate in the jurisdiction is therefore

$$e = \frac{T}{P}$$

where
T = adjusted covered taxes
P = net GloBE income

1.2 Determine the top-up tax and QDMTT

This is determined in three stages.[15]

1.2.1 Determine the top-up tax percentage, equal to the minimum rate (defined here as *m*, equal to 15%) less the ETR.

1.2.2 Determine excess profit, equal to the net globe income (*P*) less the substance-based income exclusion (*C*).

Combining these determines the overall required top-up, in the event that $m > e$:

$$J = (m - e)(P - C)$$

1.2.3 Deduct Qualified Domestic Minimum Top-up Tax (QDMTT). This is defined as a top-up tax levied by the source country, with a tax base of $P - C$. Applying a rate of *q* to this base, this is therefore:

$$Q = q(P - C)$$

In practice, it is likely that $q = 0$ or $q = m - e$.

The top-up tax levied by other jurisdictions is then[16]

$$K = J - Q = (m - e)(P - C) - Q$$

[15] We abstract from the "additional current top-up tax", see OECD (2022), para 5.4.

[16] With a limit that $q \leq m - e.$

$$= (m - e - q)(P - C)$$

Combining these expressions, the total tax liability of the multinational is

$$Z = T + Q + K = T + J$$

In general, we can think of the domestic tax as being $T = \tau(P - G)$, where *G* is an arbitrary deduction from financial accounting profit. Substituting this and the definition of *e* into this expression, and rearranging, it is possible to show that the total tax liability of the MNE is:

$$Z = m(P - C) + T\frac{C}{P}$$

The total tax liability therefore consists of two components:

- The minimum tax rate, m, applied to excess profit $(P - C)$; and
- Adjusted covered taxes, $T = \tau(P - G)$, multiplied by the ratio of the substance-based income exclusion (*C*) to net globe income (*P*).

In the special case in which $G = 0$, then $Z = m(P - C) + \tau C$.

2. Incentives for Source Country

2.1 Choice of *q*

The tax revenue collected by the source country is

$$D = T + Q = \tau(P - G) + q(P - C)$$

Note that we are considering the case in which $m > e$ and $q \leq m - e$.

The country is able to choose three tax parameters, τ, G and q, (or equivalently, T and q), conditional on these two constraints.

Note that the total tax liability of the multinational, Z, does not depend on q. That is because other countries give a full credit for the Qualified Domestic Minimum Top-up Tax. Assuming that the source country would prefer to receive tax revenue itself, then it should clearly choose:

$$q = m - e$$

This in effect gives the source country the revenue from the Pillar 2 top-up.

2.2 Choice of covered taxes, *T*

2.2.1 Marginal incentives

Note that the choice of q makes a difference to the marginal incentive for the source country to compete on the Corporation Tax.

If $q = m - e$ then the total tax revenue of the source country is

$$D = T + \left(m - \frac{T}{P}\right)(P - C) = m(P - C) + T\frac{C}{P}$$

Not surprisingly, this is exactly the same as the total tax liability of the multinational. Since the source country receives all of the top-up tax, then no other country receives any revenue.

In general, the source country may seek to trade-off higher revenue against any disincentive that is created for the multinational to invest in that country. Consider, for example, the case in which the country seeks to attract investment by cutting the covered tax, *T*, by $1. This will reduce the overall tax liability of the multinational, and the net revenue of the source country, by $*C/P*. In effect, there is a one-to-one trade-off for the country. Just as in a system without the minimum tax, any reduction in the multinational's tax liability is exactly borne by a reduction in the revenue from the covered tax of the country.

However, if $q = 0$, the source country does not collect the QDMTT. In this case, a $1 reduction in the Corporation Tax reduces the country's revenue by $1. But there is only a reduction of $*C/P* in the liability of the multinational, as another country will collect the top-up charge. This reduces the balance of incentives for the source country, since giving up $1 of revenue would have a smaller effect on the incentive of the MNE to choose to locate there.

Especially with $q = m - e$, then at the extreme, the country may choose to set $T = 0$. This minimises the tax liability of the multinational and minimises the total revenue received by the country. However, through the top-up tax, the overall tax liability would not be zero: it would be equal to $m(P - C)$, the minimum tax rate applied to excess profit.

2.2.2 Location of real activity

Suppose countries X and Y compete for real inward investment from MNE resident in country M. Real costs are lower in Y, and so pre-tax profit is higher in Y. Denote pre-tax profit in Y as π_Y and pre-tax profit in X as π_X. The difference in pre-tax profit is $D = \pi_Y - \pi_X > 0$. In the absence of tax MNE will therefore choose to locate in Y.

The tax in Y applies a rate *v* to total profit, so the post-tax profit in Y is $(1 - v)\pi_Y$.

No Pillar 2:

The tax in X applies a rate *w* to total profit, so the post-tax profit in X is $(1-w)\pi_X$.

In the absence of Pillar 2, X can only capture the inward investment by setting *w* low enough. The highest *w* that X can levy - which we denote with an asterisk, and subscript of 1 to denote the absence of Pillar 2, i.e. w_1^* - is

$$(1-w_1^*)\pi_X = (1-v)\pi_Y$$

which implies that

$$w_1^* = 1 - \frac{(1-v)\pi_Y}{\pi_X}$$

The maximum revenue that X can receive whilst still having the investment is $w_1^*\pi_X$, which in this case is

$$w_1^*\pi_X = \pi_X - (1-v)\pi_Y = v\pi_Y - D$$

which is equal to the revenue collected in Y less the difference in the pre-tax profit.

With Pillar 2, including QDMTT:

Now introduce Pillar 2 top-up, together with the QDMTT, and assume that $q = m - e$. Further assume, for simplicity, that the tax base in X is simply *P*, and also assume that $v \geq 15\%$ so that there is no Pillar 2 charge in Y. So the ETR in X is w, and the QDMTT in X is

$$(m-w)(\pi_X - C)$$

This means that the total tax on profit earned in X is

$$w\pi_X + (m-w)(\pi_X - C) = m(\pi_X - C) + wC$$

To match the net profit in Y, then X needs to set its maximum tax rate, w_2^*, to achieve

$$m(\pi_X - C) + w_2^* C = (1-v)\pi_Y$$

This implies that

$$w_2^* = \frac{(1-v)\pi_Y - m(\pi_X - C)}{C}$$

The maximum revenue that X can receive, using the QDMTT, is

$$m(\pi_X - C) + w_2^* C = v\pi_Y - D$$

In order to match the net income of the MNE in Y, the tax levied on the MNE from activities in X must be equal to $v\pi_Y - D$. If we allow X to choose only the tax rate, *w*, then the tax liability on activity in X must be unchanged by Pillar 2. That is:

$$w_1^*\pi_X = m(\pi_X - C) + w_2^*C$$

We can therefore compare w_1^* and w_2^*:

$$(m - w_1^*)\pi_X = (m - w_2^*)C$$

We know that $\pi_X \geq C$, which implies that $(m - w_1^*) \leq (m - w_2^*)$, which implies in turn that $w_2^* \leq w_1^*$.

That is, to achieve the same outcome for real inward investment as in the absence of Pillar 2, country X has to choose a lower CIT rate with Pillar 2.

3. Profit Shifting

Consider the option for a multinational to shift $1 of profit from a high tax country - with a tax rate of *s* – to country X. This will save tax of $$s$ in the high tax country.

Shifting $1 represents a rise in *P* of $1. In the absence of Pillar 2, this would lead to higher tax of $τ. The overall reduction in tax would therefore be $\$(s - \tau)$.

With Pillar 2, together with the QDMTT, and assuming that $q = m - e$, the overall tax liability on income arising in X is

$$Z = D = m(P - C) + \tau(P - G)\frac{C}{P} = m(P - C) + \tau C - \tau G\frac{C}{P}$$

The effect of a marginal increase in *P* on the tax liability is therefore

$$\frac{\partial Z}{\partial P} = m + \tau G\frac{C}{P^2}$$

which in effect represents the marginal tax rate in the source country. Note that this is company-specific, since it depends on *P, C* and *G.*

The overall reduction in tax from shifting $1 is therefore

$$R = s - \left(m + \tau G\frac{C}{P^2}\right)$$

Assuming that τ is low, this is likely to be much smaller than in the absence of Pillar 2. For example, a source country that wanted to compete to the extreme for profit could set $\tau = 0$ in the presence of Pillar 2. In this case, the gain in terms of reduced tax is $\$(s - m)$.

Unless the original tax rate was close to *m*, this would represent a reduction in the incentive to shift profit to the source country. That is possible. Suppose that in the absence of Pillar 2, X applies a high rate to a narrow base – that is both τ and G are large. For example, suppose that, in the absence of Pillar 2, X chooses τ=15% and $G > C$. Its tax revenue is therefore $T = 0.15(P - G)$. With the introduction of Pillar 2 and setting $q = m - e$, the minimum total revenue X would raise is $T = 0.15(P - G)$ – more than in the absence of Pillar 2 and also with $\tau = 0$. If X set $\tau = 0$ on the introduction of Pillar 2, then $1 shifted to that country would be taxed at a rate of *m*=15%. In this case, there would be no impact on the incentive to shift profit to X. However, this is perhaps an unusual example; it seems unlikely that that MNE would have shifted profit to X in the absence of Pillar 2, when there exist other countries with lower statutory rates.