Revenue Effects of the Global Minimum Corporate Tax Rate for African Economies

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Abstract

This policy brief provides the first piece of empirical evidence on the revenue implications of the recent global minimum tax rate reform agreement for African economies. We implement a regression discontinuity design to evaluate the effect of having an effective corporate tax rate of at least 15% on tax revenue collection for a panel of 28 African economies over the period 2000-2020.

The estimation results indicate that the implementation of the global minimum effective corporate tax rate of 15% proposed under Pillar II of the Organisation for Economic Co-operation and Development (OECD) Two Pillar Solution has a positive but not statistically significant likely impact on corporate tax revenue and total tax revenue at the conventional significance levels. This suggests that the global minimum tax deal is unlikely to increase tax revenue for African economies. These findings exhort the Inclusive Framework and all the stakeholders of the global tax reform negotiations to consider revising the global minimum tax rate rules to ensure that the agreement will effectively benefit African countries through better tax revenue collection.

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Le présent rapport sur les politiques démontre, pour la première fois, les conséquences pratiques qui résulteront, en termes de recettes, de la conclusion de l'accord international sur le taux d'imposition mondial minimum pour les économies africaines. En s'appuyant sur un modèle de discontinuité de la régression, elle se propose d'évaluer les effets liés à la fixation d'un taux effectif d'imposition des entreprises d'au moins 15 % sur le montant des recettes fiscales perçu par 28 économies africaines sur la période 2000-2020.

Les résultats de l'évaluation indiquent que l'application du taux d'imposition minimal de 15 % fixé dans le cadre du pilier II de la solution reposant sur deux piliers de l'Organisation de coopération et de développement économiques (OCDE) aura un impact positif mais non statistiquement significatif, aux seuils habituels, sur les recettes fiscales provenant des entreprises et le montant total des recettes fiscales. Ils suggèrent que l'accord international sur l'impôt minimum est peu susceptible d'augmenter les recettes fiscales des économies africaines. Les conclusions de cette évaluation appellent le Cadre inclusif et toutes les parties prenantes aux discussions concernant la réforme du système fiscal à l'échelle internationale à revoir les règles relatives au taux d'imposition minimum afin de s'assurer que l'accord bénéficiera effectivement aux pays africains grâce à une meilleure perception des recettes fiscales.

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En este informe sobre políticas se proporciona la primera prueba empírica sobre las consecuencias para los ingresos de las economías africanas a partir del reciente acuerdo que se ha adoptado sobre la reforma del tipo impositivo mínimo mundial. Implementamos un diseño de regresión continua para evaluar las repercusiones de aplicar un tipo efectivo del impuesto de sociedades de al menos el 15 % a una recaudación de ingresos tributarios en un panel de 28 economías africanas durante el período 2000-2020.

Los resultados de la estimación indican que la implementación del tipo impositivo mínimo efectivo mundial sobre el impuesto de sociedades del 15 % propuesto con arreglo al Pilar 2 de la solución de dos pilares de la Organización para la Cooperación y el Desarrollo Económicos (OCDE) tiene un probable impacto positivo aunque no estadísticamente significativo en los ingresos tributarios en concepto de impuesto de sociedades y los ingresos fiscales totales a niveles de importancia convencional. Esto indica que es poco probable que el acuerdo relativo al tipo impositivo mínimo mundial logre aumentar los ingresos tributarios de las economías africanas. Estos resultados exhortan al Marco Inclusivo y todas las partes interesadas de las negociaciones relativas a la reforma del tipo impositivo mundial a que consideren una revisión de las normas en materia de tipo impositivo mínimo mundial para que garanticen que el acuerdo beneficie efectivamente a los países africanos a través de una mejor recaudación de ingresos tributarios.

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1. Introduction

In October 2021, 136 out of the 140 jurisdictions of the Organisation for Economic Co-operation and Development (OECD)/Group of Twenty (G20) Inclusive Framework engaged in discussion for changes to international tax rules reached an agreement on a Two-Pillar tax reform proposal for addressing outstanding tax challenges. The first Pillar of the agreement aims to address the tax challenges arising from the digitalisation of the economy. This Pillar gives a taxing right to countries where large multinational companies have customers without having a physical presence in these "market jurisdictions". The second Pillar introduces a global minimum effective corporate tax rate of 15% to prevent a global race to the bottom in corporate taxation and to combat tax evasion and tax avoidance by multinational enterprises through base erosion and profit shifting. However, the rate of 15% is considered too low by some Group of 7 (G7) and African countries for effectively preventing a global race to the bottom in corporate taxation and combatting tax evasion through base erosion and profit shifting. Thus, the United States proposed 21% as the minimum rate, one percentage point above the 20% rate proposed by the African Tax Administration Forum (ATAF) as the global minimum corporate tax rate (Garver, 2021). While the current proposal has adopted 15%, the reflections on the optimal threshold for the global minimum corporate tax rate still constitute a potential avenue for revising the proposal.

Basically, the implementation of the global minimum corporate tax rate may lead countries to review tax incentives in domestic law and investment contracts to align the effective tax rate with the global tax rate (Readhead, Lassourd and Mann, 2021). Nonetheless, it would be difficult to amend tax incentives subject to fiscal stabilisation clauses in law or contracts, a factor which may impede the full implementation of the global minimum tax rate rule (Readhead *et al.*, 2021). Furthermore, it is possible that with the implementation of a minimum global effective corporate tax rate, African countries that were attractive because of their generous tax provisions may experience a decline in foreign direct investment inflows, thereby leading to a potential reduction of their corporate tax bases. Furthermore, some countries may fully comply with the global minimum tax rate, but they can still offer tax credits to multinational enterprises to attract investments, which may undermine the revenue gain from implementing the global minimum tax rate. Accordingly, the theoretical impact of the minimum effective corporate tax rate on tax revenue for African economies is controversial.

In the context of this background, this study provides the first piece of empirical evidence on the likely tax revenue implications of the global minimum effective corporate tax rate for African economies using regression discontinuity design (RDD), one of the most credible strategies to estimate causal effect in non-experimental settings, particularly when the treatment is assigned based on a cut-off (Imbens and Lemieux, 2008; Meyersson, 2014; Hahn, Todd, and Van der Klaauw, 2001).

We find that the association between the global minimum effective tax rate at 15% and corporate tax revenue and total tax revenue is positive but not statistically significant at the conventional significance levels. The same result is obtained when the global minimum tax rate is set at 20%. These results corroborate the fears that implementing the global minimum effective corporate tax rate proposal in its current version will not likely increase tax revenue collection for African economies.

## 2. Overview of OECD/G20 Two Pillar Global Tax Reform Proposal

The new deal in international taxation reached on 8 October 2021 between 136 jurisdictions among 140 of the Inclusive Framework contains two Pillars. As noted, Pillar 1 is dedicated to allocating profits and taxing rights to jurisdictions where multinationals conduct activities without a significant physical presence. Pillar 2 introduces a global minimum effective corporate tax rate for addressing tax avoidance and tax competition among countries. The two Pillars of the agreement include different components (figure 1).

The second Pillar of the global tax reform agreement (Pillar 2) introduces a global minimum effective corporate tax rate set at 15%. Pillar 2 contains three rules, including two main rules (income inclusion rule and undertaxed payment rule) and then a third rule for tax treaties (subject to tax rule). These rules would apply to companies with gross annual revenue above €750 million.

The "income inclusion rule" indicates the extent to which the foreign income of a subsidiary should be included in the taxable income of the parent company such that the effective tax rate should be "at least 15 percent," otherwise top-up taxes would be paid by the parent company in its home jurisdiction. More precisely, if a subsidiary's effective corporate tax rate is below 15% (the minimum globally agreed rate), its parent company must pay a "top-up tax" on its proportionate share of the income of the low-taxed subsidiary to the country where it is headquartered (Readhead, Lassourd and Mann, 2021).

The immediate consequence of the income inclusion rule is that the major beneficiaries of the implementation of a global minimum tax rate would be the developed countries that host many multinational enterprises headquarters. The income inclusion rule would apply to foreign profits after deducting 7.5 percent of the value of tangible assets (like equipment and facilities) and payroll costs. After a five-year transition period, the deduction would be lowered to 5 percent. The income inclusion rule is likely to neutralise the tax incentives based-competitiveness of countries such that capital owners' decisions on where to hire and invest around the world will not be significantly influenced by generous tax provisions.

Figure 1: Structure of the global tax reform proposal
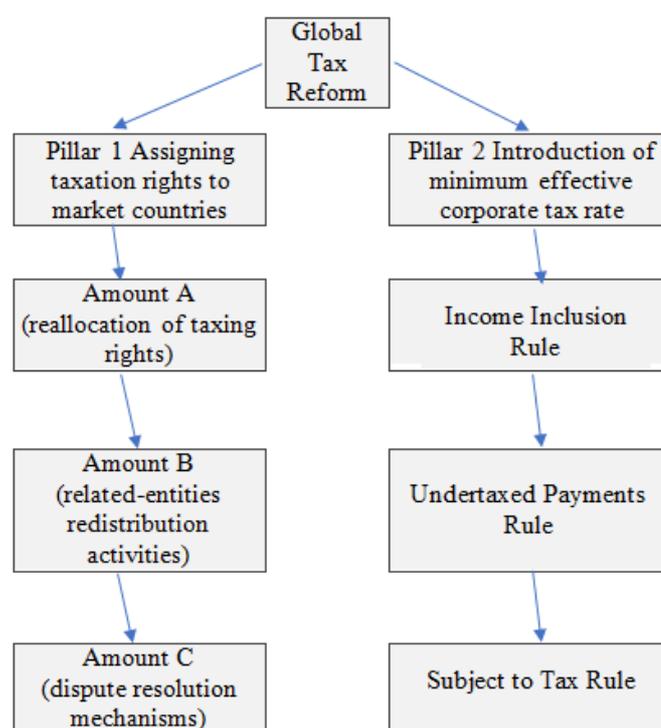
Source: Author's own elaboration

The second rule of Pillar 2, the so-called "under-taxed payments rule", allows a jurisdiction to deny a deduction for (or apply) a withholding tax on international payments. The under-taxed payments rule could apply to situations where a subsidiary company is making payments back to its parent company which is in a low-tax jurisdiction.

The income inclusion rule and the under-taxed payment rule tie multinational enterprises to the global minimum effective rate of 15%. However, the agreement provides an exception indicating that multinational enterprises with a maximum €50 million in tangible assets abroad and operations in a maximum of 5 other countries (multinational enterprises in the initial phase of their international activity) would be exempt from the undertaxed payment rule for five years.

The third rule in Pillar 2 is the "subject to tax rule". This rule would be used in bilateral tax treaties to allow source countries to apply limited source taxation to some party-related payments that might otherwise be taxed under the minimum rate. The tax rate for the "subject to tax rule" is set at 9 percent.

The implementation of Pillar 2 of the reform suggests that the amount of corporate income tax revenue the government will be collecting from any subsidiary of a multinational enterprise is expected to be at least 15% of that subsidiary's profits. Since, for most African countries, the statutory corporate income tax rate ranges from 20 to 35% (ATAF, 2021; Brun and Coulibaly, 2019), *a priori*, it should not be difficult for these countries to achieve a minimum corporate effective tax rate

of 15%. However, some African countries may fail to reach the minimum effective corporate tax rate of 15% when companies benefit from large tax incentives, including tax holidays, preferential tax rates, tax credits, investment allowances and income exemptions.

Empirical Analysis

3.1 Empirical Model

At the country level, the implementation of Pillar 2 of the global minimum tax rate reform will be confirmed when the effective corporate tax rate is at least 15%. Countries experiencing considerable amount of illicit financial outflows through tax evasion and tax avoidance are more likely to implement global tax reform rules. Accordingly, the estimation of the revenue impact of global minimum tax rate reform from standard regression analysis may be biased in such circumstances due to the self-selection in complying with the implementation of Pillar 2 rules. Since regression discontinuity design (RDD) estimates treatment effect in non-experimental settings when treatment assignment (T_i) is determined based on an observed "assignment" or forcing variable (a_i) exceeds a known cut-off score (c), this research design could be an alternative option for estimating the revenue impact of global minimum tax rate reform (Meyersson, 2014; Hahn, Todd, and Van der Klaauw, 2001; Imbens and Lemieux, 2008). The RDD exploits a discontinuity in the treatment assignment by comparing panel units with values just above and below the cut-off point to identify a treatment effect (Meyersson, 2014) without relying on functional form assumptions. The credibility of RDD estimates has been em-

phasised by Brodeur *et al.* (2020), who find that RDD is less susceptible to p-hacking and selective reporting than instrumental variable and difference-in-difference methods.

The assignment variable in our design is the effective corporate income tax rate, and the cut-off is 15%. The countries above the cut-off are assigned to the treatment group (mi >= 15), while those that fall below the cut-off (mi < 15) constitute the control group. The treatment is assigned following a deterministic rule, $T_i = 1\{x_i \geq c\}$, where $1\{\cdot\}$ is the indicator function.

We consider the following specification for estimating the regression discontinuity treatment effect:

$$y_i = \alpha + \beta T_i + f(a_i) + \varepsilon_i \qquad (1)$$

$$\forall a_i \in (c - h, c + h)$$

where y_i is the outcome variable (tax revenue ratio), T_i is the treatment, a_i is the assignment variable, and h is a neighbourhood around the cut-off c, hereby referred to as the bandwidth. $F(a_i)$ is the control function, an n-order continuous polynomial function in the assignment variable on each side of the cut-off c.

Following Meyersson (2014), we use local linear regressions (Hahn, Todd, and Van der Klaauw (2001); Porter (2003); Imbens and Lemieux (2008)) as the main method because this method combines both setting a suitable bandwidth with a linear control function (Meyersson, 2014). Furthermore, we add covariates in the regression discontinuity (RD) local polynomial analysis to improve the efficiency of the estimations (Cattaneo, Idrobo, and Titiunik, 2020; Calonico *et al.*, 2019). We include foreign direct investment, trade openness, inflation, Gross Domestic Product (GDP) growth, government effectiveness, tax administration digitalisation, digitalisation of the economy, natural resources rents, agriculture, forestry and fishery value added, and official development assistance as control variables in the RDD estimation. These variables are potential determinants of tax revenue because foreign investors, poor quality of socio-economic infrastructure, trade liberalisation and macroeconomic instability (inflation) may push the government to grant tax incentives to support the country's competitiveness. We include GDP per capita growth as a control variable to consider the fact that high-income countries, in general, do not offer large tax incentives, something which is understandable because as the country develops with an intense economy, the government is in a strong position to refuse granting tax incentives to investors.

3.2 Data

Data on tax expenditures measured by revenue forgone in percent of GDP from tax incentives are collected from the Global Tax Expenditures Database (GTED) built by the Council on Economic Policies and the German Development Institute (Redonda *et al.*, 2021). Revenue forgone data are available for 28 African countries over the period 1990-2020 in the GTED. The GTED con-

tains some missing values for the variable revenue forgone. For the 28 African countries, the first year for which data are available on revenue forgone is the year 2000 for Tanzania. Therefore, we retain the year 2000 as the starting period of the panel (2000-2020).

Corporate income tax revenue data are extracted from the government revenue database developed by the International Centre for Tax and Development and the United Nations University World Institute for Development Economics Research (ICTD/UNU-WIDER-GRD) database. We use statutory corporate income rate data from the Tax Foundation's Corporate Tax Rates Around the World database. Where missing, Tax Foundation's statutory corporate income tax rate data have been fulfilled by statutory corporate income tax rate data of the Fiscal Affairs Department of IMF (IMF-FAD).

We compute effective corporate tax rate (ETR) using data on tax expenditure, tax revenue and statutory corporate tax rate (STR) as inputs in the following approach:

(Accounting Profit) x STR - (tax expenditures[1]) = actual taxes (2)

Accounting profit = (actual taxes + tax expenditures) / STR (3)

ETR = actual taxes / accounting profit (4)

ETR = actual taxes / ((actual taxes + tax expenditures) / STR) (5)

The descriptive statistics of all the variables are reported in table 1. For the sample under study, on average, the revenue forgone due to tax expenditure represents 2.33 % of GDP, while the average statutory corporate tax rate is 30.73%, and the effective corporate tax rate is 15.72%. On average, corporate income tax revenue and total tax revenue respectively accounts for 2.2% of GDP and 14.7% of GDP.

4. Results

This section presents the main findings from the RDD regressions[2] carried out to estimate the likely impact of the global minimum tax rate on corporate tax revenue for African economies.

We first present a graphical representation of the RD design in Figure 2, where corporate income tax revenue averages in percent of GDP are plotted against the effective corporate income tax rate. Figure 2 indicates an overall positive relationship between corporate income tax revenue and effective corporate tax rate when the polynomial order of the control function is 1. However, when the polynomial order of the regression equation is higher than 1, corporate income tax revenue tends to decrease beyond a certain level of the effective corporate tax rate, suggesting that the graphical observation is inconclusive about the sign of the association between effective corporate tax rate and corporate tax revenue.

In table 2, we present the results from the econometric regression analysis to refine the graphical analysis. In the

Table 1: Descriptive statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
Tax revenue	512	14.726	8.319	0.573	60.946
CIT revenue	393	2.207	1.673	0.119	10.333
Tax expenditure	222	2.332	1.504	0.02	13.14
Statutory CIT rate	574	30.735	5.303	15	50
Effective CIT rate	149	15.720	6.338	4.672	36.451
GDP growth	587	4.085	4.625	-36.391	26.417
Trade openness	448	74.139	43.381	20.722	311.354
FDI	560	4.313	8.503	-11.624	103.337
Agriculture, forestry, and fishery value added	577	22.654	14.387	1.880	79.042
Natural resource rents	494	9.051	7.502	0.001	40.492
Domestic credit provided by banks	453	19.846	19.367	0.449	106.260
Inflation	568	7.191	26.663	-9.616	513.906
Government effectiveness	468	-0.610	0.6039	-1.884	1.056
Internet users	468	9.436	13.645	0.006	58.769
e-filing	494	0.180	0.384	0	1
Net ODA	558	8.841	9.658	-0.250	92.141

estimation results tables (tables 2 and 3), RD Estimate is the estimated likely impact of the global minimum corporate effective tax rate on corporate tax revenue. In other words, RD Estimate indicates in which proportion corporate tax revenue collection may vary due to the implementation of the global minimum tax rate rules. In tables 2 and 3, the stars are used to flag levels of statistical significance of the estimated impacts for the likely revenue impact of the global minimum effective corporate tax rate at the three most commonly used statistical significance levels. The value of the estimated impact (RD Estimate) flagged with one star (*), two stars (**), and three stars (***) respectively suggest that the likely revenue impact of global minimum tax revenue is statistically significant at 10%, 5% and 1% level. The absence of star(s) next to the estimated value for RD Estimate indicates that the likely revenue impact of the global minimum tax rate is not statistically significant at the conventional significance levels.

Figure 2: RDD illustration of the relationship between effective corporate tax rate and corporate income tax revenue
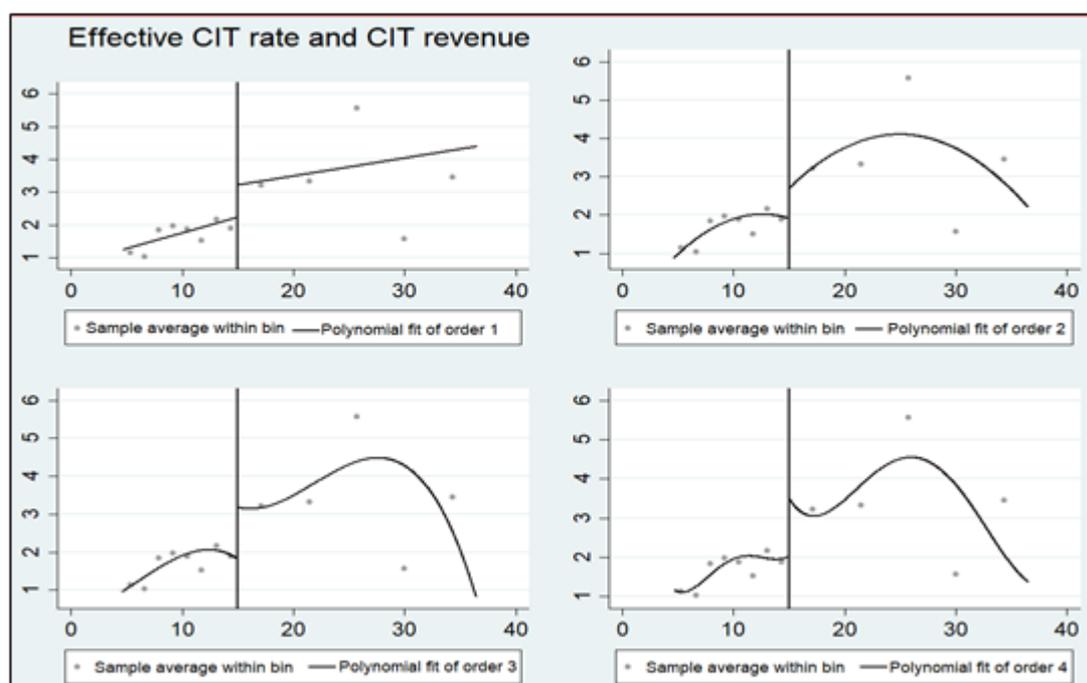
Notes: Averages for a sample of 28 African economies; Effective corporate income tax (CIT) rate on the x-axis; CIT revenue (%GDP) on the y-axis.

Table 2: Global minimum effective corporate income tax rate and corporate tax revenue

Log (CIT revenue (%GDP))	(1)	(2)	(3)	(4)	(5)	(6)
RD Estimate	0.068	0.201	0.140	0.091	0.176	0.203
	(0.147)	(0.239)	(0.254)	(0.189)	(0.243)	(0.396)
Observations (N)	108	108	108	110	110	110
Polynomial order of the control function	1	2	3	1	2	3
Threshold of the forcing variable	15	15	15	15	15	15
N right	55	55	55	55	55	55
N left	53	53	53	55	55	55

Notes: Robust Standard errors in parentheses. *** $p<0.01$, ** $p<0.05$, * $p<0.1$

The results from covariate-adjusted sharp RD estimates using local polynomial regression indicate a positive but not statistically significant regression design (RD) estimate of 0.1-0.2 percentage point treatment effect on corporate tax revenue (table 2, column 1, 2 and 3). These results are stable for alternative polynomial order for the control function (table 2). The main results also remain unchanged when only the covariates that pass the falsification test are included in the regression (table 2, columns 4, 5 and 6).

The main findings of the analysis indicate that the implementation of a global minimum effective corporate tax rate is likely to end up with no gains in terms of corporate tax revenue collection for African economies. This result is in line with the conclusion of Jacobs (2022), who finds *"that most Low- and Middle-income countries are likely to gain close to nothing by adopting Pillar 2."* More generally, the findings of our analysis are in harmony with McCarthy (2022), who considers that the Inclusive Framework proposal on global tax reform failed to lay the foundations to stimulate corporate tax revenue for low- and middle-income countries.

The absence of a statistically significant likely impact of the implementation of the global minimum corporate tax rate on tax collection performance could be explained by the relatively narrow scope of Pillar 2. In fact, the global minimum tax rate rules may end up applying to few companies, leaving aside many large taxpayers in African countries, because only enterprises that exceed the revenue threshold of EUR 750 will be subjected to Pillar 2, a factor that may neutralise the net revenue generation power of Pillar 2 (McCarthy, 2022).

Furthermore, fiscal stabilisation clauses in major investments projects may impede the materialisation of any potential gain from the global minimum tax rate through the cancellation of preferential tax treatments to bring the effective tax rate up to the global minimum tax level, at least in the short and medium term (Readhead *et al.*, 2021).

In fact, even if the minimum effective corporate tax rate of 15% is adopted in national tax laws, it may not be automatically applied by African countries under current agreements with multinational enterprises benefiting from fiscal stability clauses for their operations since the countries are bound to not unilaterally increase their tax rate for the ongoing contracts. Companies benefiting from fiscal stability clauses for their investment projects can cause resistance to countries that intend to unilaterally rationalise tax incentives or introduce a minimum tax on gross revenue applicable to these existing investment projects. This challenge makes prospects of more tax revenue collection from the implementation of Pillar 2 uncertain.

Moreover, the risks of tax base erosion for African countries related to the global minimum tax rate may have the unintended consequence of driving investments out of African countries (Redonda, 2022), a factor that may neutralise the revenue gains from reducing tax incentives to increase effective corporate income tax rate up to the global minimum rate if it is not yet there. In fact, it is difficult to rigorously guarantee that African countries will benefit from foreign direct investment (FDI) inflows as in the past if the effective corporate tax rate is harmonised around the world. Accordingly, African countries with poor infrastructure and business climate may experience a portion of FDI outflows due to the erosion of their tax attractiveness (Boly, Coulibaly and Kéré, 2020) and thereby render the global minimum tax rate less effective for these economies.

The top-up tax to bring the effective corporate tax rate at the global minimum threshold will be primarily collected by the countries where multinationals are headquartered (home countries), which are predominantly high-income countries (income inclusion rule), to the detriment of African countries. This reduces the prospect for African economies to collect substantial revenue from implementing the global minimum tax rate.

While Pillar One of the global tax reform will constrain African countries from introducing unilateral anti-base erosion taxes like digital service taxes and 'similar related measures" to bring up effective corporate tax rate to the

minimum threshold, the so-called "Subject To Tax Rule" that would allow African countries to modify bilateral tax treaties to collect more withholding taxes is capped at only 9% on only royalties and interests (excluding, for now, most service fees, capital gains, dividends and technical fees). Therefore, the "Subject to Tax Rule" will not generate revenue gains if tax havens do not ratify the Multilateral Instrument (MLI) aiming to facilitate swift and consistent implementation of that rule in relevant bilateral tax treaties. In fact, most tax havens rely on grandfathered treaties with low withholding rates to attract companies to incorporate into their jurisdiction. There are fewer incentives for tax havens to renegotiate beneficial grandfathered treaties that allow them to be in business.

The global minimum tax rate aims to discourage the use of corporate tax incentives to attract FDI. Although the effectiveness of tax incentives in attracting investments is debatable (Coulibaly and Camara, 2022), African countries wanting to use tax incentives can grant multinational enterprises alternative tax benefits that are not related to corporate taxation (McCarthy, 2022; Redonda, 2022), thereby continuing the race to the bottom and undermining the overall revenue-raising power of a global minimum effective corporate tax rate. This could explain the result indicating that the likely revenue impact of the global minimum tax rate on total tax revenue is not statistically significant (table 3, columns 1, 2 and 3). The estimates do not provide evidence of the global minimum tax rate's significant impact on corporate tax revenue when the minimum rate is set at 20% (table 3, columns 4, 5 and 6). This result suggests that initiatives geared toward revising Pillar 2 should be more focused on revising the global minimum tax rules rather than on the threshold for the minimum tax rate.

From that perspective, policymakers and all the stakeholders engaged in the elaboration of a global tax reform may consider revising the order of priority for the income inclusion rule such that instead of home countries, source countries become the primary beneficiaries for charging a top-up tax on any under-taxed income. The Pillar 2 threshold could be revised down to bring as much as possible many multinational enterprises under the scope of the global minimum effective tax rate. Furthermore, the international community, particularly the Inclusive Framework stakeholders, should envisage supporting African countries willing to amend tax provisions of existing investment projects subject to fiscal stability clauses in order to bring up their effective tax rate to 15% (Readhead et al., 2021).

5. Conclusion and Policy Implications

This study contributes to the debate on the revenue implications of the global minimum corporate tax rate for African economies. We implement a regression discontinuity design to evaluate the likely effect of having an effective corporate tax rate of at least 15% on tax revenue performance.

The results indicate that the implementation of the global minimum effective corporate tax rate of 15% (or even 20%) will not stimulate tax revenue collection for African economies. These results do not necessarily mean that the proposal of introducing a global minimum tax rate is bad. The findings of this paper rather encourage the Inclusive Framework and all the stakeholders of the global tax reform negotiations to consider revising the global minimum tax rate rules agreement to ensure that the agreement will effectively benefit African economies.

The stakeholders engaged in the elaboration of global tax reform may consider granting priority to source countries instead of home countries for collecting a top-up tax on any undertaxed income. The Pillar 2 threshold could be revised to include as many multinational enterprises as possible under the scope of the minimum effective corporate tax rate. Furthermore, the Inclusive Framework should explicitly envisage to strongly support African countries willing to amend tax provisions of existing in-

Table 3: Revenue impacts of the minimum effective corporate income tax rate

Dependent variable	(1) total tax revenue	(2) total tax revenue	(3) total tax revenue	(4) CIT revenue	(5) CIT revenue	(6) CIT revenue
RD Estimate	0.251	0.338	0.326	0.082	-0.370	-0.103
	(0.287)	(0.372)	(0.344)	(0.162)	(0.381)	(0.390)
Observations (N)	110	110	110	110	110	110
Polynomial order of the control function (p)	1	2	3	1	2	3
Threshold of the forcing variable (c)	15	15	15	20	20	20
N right	55	55	55	23	23	23
N left	55	55	55	87	87	87

Robust Standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

vestment contracts that are subject to fiscal stability clauses, in order to bring up their effective tax rate to 15%. These revisions can facilitate the political acceptability and the implementation of the reform in African countries.

Endnotes:

[1] Ideally, we should use in this calculation tax expenditures from tax incentives granted to companies. However, for African countries, we do not obtain disaggregated data on tax expenditures resulting from tax incentives granted to companies. Accordingly, we alternatively used tax expenditures granted to all the beneficiaries of tax incentives (companies, CSOs and individuals). Since companies are the major beneficiaries of tax incentives in Africa and the amount of tax incentives going to other beneficiaries (CSO, individuals) is often negligible compared to the tax expenditure going to enterprises, we think that our approach is acceptable because the potential bias from using total tax expenditures instead of tax expenditures from companies could be considered as negligible for African economies.

[2] The estimation results pass all the statistical and econometric tests carried out for validating the choice of the RDD used to estimate the likely impact of the global minimum corporate tax rate on corporate income tax revenue for African economies. For moderating the econometric technicality of this Policy Brief, which is intended for policymakers, who may not be familiar with technical econometric details, the results of these statistical and econometric tests (available upon request from the author) are not reported in the document.

References

African Tax Administration Forum (ATAF, 2021). A new era of international taxation rules— What does this mean for Africa? ATAF Communication, 8 October. Available from https://www.ataftax.org/a-new-era-of-international-taxation-rules-what-does-this-mean-for-africa.

Boly, A., S. Coulibaly and E. N. Kéré (2020). Tax Policy, Foreign Direct Investment and Spillover Effects in Africa. *Journal of African Economies*, Vol. 29, No. 3, pp. 306–331.

Brodeur, A., C. Nikolai and H. Anthony (2020). Methods Matter: p-Hacking and Publication Bias in Causal Analysis in Economics. *American Economic Review*, Vol. 110, No. 11, pp. 3634-60.

Brun J.-F. and S. Coulibaly (2019). Domestic and cross border spillover effects of corporate tax policy in Africa. *Études et Documents*, No. 17, CERDI.

Calonico, S., M. Cattaneo, M.H. Farrell and R. Titiunik (2019). Regression Discontinuity Designs Using Covariates. *The Review of Economics and Statistics*, Vol. 101, No. 3, pp. 442–451.

Cattaneo, M., N. Idrobo, and R. Titiunik (2020). *A Practical Introduction to Regression Discontinuity Designs: Foundations*. Cambridge: Cambridge University Press.

Coulibaly, S. and A. Camara, A. (2022). The end of tax incentives in mining? Tax policy and mining foreign direct investment in Africa. *African Development Review.*

Available from https://doi.org/10.1111/1467-8268.12651.

Garver, R. (2021). What Is the 'Global Minimum Tax' Rate in Biden's Plan? *Voice of America*, 9 April. Available from https://www.voanews.com/a/usa_what-global-minimum-tax-rate-bidens-plan/6204342.html.

Hahn, J., P. Todd and W. Van Der Klaauw (2001). Identification and Estimation of Treatment Effects With a Regression Discontinuity Design. *Econometrica,* Vol. 69, No. 1, pp. 201–209.

Imbens, G. W. and T. Lemieux (2008). Regression Discontinuity Designs: A Guide to Practice. *Journal of Econometrics*, Vol. 142, No. 2, pp. 615-635.

Jacobs, D. (2022). Is the Inclusive Framework tax deal in the interests of lower-income countries? International Centre for Tax and Development Blogs, 28 February. Available from https://www.ictd.ac/blog/inclusive-framework-tax-deal-interests-lower-income-countries.

McCarthy, J. (2022). A bad deal for development: Assessing the impacts of the new inclusive framework tax deal on low- and middle-income countries. Brookings Global Working Paper, No. 174.

Meyersson, E. (2014). Islamic Rule and the Empowerment of the Poor and Pious. *Econometrica*, Vol. 82, No. 1, pp. 229-269.

Porter, J. (2003). Estimation in the Regression Discontinuity Model. Working Paper, Department of Economics, University of Wisconsin.

Readhead, A., T. Lassourd and H. Mann (2021). The end of tax incentives: How will a global minimum tax affect tax incentives regimes in developing countries? *Investment Treaty News,* The International Institute for Sustainable Development (IISD), 7 October.

Redonda, A. (2022). The Global Tax Deal and Tax Incentives: What if the Cure Is Worse Than the Disease? Council on Economic Policies Blog, fiscal, 18 March. Available from https://www.cepweb.org/the-global-tax-deal-and-tax-incentives-what-if-the-cure-is-worse-than-the-disease/.

Redonda, A., C. Christian von Haldenwang, and F. Aliu (2021). The Global Tax Expenditures Database (GTED). Companion Paper. Available from https://gted.net/2021/05/the-global-tax-expenditures-database-companion-paper/.

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This brief is part of the South Centre's policy brief series focusing on tax policies and the experiences in international tax cooperation of developing countries.

Efforts to reform international cooperation in tax matters are exhibiting a distinct acceleration. The direction of change must recognize and incorporate innovations in developing country policies and approaches, otherwise the outcomes will obstruct practical paths to development.

The policy brief series is intended as a tool to assist in further dialogue on needed reforms.

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