

Domestic Revenue Mobilization Across Emerging and Developing Countries: One Size Does Not Fit All

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Oral Williams

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Prepared by Elorm Darkey, Christian Ebeke, Anh Dinh Minh Nguyen, and Oral Williams *

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ABSTRACT: This paper examines whether the drivers of domestic revenue mobilization in emerging and developing economies (EMDEs) vary across levels of revenue performance, with a particular focus on non-resource tax. Using panel quantile regressions for 118 countries over 1990-2022, we find substantial heterogeneity in the correlates of revenue mobilization. At relatively low tax performance, after accounting for country-fixed effects, per capita income growth, IMF technical assistance, and governance quality are most strongly associated with revenue gains. By contrast, at relatively higher tax-to-GDP level, governance quality appears to be the most robust correlate. Focusing on the role of technical assistance, we construct a novel shift-share instrument by interacting annual aggregate IMF capacity-development resources with a predetermined measure of country exposure. Our IV-based analysis supports the idea that technical assistance matters most when tax performance is relatively low. These results highlight the need to tailor reform strategies, with focused technical assistance where revenue performance is relatively low, while strengthening the role of governance and the social contract in sustaining high levels of domestic revenue mobilization.

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WORKING PAPERS

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I. Introduction

Domestic revenue mobilization (DRM) has received increasing attention in recent times, particularly in emerging markets and developing economies (EMDEs). This on the one hand reflects the increasing financing needs for development, including spendings for infrastructure, education, health, and climate. On the other hand, large consecutive global shocks like the Covid-19 pandemic and geopolitical conflicts have demanded significant policy interventions, further constraining fiscal policy space and contributing to rising debt levels. More recently, large cuts in development aid have further compounded tighter funding conditions and higher borrowing costs. Against this background, policy makers face difficult choices in safeguarding economic stability, meeting development needs, and responding to social pressures.

While reforms to boost DRM have long been proposed as a solution, there is limited empirical guidance on how the effectiveness of different revenue-enhancing measures varies with the level of tax performance. To address this gap, we revisit the macroeconomic and structural drivers of domestic revenue mobilization in EMDEs, explicitly questioning whether their associations with revenue outcomes differ when tax performance, usually measured as the tax revenue-to-GDP ratio, is relatively low or high, after accounting for country-specific fixed characteristics. While building on the extensive empirical literature on determinants of tax performance, this approach therefore moves beyond the usual focus on average-effects regressions and asks whether “one-size-fits-all” reform prescriptions obscure important heterogeneity in the revenue mobilization process.

The paper posits that the determinants of domestic revenue mobilization (DRM) vary systematically across the tax-to-GDP distribution because the binding constraints to taxation evolve with fiscal development. Drawing on the fiscal capacity, political economy, and social contract literatures, the argument is that low tax-to-GDP states are “undertaxed” primarily due to limited administrative reach, pervasive informality, weak legitimacy, and fragmented political authority. Under such conditions, governments rely on “easy tax handles,” including trade taxes, hydrocarbon revenues, import VAT, excises, and large taxpayers, rather than broad-based taxation and compliance. As fiscal systems mature, however, these structural constraints weaken, and DRM increasingly depends on institutional credibility, taxpayer compliance and morale, and redistribution bargains or elite consensus in favor of taxation. Accordingly, while early-stage revenue mobilization is driven largely by structural and extractive factors, higher levels of taxation depend more on administrative sophistication, broader income taxation, and stronger fiscal contracts between the state and citizens. This motivates our empirical question: whether the relevance of these factors varies when revenue performance is relatively low or high, after accounting for persistent country-specific characteristics.

Specifically, we apply Machado and Santos Silva (2019) to estimate fixed-effects panel quantile regressions using data for 118 countries over 1990-2022. This framework allows the drivers of revenue mobilization to vary across different points of the tax-performance distribution while controlling for time-invariant country characteristics. The quantiles should therefore be interpreted as differences across relatively low and high revenue performance observations, rather than as simple comparisons between low- and high-tax countries. We find strong evidence of non-linearities. When tax performance is relatively low, a lot more factors are at play—per capita income growth, IMF technical assistance, and governance quality are most strongly associated with revenue gains. By contrast, at relatively higher tax-to-GDP levels, governance quality emerges as the most robust correlate of further improvements, consistent with a social contract mechanism in which taxpayers’ willingness to comply depends increasingly on state capability and accountability.

Our paper therefore makes four key contributions to literature. First, it focuses on the non-resource tax-to-GDP—which is the most challenging component of overall tax collection, which is closely linked to sustained fiscal capacity and least mechanically driven by commodity-related windfalls—to revisit the empirical literature

on the drivers of domestic revenue mobilization in EMDEs. Second, it documents substantial heterogeneity in the correlates of tax-to-GDP performance using fixed-effects panel quantile regressions, depending on whether revenue performance is relatively low or high along the tax-to-GDP distribution curve, after accounting for country fixed effects. This suggests that the marginal relevance of some drivers of tax revenue performance may decline—as mobilizing more revenues becomes more challenging at higher levels of the tax-to-GDP ratio. Our analysis therefore complements the literature that discusses the heterogeneity across levels of economic development as described in section II. Third, it highlights the role of targeted policy actions, particularly improvements in governance quality or technical assistance in shaping outcomes across the revenue distribution curve. Fourth, it strengthens the identification of the technical-assistance result using a dynamic panel quantile specification and a novel shift-share instrument for technical assistance that exploits exogenous variation in aggregate IMF capacity-development allocations to mitigate endogeneity concerns.

The rest of the paper is organized as follows. Section II provides a review of the literature, and Section III documents key stylized facts. Section IV outlines the empirical design. Section V presents the results, followed by section VI, which extends the analysis to an instrumental-variable fixed-effects dynamic panel quantile regression. Finally, Section VII offers some concluding remarks.

II. Literature Review

The empirical literature on the macroeconomic drivers of the tax-to-GDP ratio in developing countries is vast but broadly consistent. Several papers have explored the effects of various determinants in a panel data setting. These include structural factors such as the level of per capita income, the shares of the agricultural and commodity sectors, trade openness, and governance quality, as well as policy factors such as fiscal reforms involving the introduction of VAT, large tax payers units, or semi-autonomous revenue authorities and technical assistance, and finally the role of political systems and democratic values (Keen and Lockwood, 2010; Ehrhart, 2012; Ebeke et al., 2016). Studies following this approach have been conducted across regions or using large samples of developing countries.

This section reviews the main findings from this literature, but with a twist. We are particularly interested in identifying whether previous studies provide empirical evidence of non-linear effects in the traditional drivers of domestic revenue mobilization. We provide a brief discussion of key drivers identified under three main categories: (i) economic structural and macroeconomic determinants; (ii) institutional and governance factors; and (iii) the role of technical assistance. In line with the specific focus of this paper, we highlight studies that distinguish the relative importance of these drivers across different economic contexts, namely heterogeneity between advanced economies and emerging market and developing economies (EMDEs), as well as between countries with high versus low tax revenue performance.

A. Average Effects

Structural and Macroeconomic Drivers of the Tax-to-GDP Ratio

Several economic structural and macroeconomic variables have been documented as strong predictors of tax performance. Many studies show that income per capita is among the most robust correlate of higher tax-to-GDP ratios (Gupta, 2007; Le, Moreno-Dodson, and Bayraktar, 2012; Fenochietto and Pessino, 2013). Moreover, the structure of the economy also matters: a high share of agriculture, often used as a proxy for informality, is typically negatively associated with revenue mobilization (Burgess and Stern, 1993; Tanzi, 1992). By contrast, a larger manufacturing base helps expand taxable capacity (Langford and Ohlenburg, 2016).

Trade openness has generally been found to facilitate revenue mobilization by enlarging the taxable base. (Gupta, 2007—using import share; Baunsgaard and Keen, 2010— using sum of the shares of imports and exports in GDP).

Income distribution and education spending have also been linked to higher tax capacity, by boosting compliance and broadening the base. (Fenochietto and Pessino, 2013; IMF, 2018).¹ Furthermore, some argue that high inflation erodes the nominal value of debt, therefore reducing the incentive to collect tax (Fenochietto and Pessino, 2013). In other words, lower inflation supports tax collection.

Broad Impact of Institutional and Governance Factors

A widely recognized set of factors affecting tax revenue is the quality of institutions and governance. In this group, *corruption* has been robustly found to have a negative effect on tax collection (Gupta, 2007; Le et al., 2012; Bird, Martinez-Vazquez, and Torgler, 2014). In contrast, Bird et al. (2014) show that better bureaucratic quality, stronger rule of law, and higher levels of voice and accountability are associated with stronger tax performance. In line with these findings, Besley and Persson (2014) argue that weak political institutions, limited state capacity, and low tax morale are central to explaining why many developing countries “tax so little.” However, as discussed below, some studies document potential heterogeneous effects of these variables across countries.

Technical Assistance and Tax Reforms

Beyond the aforementioned factors, recent literature also emphasizes technical assistance (TA) and tax reforms. Chami et al. (2022) show that TA significantly improves revenue collection across 115 countries. Relatedly, Darkey and Williams (2025) document that technical assistance is strongly associated with higher VAT revenues in EMDEs. In terms of reform, Akitoby et al. (2018a, 2018b) argue that sustained tax revenue mobilization episodes are typically the outcome of tax policy reforms (such as broadening VAT and reducing exemptions) associated with revenue administration improvements (risk-based audits, large taxpayer offices, IT systems). In addition, Akitoby et al. (2019) further illustrate through case studies (e.g., Georgia, Liberia) that political commitment, simplification of tax systems, and modern compliance management were critical to revenue gains.

B. Non-Linearities in the Drivers of the Tax-to-GDP Ratio

A key insight emerging from recent literature, is that the relevance of key domestic revenue drivers may vary across levels of economic development. First, several studies show that structural and political factors play a larger role in explaining revenue performance in developing countries. In advanced economies, factors such as income levels, exchange rate dynamics, openness, and fiscal variables explain a greater share of tax revenue fluctuations (see Barros et al., 2023). In particular, Barros et al. (2023) show that tax effort—in advanced economies relies more heavily on structural and macroeconomic factors, such as income per capita, the share of agriculture, openness, GDP growth, fiscal variables, and exchange rate stability, with no significant role for political variables.² In contrast, openness, structural characteristics, and political factors appear to be more relevant in developing economies.

¹ According to Fenochietto and Pessino (2013), A better income distribution should facilitate collection as well as voluntary taxpayer compliance. For education spending, it is a proxy for the level of education; more educated people can understand better how and why it is necessary to pay taxes.

² Based on the indices of Bird (1964) and Frank (1959).

Some studies examine the differentiated effects of governance quality on revenue depending on the level of economic development. Gupta (2007) finds corruption to be particularly detrimental to tax revenue mobilization in low- and middle-income countries. In addition, political stability is weakly related to revenue performance in EMDEs, but not in high-income countries. Chami et al. (2022) further show that technical assistance has the largest impact on tax revenues in low-income countries.

Another strand of the literature examines the differentiated impact of trade liberalization on revenue performance between advanced economies and EMDEs. Baunsgaard and Keen (2010) question whether countries have been able to recover, through domestic taxes, the revenues lost from trade liberalization episodes. Their findings suggest that while advanced economies successfully offset revenue losses from tariff reductions by strengthening domestic taxes, low-income countries struggled to replace lost trade tax revenues.

III. Stylized Facts

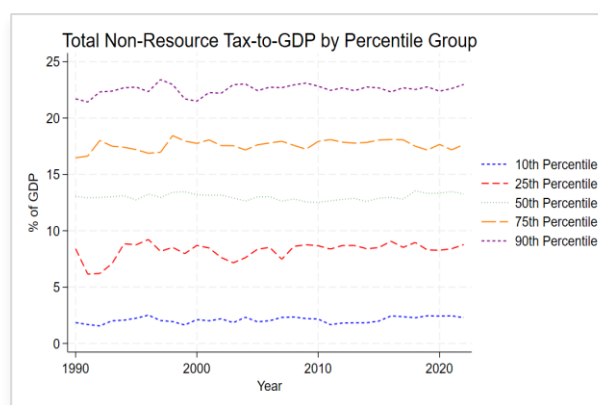
This section presents simple descriptive statistics of the main characteristics of non-resource tax-to-GDP ratios in our sample. We focus on three key questions. First, how has the non-resource tax-to-GDP ratio evolved over time across different quantiles of the distribution? Second, what is the typical composition of non-resource revenue at each quantile—that is, which revenue categories are most important at different levels of tax performance? Third, is there evidence that some revenue categories plateau at certain levels, while others continue to grow? These questions are of particular interest because they provide an initial view of the heterogeneity in the data and of the specific features associated with different tax revenue quantiles.³ It is useful to note that these descriptive patterns are unconditional and serve as motivation; the econometric analysis below estimates heterogeneity after controlling for country-specific factors.

Our sample includes 118 countries, spanning from 1990 to 2022—the list of data and associated sources are presented in the Annex. We begin by examining the levels of non-resource tax-to-GDP across revenue groups. Figure 1 shows that the top quantile (90th percentile) records a non-resource tax-to-GDP ratio of about 23 percent of GDP. The 75th percentile stands at a little above 15 percent of GDP, the median is around 13 percent of GDP, and the bottom quantile (25th percentile) below 5 percent of GDP.

We then extend the analysis to examine differences in revenue composition across quantiles and the main sources of non-resource tax revenue growth. Overall, the

results suggest that taxes on goods and production are likely to drive the transition to higher tax-to-GDP ratios,

Figure 1. Non-Resource Tax Revenue Performance Across the Years



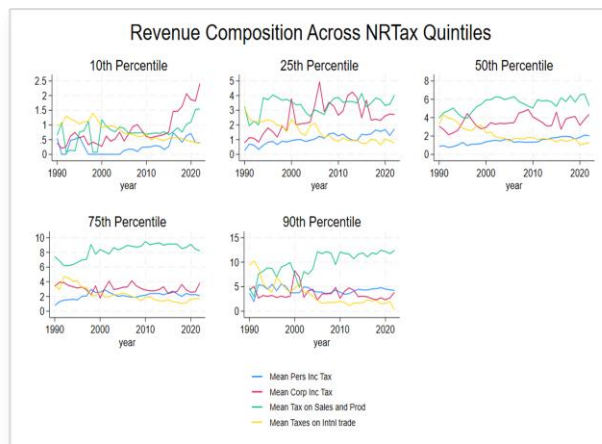
Source: IMF World Revenue Longitudinal Database.

³ A key challenge is to distinguish changes in revenue composition that reflect a country's position in the non-resource tax-to-GDP distribution from those driven by cross-country differences in per capita income. The econometric analysis will systematically control for differences in the level of development—including GDP per capita, the share of agriculture, and institutional quality—to ensure that comparisons of revenue-to-GDP ratios across quantiles are purged of the influence of economic development.

based on historical patterns across revenue quantiles (Figure 2). Several clear regularities emerge from the analysis:

- Sources of structural change in revenue mobilization—the dominance of indirect taxes.** Taxes on goods and services and on production gradually become the main driver of non-resource tax-to-GDP as countries move up the tax-to-GDP distribution. The growth potential of these taxes is substantial. Countries moving from the 25th to the 90th percentile appear to experience an increase in these taxes from about 1.5 percent of GDP to roughly 12 percent of GDP—an increase of nearly 10 percentage points of GDP. At lower quantiles (25th and 50th percentiles), non-resource tax revenues are concentrated in taxes on goods and production and in corporate income taxes. As countries reach higher quantiles (75th and 90th percentiles), revenue mobilization continues to be driven primarily by tax revenues on goods and production, which keep rising as a share of GDP. This pattern suggests that the transition from low to high non-resource tax-to-GDP ratios is largely driven by progress in indirect taxation.
- The plateauing of income tax-to-GDP ratios.** Corporate income taxes tend to stabilize at around 2–3 percent of GDP as countries move up the tax-to-GDP ladder. In other words, corporate income tax revenues, as a share of GDP, do not appear to increase beyond this range even for countries approaching the top quantiles of the non-resource tax-to-GDP distribution. Personal income taxes also increase as countries move up the distribution, but they tend to plateau relatively quickly, at around 3–4 percent of GDP.
- The retrenchment of trade taxes.** Across all non-resource tax-to-GDP quantiles, trade taxes exhibit a structural decline toward a stable level of around 1 percent of GDP. This trend is consistent with widespread trade liberalization over recent decades (Baunsgaard and Keen, 2010). As countries climb the revenue ladder, trade taxes play a diminishing role in domestic revenue mobilization.

Figure 2. Revenue Structure Within and Between Percentiles



Source: IMF World Revenue Longitudinal Database.

IV. Empirical Design

This section discusses the research setup and methodology used to identify the heterogeneity of drivers of domestic revenue mobilization across EMDEs. Specifically, the key hypothesis posits that the primary factors influencing revenue performance yield varying marginal returns depending on where a country-year observation lies in the tax-performance distribution. To address this research question, we employ a panel quantile regression that accounts for country-specific heterogeneity. There are several reasons why employing the latest advances in quantile regressions is particularly relevant in this context.

First, this methodology allows us to avoid relying on arbitrary or institutionalized thresholds to benchmark countries and examine their tax-to-GDP drivers. For example, one could simply divide the sample into income per capita subgroups, from low-income countries (LICs) to higher-income countries, and assess the drivers of the revenue-to-GDP ratio in each sub-sample. While this approach is appealing and used

in the literature, our paper departs from this setup by endogenously allowing regression coefficients to vary across points of conditional distribution of the revenue-to-GDP ratio, rather than an arbitrary cutoff point. The regressions will also systematically control the level of per capita income which will ensure that our results across tax revenue-to-GDP quintiles are purged from countries' differences in economic development. Furthermore, the full sample of country-year observations is used to estimate the various coefficients and their standard errors, rather than relying on partitioned samples with smaller sizes.

Second, recent advances in panel quantile regressions allow for the control of unobserved heterogeneity (country-fixed effects), which is a crucial issue when working with panel data (Galvao, 2011). Revenue mobilization across countries and quintiles could be driven by unobservable factors such as tax culture, the social contract, specific economic structures, historical features of the country, or the degree of commitment of policymakers when conducting specific reforms. Controlling for these hard-to-measure or unobservable factors is paramount to reducing endogeneity concerns.

Third, recent panel quantile regressions allow for the control of inertia in the dependent variable as well as for the endogeneity of certain regressors. In the current context, we are particularly interested in testing the robustness of our results to: (i) the inclusion of the lagged revenue-to-GDP ratio variable—though this brings its own set of challenges and necessary adjustments—and (ii) the instrumentation of certain policy variables that are more likely to suffer from endogeneity bias (for example, the coefficient associated with the technical assistance variable could be biased). This could arise as it is likely that causality runs both ways as countries facing revenue mobilization challenges are the ones requesting and receiving more technical assistance.

Baseline Econometric Specifications and Results

The model (1) is for the τ -th conditional quantile function of the response of the t -th observation on the i -th individual non-resource revenue-to-GDP ratio R_{it} . The model also controls for country fixed effects η_i but does not yet include the lagged dependent variable, which will be added as a robustness check.

$$Q_{R_{it}}(\tau | x_{it}) = \eta_i + x'_{it}\beta(\tau), \quad (1)$$

In model (1) only the effects of the covariates x_{it} are allowed to depend upon the quantile, τ , of interest. The η_i 's are intended to capture some country-specific source of revenue-to-GDP variability, or “unobserved heterogeneity,” that are not adequately controlled by other covariates. We estimate quantile regressions with additive fixed effects using the method of Machado and Santos Silva (2019).

The baseline model incorporates the standard macroeconomic determinants of domestic revenue mobilization, drawing extensively on the literature review presented earlier. These drivers include real per capita GDP, imports-to-GDP ratio, agriculture value added as a share of GDP, inflation rate, and natural resources non-tax revenue in percent of GDP (see Annex).

Including the contemporaneous GDP per capita in the regression is both standard and critical for several reasons. First, it ensures that the analysis focuses on the differentiated impacts of revenue-to-GDP drivers according to countries' positions along the non-resource tax revenue-to-GDP distribution, rather than the level of economic development across countries. Second, it is equally interesting to assess whether the level of per capita income exerts a differentiated effect on the tax-to-GDP ratio at different levels of revenue mobilization. For example, one could argue that the tax-revenue-to-GDP ratio would be less sensitive to changes in per capita income in low revenue-to-GDP countries characterized by high informality and inequality, making the tax system less able to immediately benefit from shifts in income levels. At the same time, higher GDP per capita—which reflects improvements in the overall level of economic development—could be associated with a stronger increase in the tax-to-GDP ratio in countries where collection has historically been low.

V. Results

The results from the baseline regressions point to strong structural determinants of non-resource taxation. Most coefficients associated with traditional determinants display the expected signs (Table 1). Per capita income and a higher imports-to-GDP ratio are positively associated with non-resource tax revenue performance. Notably, trade openness, reflected by higher imports-to-GDP ratio, appears to have a slightly stronger effect when tax performance is relatively low than when it is relatively high. This suggests that improvements in trade translate into larger revenue gains in lower part of revenue distributions, highlighting the importance of the tradable sector as a relatively easy-to-tax base. This aligns with the pro-tax-capacity effect of trade documented in Bachas et al. (2023), mainly by expanding economic activity in larger, formal corporate structures relative to smaller informal businesses. Meanwhile, the negative race-to-the-bottom effect has dominated in high-income countries.

The effects of per capita income and the agricultural share of GDP are broadly similar across conditional revenue quantiles in the baseline specification. These variables primarily capture structural features of the economy—such as overall development levels and informality—that shape tax capacity in a relatively uniform manner across the distribution, rather than generating sharply different marginal effects at different revenue levels. In particular, a higher agricultural share of GDP, often used as a proxy for informality, is negatively associated with revenue performance. That said, as shown below in Tables 2 and 3, once controlling for governance quality and technical assistance, the effects of GDP per capita and agriculture share appear to be stronger at the lower end of the distribution. This suggests that these structural variables may partly absorb variation related to institutional capacity and policy support in the baseline specification, which in turn highlights the need to consider their role alongside direct measures of governance quality and technical assistance. Inflation is negatively associated with revenue performance, which is in line with Fenochietto and Pessino (2013) who document that countries that obtain resources from printing money tend to have negative efficiency for collecting taxes. Though its effect is not statistically different from zero in this specification.

An interesting result emerging from Table 1 is the heterogeneous effect of natural resource dependence on non-resource domestic revenue mobilization. The estimates show a stronger crowding-out (substitution) effect at the upper end of the non-resource tax-to-GDP (conditional) distribution, i.e., when non-resource tax performance is relatively high. In other words, increases in resource revenues tend to reduce non-resource tax effort more strongly with relatively high levels of non-resource taxes, echoing the findings of Thomas and Trevino (2013) for an analysis on resource-exporting countries in sub-Saharan Africa.⁴

Introducing Quality of Governance and Direct Policy Reforms

The basic model is now augmented with several variables that approximate direct policy interventions and whether there are differentiated effects on the revenue-to-GDP ratio depending on the country's position in the conditional revenue distribution. These variables include governance quality, the amount of technical assistance received by countries in the area of tax policy or revenue administration, and changes to tax rates.⁵

⁴ In low-revenue countries, the crowding-out effect is also present but less pronounced, reflecting the continued need to strengthen domestic revenue mobilization to meet pressing development and macroeconomic financing needs, and the lack of alternative revenue sources to absorb macroeconomic shocks.

⁵ See Annex for a definition and sources of these policy variables.

Governance Quality Results

To capture the overall stance of governance quality, we use the average of selected ICRG indicators—corruption, law and order, bureaucracy quality, and democratic accountability—with higher values indicating stronger governance. Specifically, bureaucracy quality and law and order are closely linked to fiscal institutions, administrative capacity, and enforcement, while corruption and democratic accountability relate more directly to trust, compliance, and fiscal social contract.

The quantile regression results linking governance quality to the non-resource tax-to-GDP ratio—after controlling for other determinants, including economic development—yield several notable findings (Table 2). While controlling for the governance quality shrinks the sample by 30 percent, from 118 to 85 countries, the importance of baseline structural variables remains, but with more distinct heterogeneity, as mentioned above. Regarding the impact of governance quality, the overall impact is positive, therefore consistent with the findings of Bird et al. (2014). Most important, we find that better governance is robustly associated with higher non-resource tax mobilization, particularly when tax performance is relatively high. The estimated coefficient on governance quality increases substantially across quantiles, becoming roughly two times larger at the 90th percentile than at the bottom of the distribution.

This pattern suggests that further increases in non-resource tax revenue at the top end of the distribution continue to depend critically on sustained improvements in governance quality. This result is closely related to the notion of a stronger social contract: when compliance is already relatively high, taxpayers and the median voter place greater emphasis on accountability and governance. Higher taxation is then accepted in exchange for better public institutions and service delivery. At high revenue-to-GDP levels, taxpayers may actively demand governance reforms that directly affect their economic activity, which in turn supports further revenue mobilization. By contrast, when tax performance is relatively low, such pressures are weaker, as significant revenue gains can still be achieved through relatively easy-to-collect taxes (e.g., trade taxes or large corporate taxpayers), and the social contract remains less developed.

Table 1. Traditional Macro Drivers of the Non-Resource Tax-to-GDP Ratio
(Country-Fixed Effects Quantile Regressions)

	(1) q:0.1	(2) q:0.25	(3) q:0.5	(4) q:0.75	(5) q:0.90
GDP Per Capita, Log	2.819*** (0.339)	2.699*** (0.254)	2.532*** (0.199)	2.339*** (0.278)	2.173*** (0.408)
Agriculture Value Added-to-GDP	-0.0875*** (0.0243)	-0.0882*** (0.0182)	-0.0891*** (0.0143)	-0.0902*** (0.0199)	-0.0912*** (0.0293)
CPI Inflation	-0.00527 (0.00477)	-0.00409 (0.00358)	-0.00244 (0.00280)	-0.000525 (0.00392)	0.00111 (0.00575)
Natural Resources Non-Tax Revenue-to-GDP	-0.0411** (0.0161)	-0.0519*** (0.0121)	-0.0671*** (0.00950)	-0.0846*** (0.0133)	-0.0997*** (0.0195)
Imports-to-GDP	0.0646*** (0.00785)	0.0598*** (0.00589)	0.0529*** (0.00462)	0.0450*** (0.00646)	0.0382*** (0.00947)
Observations	2,739	2,739	2,739	2,739	2,739
Number of Countries	118	118	118	118	118
Standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1					

Table 2. Adding Governance Quality
(Country-Fixed Effects Quantile Regressions)

	(1) <i>q</i> :0.1	(2) <i>q</i> :0.25	(3) <i>q</i> :0.5	(4) <i>q</i> :0.75	(5) <i>q</i> :0.90
GDP Per Capita, Log	2.147*** (0.368)	2.009*** (0.271)	1.827*** (0.213)	1.618*** (0.295)	1.434*** (0.434)
Agriculture Value Added-to-GDP	-0.0674** (0.0315)	-0.0596** (0.0232)	-0.0494*** (0.0182)	-0.0376 (0.0252)	-0.0274 (0.0371)
CPI Inflation	-0.0118** (0.00564)	-0.00994** (0.00416)	-0.00753** (0.00327)	-0.00476 (0.00453)	-0.00234 (0.00666)
Natural Resources Non-Tax Revenue-to-GDP	-0.0386** (0.0168)	-0.0460*** (0.0124)	-0.0556*** (0.00974)	-0.0666*** (0.0135)	-0.0763*** (0.0198)
Imports-to-GDP	0.0797*** (0.00940)	0.0740*** (0.00694)	0.0664*** (0.00546)	0.0578*** (0.00755)	0.0502*** (0.0111)
Governance Quality (ICRG Composite)	0.316 (0.198)	0.396*** (0.146)	0.500*** (0.115)	0.621*** (0.159)	0.727*** (0.233)
Observations	2,047	2,047	2,047	2,047	2,047
Number of Countries	85	85	85	85	85

Standard errors in parentheses
 *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

Technical Assistance Results

We next test for the effects of IMF technical assistance on the non-resource tax-to-GDP ratio, using total technical assistance combining revenue administration and tax policy support (Tables 3, 4, and 5).

In all specifications, we control for other determinants of domestic revenue mobilization, including governance quality and per capita income, to better isolate the impact of technical assistance.

Before turning to the results, it is worth noting that the (unconditional) distribution of technical assistance (TA) is broadly similar across tax-revenue quantiles, averaging about 0.2 FTEs in the upper quantiles, 0.3 FTEs in the middle quantiles, and 0.1 FTE in the lowest quantile. TA intensity is therefore not systematically lower in higher tax-revenue quantiles. The presence of within-quantile variation in TA helps identify its role in shaping revenue outcomes. We find that overall IMF technical assistance (Table 3) is strongly and positively associated with non-resource tax-to-GDP ratios, with significantly larger effects at the lower end of the revenue distribution (up to the median of the non-resource tax-to-GDP ratio). In other words, technical assistance yields larger revenue gains when tax performance is relatively low. These findings are consistent with Chami et al. (2022), who report stronger effects in low-income countries. Our contribution differs in that the heterogeneity is estimated along the tax-to-GDP distribution itself, after controlling for country-specific factors, rather than by income classification.

The results are further evaluated using specifications that include both country and year fixed effects.

As reported in Table 4, time fixed effects control for unobserved common year-specific shocks that may affect all countries, such as fluctuations in global funding for technical and development assistance or changes in commodity prices. The findings largely corroborate the baseline results. In particular, capacity development continues to have a stronger positive impact on non-resource tax revenue collection in countries with relatively low levels of tax revenue. In addition, macroeconomic instability, proxied by high inflation, and greater dependence on natural resource revenues are associated with lower non-resource tax revenue-to-GDP ratios at the lower end of the tax revenue distribution. Finally, the results confirm the earlier finding that better governance is associated with stronger domestic revenue mobilization, with this effect being more pronounced in when tax performance is relatively high.

Table 3. Adding IMF Technical Assistance
(Country-Fixed Effects Quantile Regressions)

	(1) <i>q</i> :0.1	(2) <i>q</i> :0.25	(3) <i>q</i> :0.5	(4) <i>q</i> :0.75	(5) <i>q</i> :0.90
GDP Per Capita, Log	2.148*** (0.364)	2.018*** (0.274)	1.832*** (0.213)	1.626*** (0.291)	1.440*** (0.429)
Agriculture Value Added-to-GDP	-0.0620** (0.0314)	-0.0550** (0.0236)	-0.0450** (0.0183)	-0.0339 (0.0250)	-0.0240 (0.0370)
CPI Inflation	-0.0108* (0.00558)	-0.00926** (0.00419)	-0.00700** (0.00326)	-0.00449 (0.00445)	-0.00224 (0.00658)
Natural Resources Non-Tax Revenue-to-GDP	-0.0379** (0.0168)	-0.0451*** (0.0126)	-0.0555*** (0.00980)	-0.0669*** (0.0134)	-0.0773*** (0.0198)
Imports-to-GDP	0.0803*** (0.00940)	0.0748*** (0.00707)	0.0668*** (0.00550)	0.0580*** (0.00751)	0.0501*** (0.0111)
Governance Quality (ICRG Composite)	0.324 (0.198)	0.401*** (0.149)	0.511*** (0.116)	0.633*** (0.158)	0.743*** (0.233)
IMF Technical Assistance, Log	0.683** (0.328)	0.605** (0.246)	0.493** (0.191)	0.368 (0.262)	0.257 (0.387)
Observations	2,047	2,047	2,047	2,047	2,047
Number of Countries	85	85	85	85	85

Standard errors in parentheses

*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

Table 4. Adding IMF Technical Assistance
(Country and Year Fixed Effects Quantile Regressions)

	(1) <i>q</i> :0.1	(2) <i>q</i> :0.25	(3) <i>q</i> :0.5	(4) <i>q</i> :0.75	(5) <i>q</i> :0.90
GDP Per Capita, Log	1.005 (0.839)	0.652 (0.815)	0.243 (0.822)	-0.248 (0.875)	-0.646 (0.954)
Agriculture Value Added-to-GDP	-0.0228 (0.0331)	-0.0291 (0.0325)	-0.0365 (0.0346)	-0.0454 (0.0400)	-0.0526 (0.0461)
CPI Inflation	-0.0103*** (0.00372)	-0.00902*** (0.00325)	-0.00755** (0.00326)	-0.00578 (0.00408)	-0.00435 (0.00513)
Natural Resources Non-Tax Revenue-to-GDP	-0.0441*** (0.0141)	-0.0414*** (0.0147)	-0.0383** (0.0164)	-0.0346* (0.0195)	-0.0316 (0.0225)
Imports-to-GDP	0.0760*** (0.0163)	0.0719*** (0.0151)	0.0671*** (0.0145)	0.0613*** (0.0149)	0.0567*** (0.0160)
Governance Quality (ICRG Composite)	0.518* (0.309)	0.574* (0.296)	0.639** (0.304)	0.716** (0.343)	0.779** (0.394)
IMF Technical Assistance, Log	1.955* (1.048)	1.675** (0.795)	1.349** (0.586)	0.959 (0.608)	0.643 (0.827)
Observations	2,047	2,047	2,047	2,047	2,047
Country fixed effects	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes
Number of Countries	85	85	85	85	85

Standard errors in parentheses

*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

VI. Robustness and Extensions

This section extends the baseline specification to allow for the dynamic panel, while further investigating in the role of technical assistance with a novel instrumental variable to address endogeneity concerns.⁸

The first transformation we allow in the model is to control for the lagged non-resource tax-to-GDP ratio.

Relative to the baseline specification, estimated coefficients in this dynamic setting capture short-term effects, conditional on revenue performance, rather than long-run relationship. This dynamic specification is motivated by two considerations. From an economic standpoint, domestic revenue mobilization, especially the non-resource part, is a slow process characterized by strong inertia. As such, the tax-to-GDP ratio today is influenced by its lagged level. From an econometric standpoint, controlling for the lagged dependent variable would help check whether the impact of the other *correlates* in the model remain statistically significant even after accounting for the initial level of the non-resource tax-to-GDP ratio. This is particularly critical for the slow-moving variables in the regression, such as the level of economic development, the agricultural share in GDP, trade openness, or governance and institutional quality variables.

This specification also helps reduce endogeneity concerns, especially if some of the policy variables are partly driven by past performance in revenue mobilization. For example, lagged performance in domestic revenue mobilization (the lagged non-resource tax-to-GDP ratio) could determine whether a country requests or receives IMF technical assistance in revenue mobilization, attempt to initiate various reforms, etc. Directly controlling for the previous level of the non-resource tax-to-GDP ratio helps mitigate this reverse causality bias.

The introduction of the lagged level of the dependent variable alongside country-fixed effects gives rise to bias in this quantile regression setup. Galvao (2011) demonstrates how conventional quantile regression estimations of dynamic panel data models with fixed effects suffer from similar bias effects as those seen in the least squares case when the time dimension is modest. Reliance on existing least squares strategies for bias reduction is unsatisfactory in the quantile regression setting. Galvao (2011) proposes reducing the dynamic bias in the quantile regression fixed effects estimator by relying on the instrumental variable quantile regression method of Chernozhukov and Hansen (2005, 2006, 2008), along with lagged (or lagged differences of the) regressors as instruments. The estimator therefore combines the usual instrumental variable concept for dynamic panel data and the quantile regression IV framework.

The model brings two additional features. First, the coefficient (τ) associated with the lagged dependent variable is determined through a careful grid search. Second, this dynamic panel quantile regression is estimated via instrumental variables. As a result, this reduces the endogeneity of key variables of interest in the model, especially technical assistance. The specification takes the following form:

$$Q_{R_{it}}(\tau | R_{it-1}, x_{it}) = \eta_i + u_t + x'_{it}\beta(\tau) + R_{it-1}\alpha(\tau), \quad (2)$$

More specifically, the lagged non-resource tax-to-GDP ratio is instrumented using its own two-period lags. We propose a novel instrumental variable for the technical assistance variable based on a shift-share (Bartik-type) design, which exploits differential exposure to “aggregate shocks” across countries through predetermined shares, following the logic of Bartik (1991). Specifically, we rely on the institutional reality of International Monetary Fund (IMF) technical assistance funding, where budget envelopes are set at the aggregate level and

⁸ The task is complicated by the econometric setup, which relies on quantile regressions in a panel setting while controlling for country-specific unobservable heterogeneity.

subsequently disaggregated across countries based on “priorities” informed by IMF analytical (surveillance or program) work. Following this logic, the external instrument (IV) for country-specific technical assistance in revenue mobilization is constructed as follows:

$$IV_{it} = \left(\sum_i TA_{it} \right) \cdot \frac{\bar{R}}{R_i}$$

where TA denotes technical assistance measured in full-time equivalents (FTEs), with one FTE corresponding to 240 working days. For each year t , we compute the aggregate sum of TA across all countries in the sample (except the observed country i). The term $\frac{\bar{R}}{R_i}$ captures the distance between a country’s non-resource tax-to-GDP ratio and the sample median of this variable prior to the starting date of the regression sample. Fixing the reference year prior to the sample estimation ensures that the instrument remains relatively exogenous to the dependent variable.⁹

The instrument therefore approximates the total supply of IMF technical assistance in a given year—argued to be plausibly orthogonal to contemporaneous individual country economic conditions conditional on controls—weighted by a predetermined proxy for an exogenous allocation rule. In other words, technical assistance is expected to be directed more toward countries that are structurally further from the revenue-to-GDP “frontier” (proxied by the median). As the model systematically controls for the lagged non-resource tax-to-GDP ratio, it helps limit the potential bias that the tax distance ratio is correlated with revenue performance directly.

Armed with both internal (the 2nd lag of non-resource tax-to-GDP ratio) and external instruments (Bartik-type for the technical assistance), we implement a control function approach (two-stage residual inclusion) to address endogeneity in this dynamic quantile panel regression setting, following Chernozhukov and Hansen (2005, 2006, 2008). The procedure involves extracting residuals from first-stage regressions in which the endogenous variables are regressed on control variables, instruments, and fixed effects. These residuals—capturing the estimated endogenous components—are then included as additional controls in the second-stage quantile regressions, where we assess the impact of the endogenous variables on the non-resource tax-to-GDP ratio at different points of the conditional distribution. Including these residuals helps address the second-stage estimates of endogeneity bias.

The results of the estimations are presented in Tables 5a and 5b. The first-stage regression (Table 5a) shows that the external instrument IV is statistically strong and positively associated with IMF technical assistance conditional on all control variables in the model, including the past non-resource tax-to-GDP ratio. Importantly, the “external” instrument for the IMF technical assistance variable is not associated with the lagged non-resource tax-to-GDP ratio (column 2), which is reassuring for the exclusion restriction. The various F-statistics assessing the strength of the instruments show that the instrumental variables are sufficiently strong.

⁹ We use the year 2001 as fixed year for the non-resource tax-to-GDP distance ratio—the TA data are available between 2000 and 2018, while the regressions start from 2004.

Table 5a. First-Stage Regressions for the Technical Assistance and Lagged Non-Resource Tax-to-GDP Ratio

	(1) IMF Technical assistance (FTE), log	(2) Non-resource tax- to-GDP, t-1
TA Instrumental Variable	0.00135** (0.000570)	0.00169 (0.00129)
Non-Resource Tax-to-GDP, t-2	0.00706 (0.00693)	0.683*** (0.0185)
GDP Per Capita, Log	0.0149 (0.109)	0.888*** (0.197)
Agriculture Value Added-to-GDP	-0.00406 (0.00535)	-0.00456 (0.0135)
CPI Inflation	-0.000735 (0.00103)	0.00245 (0.00417)
Imports-to-GDP Ratio	-0.00355*** (0.00130)	0.0340*** (0.00578)
Governance Quality (<i>ICRG</i> Composite)	0.00448 (0.0389)	-0.0369 (0.134)
Natural Resources Non-Tax Revenue-to-GDP	0.000633 (0.00200)	-0.0164** (0.00720)
Constant	0.0902 (0.863)	-4.092*** (1.528)
F-Test of Excluded Instruments	10.45	144.03
Sanderson-Windmeijer F-test	20.73	77.44
Observations	1,180	1,179
Number of Countries	71	71

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1.

In Table 5b (second-stage quantile regressions), the focus is on assessing whether policy variables—namely technical assistance and governance quality—remain statistically significant. First, the impact of technical assistance on revenue is stronger in magnitude and significant at the lower quantiles of the conditional distribution (10th to the 50th percentiles).⁹ This result holds even after lagged revenue performance is controlled for and technical assistance delivery is instrumented.

⁹ The downward OLS bias is consistent with the negative sign of the residual associated with technical assistance.

Table 5b. Dynamic Panel Quantile Regressions with Instrumental Variables—Residual Inclusions

	(1) q:0.1	(2) q:0.25	(3) q:0.5	(4) q:0.75	(5) q:0.90
IMF Technical Assistance (FTE), Log	2.391*** (0.806)	1.735*** (0.407)	0.741** (0.339)	0.00458 (0.484)	0.314 (0.702)
Governance Quality (ICRG Composite)	0.355* (0.208)	0.196** (0.0961)	0.172* (0.0904)	0.295** (0.148)	0.443*** (0.129)
Non-Resource Tax-to-GDP, Lagged	0.554*** (0.0490)	0.674*** (0.0206)	0.783*** (0.0207)	0.828*** (0.0258)	0.858*** (0.0349)
<i>Residuals: Technical Assistance</i>	-2.099** (0.835)	-1.465*** (0.441)	-0.593 (0.366)	0.257 (0.493)	-0.0666 (0.787)
<i>Residuals: Lagged Non-Resource Tax-to-GDP</i>	0.123 (0.0752)	0.100*** (0.0307)	0.0411 (0.0363)	0.0152 (0.0440)	-0.111* (0.0625)
GDP Per Capita, Log	1.086*** (0.349)	0.620*** (0.157)	0.353** (0.162)	0.174 (0.198)	-0.120 (0.303)
Agriculture Value Added-to-GDP	0.0271 (0.0224)	0.00384 (0.0124)	0.000979 (0.00944)	-0.000346 (0.0134)	0.0195 (0.0183)
CPI Inflation	0.000125 (0.000237)	-6.80e-05 (0.000264)	-8.88e-05 (0.000100)	-0.000137 (0.000319)	0.000336 (0.000301)
Natural Resources Non-Tax Revenue-to-GDP	-0.0208** (0.00942)	-0.0186*** (0.00483)	-0.0123** (0.00539)	-0.00994 (0.00729)	-0.00236 (0.0135)
Imports-to-GDP	0.0517*** (0.00774)	0.0349*** (0.00370)	0.0266*** (0.00385)	0.0193*** (0.00519)	0.0282*** (0.00762)
Observations	1,004	1,004	1,004	1,004	1,004
Number of Countries	71	71	71	71	71

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Table 6. Dynamic Panel Quantile Regressions with Instrumental Variables and Time Effects—Residual Inclusions

	(1) q:0.1	(2) q:0.25	(3) q:0.5	(4) q:0.75	(5) q:0.90
IMF Technical Assistance (FTE), Log	2.103*** (0.647)	1.466*** (0.447)	0.325 (0.355)	-0.255 (0.533)	-0.985 (0.696)
Governance Quality (ICRG Composite)	0.322* (0.178)	0.246** (0.124)	0.161 (0.105)	0.356** (0.161)	0.610*** (0.168)
Non-Resource Tax-to-GDP, Lagged	0.588*** (0.0435)	0.669*** (0.0275)	0.781*** (0.0244)	0.805*** (0.0298)	0.886*** (0.0381)
<i>Residuals: Technical Assistance</i>	<i>-1.783***</i> (0.644)	<i>-1.338***</i> (0.480)	<i>-0.234</i> (0.389)	<i>0.454</i> (0.545)	<i>0.957</i> (0.676)
<i>Residuals: Lagged Non-Resource Tax-to-GDP</i>	<i>0.109</i> (0.0684)	<i>0.126***</i> (0.0424)	<i>0.0605</i> (0.0413)	<i>-0.0116</i> (0.0548)	<i>-0.145**</i> (0.0633)
GDP Per Capita, Log	1.253*** (0.356)	0.768*** (0.261)	0.350* (0.202)	0.142 (0.244)	0.0508 (0.282)
Agriculture Value Added-to-GDP	0.0293* (0.0170)	0.0167 (0.0147)	-0.00418 (0.0107)	-0.00683 (0.0140)	0.00867 (0.0160)
CPI Inflation	-0.000145 (0.000308)	-0.000146 (0.000197)	-0.000108 (9.38e-05)	-0.000107 (0.000104)	7.22e-05 (0.000346)
Natural Resources Non-Tax Revenue-to-GDP	-0.0289*** (0.00825)	-0.0228*** (0.00596)	-0.0172** (0.00712)	-0.0155* (0.00935)	0.00625 (0.0172)
Imports-to-GDP	0.0421*** (0.00706)	0.0331*** (0.00481)	0.0223*** (0.00399)	0.0285*** (0.00584)	0.0264*** (0.00686)
Time Fixed Effects	Yes	Yes	Yes	Yes	Yes
Observations	1,004	1,004	1,004	1,004	1,004
Number of Countries	71	71	71	71	71

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Second, governance quality continues to play a key role in sustaining higher revenue-to-GDP levels along the distribution. This time, after instrumenting the governance quality variable, we find a positive and statistically significant effect of governance quality at both the very bottom of the revenue-to-GDP distribution (10th percentile of the non-resource tax-to-GDP ratio) as well as at the higher levels. The fact that this effect remains statistically significant even at higher revenue levels further underscores the importance of the governance–taxation nexus, reflecting the central role of the social contract in supporting further revenue mobilization at higher levels.

We further strengthened the identification strategy by including year fixed effects in the presence of a Bartik-type instrument. This is particularly important given the nature of the external instrument used for technical assistance. A substantial share of the instrument’s variation is driven by a factor common to all countries, notably the annual global budget allocated to technical assistance. In the absence of year fixed effects, changes in this common component could be correlated with other global shocks affecting countries simultaneously, thereby biasing the estimated effects. By controlling for year-specific effects, the model better isolates the exogenous variation in technical assistance arising from the global allocation mechanism and reduces the risk of confounding the estimated impact with other contemporaneous global shocks. The results, reported in Table 6, strongly support the main findings from the paper. The estimated effect of technical assistance on revenue mobilization remains statistically significant across the lower half of the conditional distribution of tax revenue, with the largest effects observed between the 10th and 25th percentiles. These results reinforce the conclusion that technical assistance is particularly effective in improving revenue performance when revenue performance is relatively low.

VII. Conclusion

This paper revisited the determinants of domestic revenue mobilization in developing countries. The analysis departed from previous work in several respects. First, it examined whether the drivers of revenue performance are context-specific—that is, whether factors associated with significant tax revenue gains differ systematically across countries depending on conditional tax-to-GDP distributions. The paper provided conceptual and empirical arguments for expecting such heterogeneity, implying that policy interventions could be more effective if tailored to countries’ positions along the tax revenue distribution.

Second, the analysis focused specifically on non-resource tax revenues, drawing on a newly released IMF World Longitudinal Revenue Database. By concentrating on non-resource revenues—the most challenging component of overall tax collection—the paper addressed the core dimension of sustained domestic revenue mobilization.

Third, the study broadened the scope of explanatory factors to include actionable policy variables such as governance quality or IMF technical assistance in tax administration and tax policy. Using a range of econometric specifications and quantile regression techniques—including in an instrumental variables framework—the paper assessed how these policy variables influence tax revenue outcomes across different segments of the tax-to-GDP distribution, thereby identifying where specific reforms can yield the highest gains.

The empirical results from the paper are robust and reveal consistent patterns across the revenue spectrum. In particular, the findings highlight that the effectiveness of revenue-enhancing measures is not uniform: the magnitude and even the direction of impact vary with countries’ revenue capacity levels. Key results are as follows:

- *At lower tax-to-GDP quantiles:* Per capita income growth, IMF technical assistance, and governance quality have stronger positive effects on domestic revenue mobilization.

- *At higher tax-to-GDP quantiles:* Stronger governance quality emerges as the main driver of further improvements in domestic revenue mobilization. This highlights the central role of the social contract: pushing revenue performance toward the top of the distribution requires decisive tax policy actions alongside governance improvements that secure citizens' buy-in.

Overall, these insights underscore the importance of tailoring revenue mobilization strategies according to country-specific characteristics. They suggest IMF technical assistance is most strongly associated with revenue gains when revenue performance is relatively low. The results also suggest that durable improvements in domestic revenue mobilization require nuanced, data-driven policy design that accounts for heterogeneity along the tax-to-GDP distribution, rather than relying on “one size fits all” approach.

Annex. Descriptive Statistics and Definitions

Table A.1. Descriptive Statistics

Variables	Obs	Mean	Std. dev.	Min	Max
Non-Resource Tax-to-GDP Ratio (percent)	3661	13.8	6.0	0.2	33.2
Real GDP Per Capita (in 2010 dollars)	4471	5233.2	7973.2	166.7	81608.6
Agriculture Value Added-to-GDP (percent)	4196	15.9	11.9	0.1	79.0
CPI inflation (percent)	3926	30.1	428.5	-11.7	23773.1
Natural Resources Non-Tax Revenue-to-GDP (percent)	4587	2.1	6.9	0.0	83.9
Imports-to-GDP (percent)	3762	41.1	20.8	1.1	191.3
Governance Quality (<i>ICRG</i> composite)	3004	2.7	0.7	0.3	5.3
IMF Technical assistance (FTE)	2641	0.2	0.4	0.0	4.9

Table A.2. Variables and Sources

Variables	Source
Non-Resource tax-to-GDP ratio (percent)	IMF World Revenue Longitudinal Database
Non-Tax Revenue from Extractive Industries	IMF World Revenue Longitudinal Database
Natural resources non-tax revenue-to-GDP (percent)	IMF World Revenue Longitudinal Database
Tax revenue (percent of GDP)	IMF World Revenue Longitudinal Database
Tax on income and profit (percent of GDP)	IMF World Revenue Longitudinal Database
Tax on income and profits of corporations (percent of GDP)	IMF World Revenue Longitudinal Database
Tax on income and profit of individuals (percent of GDP)	IMF World Revenue Longitudinal Database
Taxes on sales and production (percent of GDP)	IMF World Revenue Longitudinal Database
Excise taxes (percent of GDP)	IMF World Revenue Longitudinal Database
General sales taxes collected on imports (percent of GDP)	IMF World Revenue Longitudinal Database
Taxes on international trade (percent of GDP)	IMF World Revenue Longitudinal Database
IMF Revenue Administration TA (in years)	IMF FAD TA Database
IMF Tax Policy TA (in years)	IMF FAD TA Database
CPI inflation (percent)	World Bank World Development Indicators
Imports-to-GDP (percent of GDP)	World Bank World Development Indicators
Agriculture value added-to-GDP (percent of GDP)	World Bank World Development Indicators
Real GDP per capita (in 2010 dollars)	World Bank World Development Indicators
Bureaucracy Quality	International Country Risk Guide
Corruption	International Country Risk Guide
Democratic Accountability	International Country Risk Guide
Law & Order	International Country Risk Guide

Table A.3. Countries Included in the Sample

Albania	Costa Rica	Jordan	Oman	Tanzania
Algeria	Cote d'Ivoire	Kazakhstan	Pakistan	Thailand
Angola	Croatia	Kenya	Palau	The Bahamas
Antigua and Barbuda	Democratic Republic of the Congo	Kiribati	Panama	The Gambia
Armenia	Djibouti	Kyrgyz Republic	Paraguay	Timor-Leste
Azerbaijan	Dominican Republic	Lao P.D.R	Peru	Togo
Bangladesh	Ecuador	Lebanon	Philippines	Tonga
Belize	Egypt	Libya	Poland	Tunisia
Benin	El Salvador	Madagascar	Qatar	Türkiye
Bhutan	Equatorial Guinea	Malaysia	Republic of Congo	UAE
Bolivia	Ethiopia	Maldives	Romania	Uganda
Bosnia and Herzegovina	Fiji	Mali	Russia	Uruguay
Brazil	Gabon	Mauritania	Rwanda	Uzbekistan
Bulgaria	Georgia	Mauritius	Samoa	Vanuatu
Burkina Faso	Ghana	Mexico	Saudi Arabia	Vietnam
Burundi	Guatemala	Moldova	Senegal	Yemen
Cabo Verde	Guinea	Mongolia	Serbia	Zambia
Cambodia	Guinea-Bissau	Montenegro	Sierra Leone	Zimbabwe
Cameroon	Guyana	Morocco	Solomon Islands	
Central African Republic	Honduras	Mozambique	South Africa	
Chad	Hungary	Namibia	South Sudan	
Chile	India	Nepal	Sri Lanka	
China	Indonesia	Nicaragua	Sudan	
Colombia	Iran	Niger	Syrian Arab Republic	
Comoros	Jamaica	North Macedonia	Tajikistan	

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