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Inequality in low- and middle-income countries: Does fiscal policy matter?

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ABSTRACT

The main purpose of this article was to examine the link between tax revenue and income distribution in low- and middle-income countries. Reducing inequality is a central policy objective under the Sustainable Development Goals (SDGs). However, these countries deeply entrench inequality, and progress towards achieving optimal equality levels remains slow. The study, utilizing the system's generalized method of moments, investigates the correlation between tax revenue and income inequality in a panel of African countries from 2010 to 2021. The findings indicate that for the countries in this study, an increase in tax revenue is associated with a rise in income inequality. Consequently, higher tax revenues tend to widen income disparities in the countries studied. Policymakers often employ various economic instruments to achieve equitable income distribution, with tax revenue being a critical tool for this purpose. However, the study reveals that increases in tax revenue do not necessarily filter to reduce income inequalities. Other factors, such as corruption control and regulatory quality, significantly influence the redistributive effects of tax revenue. These findings provide important insights for policymakers, highlighting the need for comprehensive strategies that address these additional factors to effectively reduce income inequality.

Contribution/Originality: Previous empirical studies predominantly examined the determinants of income inequality with little empirical findings on the role of fiscal policy, particularly tax revenue. The originality of this article lies in the inclusion of tax revenue as a share of gross domestic product, control of corruption, and regulation quality as determinants of income inequality.

1. INTRODUCTION

Reducing inequality is a priority in the sustainable development goals (SDGs). The favourable economic growth in EMDEs has not filtered into substantial progress in reducing income inequality within countries (United Nations, 2020). Recently, deliberations on domestic resource mobilization in emerging markets and developing economies (EMDE) have been on the increase. This is motivated by the intuition that these respective countries do not have a strong fiscal base to invest in public goods, which is a key developmental challenge (World Bank, 2020). Therefore tax revenue plays a crucial role in EMDEs, serving as one of the fiscal instruments employed to mitigate inequality (International Monetary Fund, 2022). However, Sulla, Zikhali, and Cuevas (2022) opined that there is a bidirectional relationship between taxation and income inequality. The financing for development plan in emerging and developing economies highlights the necessity of complementing the financial resources of international aid with significant tax revenue (United Nations, 2022). In most EMDEs the potential of domestic resources as a

funding source for development is paradoxically low as the tax to gross domestic product ratio is significantly low, in most cases less than the respective countries' ability.

Additionally, the low tax revenue is persistent for most EMDEs, reducing the capacity to fund public expenditures or infrastructure investments essential for the attainment of the SDGs (Duho, Amankwa, & Musah-Surugu, 2020; Magwedere & Marozva, 2023). Inequality can have adverse political and socio-economic consequences, capable of undermining macroeconomic stability and sustainable growth (Kunawotor, Bokpin, & Barnor, 2020; Magwedere & Marozva, 2022; Ploeg, 2011). Inequality fuels conflict, reduces investment, and limits the poor's ability to build human capital, further widening the income gap (Stiglitz, 2012). High inequalities contribute to social ills, fuelling the reluctance by the citizenry to support public expenditures since taxation acts as a social contract between the government and the public (Boustan, Ferreira, Winkler, & Zolt, 2013; International Monetary Fund, 2021).

Tax revenue remains an essential primary resource available for governments to address socio-economic challenges such as funding social grants and supporting the small enterprises with the intention of addressing income inequalities. In EMDEs, tax avoidance or tax evasion are significant challenges such that the public social safety net (tax revenue) is not sufficient to meet the needs of providing public goods and services that reduce the inequality gap (Joumard, Pisu, & Bloch, 2013; Tanzi & Zee, 2001). The World Bank (2020) argued that low tax revenue collection restricts the ability of a state to provide public goods, redistribute income, invest in human capital, and insure against shocks. Tax revenue in some developing countries is less than 20 percent of the gross domestic product, which is insufficient to meet citizenry needs, thus making the redistributive effect of the tax revenue appear less effective (World Bank, 2020).

Although some countries, especially in Africa, rely more on non-tax revenue, such as foreign aid and natural resource rents, to fund public spending and investments (Babatunde, Ibukun, & Oyeyemi, 2017; Magwedere, 2023) there is a need to complement these income sources for government through stable tax revenue. Tax revenue is regarded as an effective way of raising money for public expenditure and investments that can reduce the inequality gap (Brookings Institute, 2021; Duncan & Sabirianova Peter, 2016; World Bank, 2023). A sustainable tax base is therefore essential to reducing inequality (Africa Development Bank (AfDB), 2020; World Bank, 2023). There are increasing calls for progressive tax such that the rich pay a fair share of tax for redistribution to close the income gap (OECD, 2022). The study by Oishi, Kushlev, and Schimmack (2018) revealed that income inequality considerably declined during the years of progressive income tax. However, Dotti (2020) argues that tax progressivity is associated with higher inequalities, making it unclear if increased tax revenue can ultimately contribute to reducing the inequality gap. Lustig (2018) opined that the redistributive effect of a fiscal system depends on the size of taxes and transfers. Therefore this study seeks to examine the role of tax revenue in reducing inequalities.

There are few empirical studies on the use of fiscal policy, particularly tax revenue, to combat poverty and inequality. Although tax revenue is often considered essential for reducing inequality, the link between tax revenue and income inequality has been insufficiently examined. Experts often advise governments in low- and middle-income countries to raise taxes on the rich, yet empirical research on the impact of higher tax revenue on income distribution is scarce. It remains unclear whether increased tax revenues can address income distribution challenges in economies plagued by corruption and poor regulatory quality. Besides raising revenue for governments, taxation is a critical policy instrument for achieving desired redistribution outcomes. Many low- and middle-income countries face the challenge of generating additional revenue through taxes without creating inefficiencies that exacerbate income inequality. Despite these challenges, tax revenue is essential for achieving a fair distribution of a nation's wealth. Therefore, what is the relationship between income inequality and tax revenue?

The paper proceeds as follows: Section 2 discusses both the theoretical and empirical review on the nexus between tax revenue and income distribution. Data description and methodology are discussed in Section 3. The

results on the relationship between tax revenue and inequality are reported in Section 4, whilst Section 5 concludes the study and provides a summary of the policy recommendations.

2. LITERATURE REVIEW

The theory of tax revenue dates back to Adam Smith, where the intuition was that taxation was a way of sustaining governments (Piketty, 2014; Smith, 1776). Researchers further argued that the regulatory function of taxation is to distribute income. Hence, in theory, tax revenue is among the tools used by sovereign states to reduce income inequality challenges (De Freitas, 2012). In the median voter theorem, higher taxes are supported only if they are accompanied with higher public expenditures associated with higher income (Alesina, Baqir, & Easterly, 1999; Boustan et al., 2013; Meltzer & Richard, 1981). Meltzer and Richard (1981) opined that the size of the public sector is positively associated with the degree of income inequality. The study further argued that the tax structure has a direct effect on income distribution (Meltzer & Richard, 1981). The Laffer curve suggests that tax revenue rises as the tax rate increases, but there is an optimal tax rate that maximises tax revenue without stifling economic activity (OECD, 2022). Beyond this level of optimal tax rate, higher tax rate reduces the overall tax revenue. This contrasted with Lambert (1993) political economy arguments, where tax design, which ultimately contributes to total revenue, evolves through the political process. Additionally, in the political economy theory, Stiglitz (2012) argued that power and greed contribute to economic inequality. Moneyed personas in an economy have an influential role in creating unfair economic and political systems, worsening inequality of opportunities and ultimately income (Lustig, 2018; Ndikumana, 2014; Piketty, 2021; Stiglitz, 2012).

Empirically there is inconclusive evidence on tax revenue-inequality nexus. The intuition is that tax revenue increases the public safety net, which is essential for reducing inequality by providing public goods and services (Bird & Zolt, 2005; Moore & Prichard, 2020). Effective provision of public goods and services by sovereign states is important for reducing inequality (Arora & Chong, 2018; Paler, Prichard, de la Sierra, & Samii, 2017). Social transfers to improve income equality are financed by tax revenue, as recognised by Moore and Prichard (2020). Previously, Alavuotunki, Haapanen, and Pirttilä (2019) asserted that revenue from taxes can be used to fund transfers and provision of public goods, which can reduce inequality. Hayes and Medina Vidal (2015) findings suggested that unemployment benefits as a redistributive tool reduce income inequality. However, for a study of municipalities in the United States, Boustan et al. (2013) argued that expansion of tax revenue increases income inequality. Hence the study found a positive relationship between income distribution and higher tax revenue. Ståhlberg (2008) found that welfare systems in Australia are funded by tax revenue, and they are potentially closing inequality gap. Despite other studies advocating for increased public expenditure to reduce income inequality, Song (2013) found a positive association between extensive public expenditure and income inequality for 28 provinces in China. However, for Latin America's Martorano (2018) findings suggested that tax revenue is critical for reducing income inequality. Government intervention through the income tax policy reduced income inequality and the study suggested that low tax revenue coincided with periods of higher inequality. Arguments by Jibao and Prichard (2016) and Paler et al. (2017) assert that the low-income earners at times pay more in formal and informal taxes, such that modest prominence on increasing collected revenue risks worsening existing inequities.

To meet the commitment of Goal 10 of the Sustainable Development Goals on reducing inequality, sovereign states must generate tax revenue. Inadequate tax revenue means inadequate fiscal resources to deliver essential public services, whose lack thereof affects the poor more, creating inequalities (International Monetary Fund, 2022). However, in a study for Guatemala, Domeij and Heathcote (2004) found that taxation has no effect on income inequality. This is directly contrasted by the finding of Jellema and Tassot (2018) for Togo, whose finding opined an inequality-reducing effect of tax revenue. Furthermore, Jao (2000) found that the tax revenue improved the income distribution in Taiwan whilst, Dotti (2020) found no connection between income distribution and the extent of public intervention. In many countries, inequality has been on the increase despite continued tax collection by

respective governments. This can be compounded by the ineffectiveness of the state to combat corruption, which is a threat to moderating poverty and inequality (Duho et al., 2020).

Globally, income inequality is on the rise in high-income countries with efficient tax systems and higher tax revenue as compared to low- and middle-income countries. Furthermore, it has also been recorded that in Sub-Saharan African countries, those with higher tax-to-GDP ratios are also among countries with the highest income inequality. For example, Sulla et al. (2022) found that for the SACU region, South Africa and Namibia have the highest tax revenue-to-GDP ratios, yet these countries are also among the countries with higher inequality as measured by the Gini coefficient. This calls into question the role of taxation in determining income distribution. Benabou (2000) found that more unequal societies distribute less of revenue collected irrespective of the size of the tax base. Additionally, reduction in welfare spending in the US and Europe coincided with increasing income inequality.

Higher revenue from taxes has been muted as one of the explanations to reduce income inequalities, and it plays a role in the ultimate income distribution in an economy (Dianov, Koroleva, Pokrovskaia, Victorova, & Zaytsev, 2022; Lambert, 1993). But governance factors such as control of corruption and the quality of regulation are cited as essential pre-requisites for effective income distribution using tax revenue (Furceri & Ostry, 2019; Salotti & Trecroci, 2018). But silent arguments also exist that in low- and middle-countries, misappropriation of tax revenue is rampant, pushing more low-income earners into poverty, increasing inequalities. Emerging and developing economies are rampant with grand corruption, where the politically connected evade taxes, illicit financial flows, and a vibrant shadow economy, reducing the overall revenue collected by sovereign states as taxes (United Nations Conference on Trade and Development, 2020; World Bank, 2021). Corruption weakens the systems of public financial management and investment in social services such as health education.

Ample studies have focused on other forms of achieving optimal income distribution, such as the financial sector (Altunbaş & Thornton, 2020; De Haan & Sturm, 2017) education (Cornia & Martorano, 2012; Lustig, 2018; Maknickienė, Lapinskaitė, Miečinskienė, & Skačkauskienė, 2018) and gender equality, among others. Since there is insufficient empirical literature on the effects of tax revenue on inequality, this study suggests that the claim that a higher level of tax revenue is associated with more representative systems that moderate income inequality should be revisited. Most emerging and developing economies strive to achieve fair income equality through the distribution of tax revenue; however, they face numerous structural challenges. Can increased tax revenue reduce income inequality? The debate on the effectiveness of tax revenue as a tool for reducing inequality and promoting economic development remains inconclusive, as there is paucity of studies on tax revenue and income inequality. Hence the following hypothesis was tested.

H0: Tax revenue is not significantly related to income inequality.

Ha: Tax revenue is significantly related to income inequality.

Existing empirical literature has not established a conclusive inequality-tax revenue nexus; in some countries, rising inequality has coincided with higher tax revenue and an increase in social spending by the government (Bachas, Gadenne, & Jensen, 2024; Chernick, 2005; Schwabish, 2008).

3. DATA AND METHODOLOGY

3.1. Data and Measurements

The study used available dynamic annual panel data for 20 low- and medium-income countries, focusing on African countries observed over 2010-2021, to analyse the effects of tax revenue on income inequality. The period of the study and the study sample were solely determined by data availability. Hence, a purposive sampling technique was adopted. Table 1 shows the summary description of the variables, data sources, and the expected sign. The Gini coefficient is used as the dependent variable.

Table 1. Variable description.

Variable	Definition/Measurement	Source	Expected sign.
Inequality (INEQ)	The ratio of the mean absolute difference between two individuals or entities to twice the mean level of income.	SWIID	
Tax revenue (TAXREV)	Tax revenue as % of gross domestic product (GDP)	World development indicators (WDI).	Negative (-)
Economic growth (GDPG)	The annual growth of the GDP	WDI	Negative (-)
Foreign direct investment (FDI)	Foreign direct investment, net inflows (% of GDP)	WDI	Positive/Negative (+/-)
Official development assistance (ODA)	Net ODA received per capita (Current US$).	WDI	Positive/Negative (+/-)
Remittances	Personal remittances, received (% of GDP)	WDI	Negative (-ve)
Trade openness (TRADEOP)	Sum of imports and exports as a share of GDP	WDI	Positive/Negative (+/-)
Control of corruption (CCOR)	Control of corruption (Estimate): It captures perceptions of the extent to which public power is exercised for private gain, including both petty and grand forms of corruption, as well as capture of the state by elites and private interest.	World governance indicators (WGI)	Positive (+)
Regulatory quality (Reg Q)	Regulatory quality (Estimate): Reflects perceptions of the ability of the government to formulate and implement sound policies and regulations that permit and promote private sector development.	WGI	Negative (-)

3.2. Model Estimation Technique

Inequality in developing countries is persistent; hence, the preferred methodology for this study is the generalised method of moments (GMM). Specifically, the dynamic panel data model of GMM proposed by Arellano and Bond (1991) and Blundell and Bond (1998) is employed. This methodology is designed to address the potential endogeneity issues of inequality and the independent variables of the study.

Thus, due to its ability to handle the bias arising from the correlation between the lagged income inequality and the fixed effects in the error term, GMM was a preferred model to determine the relationship between inequality and tax revenue (Arellano & Bond, 1991). Cross-sectional dependency (CD) test was also carried out to determine any possible endogeneity in the explanatory variable (Pesaran, 2007). The results revealed a Pesaran CSD of -0.800 with a probability of 0.4240, implying failure to reject the null hypothesis of cross-sectional independence. Nevertheless, the final models were run using the Driscoll and Kraay (1998) robust standard errors. The system GMM allows for the relaxation of the assumption of strong exogeneity of the explanatory variables. In other studies, the Auto Regressive Distributed Lag (ARDL) model method was used to determine the cointegration between tax revenue and income inequality (Hayrullahoglu & Tuzun, 2020). The study found an inverse relationship between tax revenue and income inequality for selected OECD countries. The objective of this study is to examine the deterministic relationship between income inequality and tax revenue; hence, the GMM is the more suitable methodology to answer the research question for this study. Furthermore, the possibility of endogeneity challenges and the nature of the data set, where the cross-sectional dimension (N) is relatively larger than the time dimension (N>T), render the GMM a preferred methodology. Balseven and Tugcu (2017) used the fixed effects and the random effects in a comparative study on the effects of fiscal policy and income inequality in developed economies and developing economies.

Following Arellano and Bond (1991) internal instruments with suitable lag lengths are used as the internal variables. The prerequisite of applying the GMM technique is that the number of cross-sections (countries) should

be considerably higher than the time periods (years) for each cross-section (country). This stud observed 20 cross-sections, each of which corresponded to 11 time periods. This implies that the condition for employing the GMM methodology is satisfied (see (Asongu & Odhiambo, 2019; Odhiambo, 2020)). Following Sargan (1958) and Hansen (1982), the validity of the instruments was assessed. To check for over-identifying restrictions, the methods of Blundell and Bond (1998) and Blundell and Bond (2000) were applied. The Arellano-Bond test was used to check for correlation of the error terms, ensuring the effectiveness of the results (Arellano & Bond, 1991; Windmeijer, 2005). To address the trade-off between efficiency and test power, we employed Roodman (2009) instrument reduction technique, which imposes lag limits and collapses the instrument matrix. The advantage of the system's GMM estimator is that it relies only on the variables already included in the dataset, without needing external instruments.

$$\Delta INEQ_{i,t} = \beta_0 + \Delta\beta_1 INEQ_{i,t-1} + \sum_{i-1}^{n} \beta_{iq} \Delta X_{q,it} + \Delta\mu_i + \Delta\lambda_{it} + \Delta\varepsilon_{it} \quad (1)$$

Where Δ is the difference operator; $INEQ_{it}$ represents the level of inequality for country i in year t; $TAXR_{it}$ represents tax revenue as a share of GDP for country i in year t; X_{it} is a vector of control variables; μ_i is the country-specific effect and λ_{it} is the time-specific effect, whilst $\varepsilon_{i,t}$ is the error term. The control variables in X_{it} includes tax revenue (TAXREV), economic growth (GDPG), foreign direct investment (FDI), official development assistance (ODA), trade openness (TRADEOP), Corruption (CCOR), and regulatory quality (RegQ); the μ_i captures the cross-country heterogeneity. Equation 1 is estimated following Roodman (2009) using forward orthogonal deviations to limit instrument proliferation. The consistency of the model is tested using the AR(2) autocorrelation test and the Sargan and Hansen tests for over-identifying restrictions (Hansen, 1982; Sargan, 1958). Section 4 discusses the results of the nexus between tax revenue and inequality.

4. RESULTS AND DISCUSSION

The descriptive statistics of inequality, tax revenue, and the control variables are reported in this section in Table 2. The results reveal that inequality ranges from 0.38 to 0.66, being minimum and maximum, respectively, with 0.08 as standard deviation and an average of 0.47. A minimum of 4.43 with a maximum of 38.08 is reported for tax revenue. The standard deviation reported is associated with a standard of 7.37 with an average of 19.02 for the tax revenue.

The control variables include GDP growth rate, foreign domestic investment, official development Assistance, regulatory quality, remittances, corruption index, and trade openness. On average, the GDP growth rate has a mean value of 2.45 percent, while the foreign domestic investment has an average value of 5.29, the official development assistance has a mean of 74.59, the regulatory quality had a mean of -0.33, while the REM had an average of 4.31, corruption index had a mean of -0.26 and the trade openness had the mean value of 86.48. The GDP growth rate ranges from -17 percent to 14.05 percent, whilst foreign domestic investment ranges from -6.37 to 57.84. The minimum and maximum of the official development assistance are 0.34 and 663.72, respectively. The regulatory quality has a minimum of -1.65 and a maximum of 1.20, while the reported minimum for remittances is 0.00 with a maximum of 27.30. Estimate of corruption index has a minimum of -1.55 to a maximum of 1.63, whilst the minimum for trade openness is 0.78 with a maximum of 216.48. The standard deviation for GDP growth rate, foreign domestic investment, official development assistance, regulatory quality, remittances, corruption index, and trade openness were 4.43, 8.29, 92.16, 0.5, 5.35, 0.69, and 37.36, respectively.

Table 3 shows the correlation matrix for the main control variables and the dependent variable for a sample of countries in Africa. The results show a negative association between inequality and ODA, remittances, and trade openness. The variables are statistically significant and in align with *a priori* expectations.

Table 2. Descriptive stats.

Variables	Definition	Mean	Max.	Min.	SD	Obs.
INEQ	Inequality	0.47	0.66	0.38	0.08	240
TAXREV	Tax revenue	19.02	38.08	4.43	7.37	240
GDPG	GDP growth rate	2.45	14.05	-17.00	4.43	240
FDI	Foreign domestic investment*	5.29	57.84	-6.37	8.29	240
ODA	Official development assistance	74.59	663.72	0.34	92.16	240
REGQ	Regulatory quality	-0.33	1.20	-1.65	0.59	240
REM	Remittance receipts**	4.31	27.30	0.00	5.35	240
CCOR	Corruption index	-0.26	1.63	-1.55	0.69	240
TRADEOP	Trade openness	86.48	216.48	0.78	37.36	240

Note: *FDI net inflows (% of GDP)
**Remittance receipts as a percentage of the gross domestic product.

Table 3. Correlations.

Variables	INEQ	TAXREV	GDPG	FDI	ODA	REGQ	REM	CCOR	TRADEOP
INEQ	1.00								
TAXREV	0.17***	1.00							
GDPG	-0.07	-0.05	1.00						
FDI	-0.07	0.035	-0.02	1.00					
ODA	-0.14**	0.20***	0.07	0.22***	1.00				
REGQ	0.069	0.486***	0.09	-0.186***	0.15**	1.00			
REM	-0.401***	0.284***	-0.039	-0.142**	0.21***	-0.07	1.00		
CCOR	0.02	0.649***	0.035	-0.062	0.466***	0.80***	0.14**	1.00	
TRADEOP	-0.13**	0.627***	0.03	0.40***	0.42***	0.27***	0.20***	0.513***	1.00

Note: ** $p < 0.01$, *** $p < 0.001$, Since RegQ and CCOR are highly correlated they were tested in separate equations.

The empirical results reported in Table 4 consist of two main sets of specifications, each corresponding to inclusion of a corruption estimate measure and regulation quality measure, respectively. These variables were not analysed in a single equation as there was high multicollinearity.

Table 4. Summary of results of inequality-tax revenue nexus.

Model	2-step system GMM	2-step system GMM
Variables	**INEQ**	**INEQ**
L.INEQ	0.382***	0.390***
	(0.0733)	(0.0787)
TAXREV	0.000956***	0.00106***
	(0.000156)	(0.000222)
FDI	0.000184**	0.000163*
	(0.0000607)	(0.0000593)
ODA	-0.00000896	-0.00000923
	(0.00000808)	(0.00000742)
REM	0.00246***	0.00247***
	(0.000420)	(0.000404)
GDPG	0.000764***	0.000690***
	(0.0000998)	(0.000105)
TRADEOP	-0.000489***	-0.000439***
	(0.0000929)	(0.0000949)
CCOR	-0.000349	
	(0.000381)	
REGQ		-0.00666***
		(0.000642)
N	200	200
Groups	20	20
Instruments	18	18
AR(1)	-0.19	-0.31
AR(2)	-0.18	-0.09
Sargan test	9.74	9.62
Hansen test	9.90	9.44

Note: *p < 0.1. **p < 0.05. ***p < 0.01. Driscoll-Kraay robust standard errors in parenthesis.

The regression analysis results confirmed that inequality is persistent, as previous levels of inequality are positively and significantly associated with current inequality levels. In many low- and middle-income countries, inequality is structural, with little to no intergenerational income mobility, reinforcing the persistence of inequality (Kunawotor et al., 2020). The study's results, shown in Table 4, indicate that inequality increases with higher tax revenue in the countries examined. This finding contradicts previous studies by Pisu (2012) on Nordic countries and Joumard et al. (2013) on OECD countries. Joumard et al. (2013) argued that the redistributive effect of taxes depends on the amount collected, and the countries in this study have relatively small tax revenues as a percentage of GDP (World Bank, 2023). Therefore, the collected tax revenue is insufficient to significantly impact income distribution. Additionally, Saez and Zucman (2019) and Looney (2021) found that in the United States, tax revenue has little effect on modulating income and wealth inequality, with a positive and significant relationship between tax revenue and inequality. This implies that as tax revenue increases, inequality also increases.

Additionally, FDI, remittances, and GDP growth have a positive relationship with inequality, whilst trade openness has a negative relationship with inequality. The finding of a positive relationship between FDI and inequality is consistent with the finding reported by Martorano (2018) and Dorn, Fuest, and Potrafke (2022) who found a positive and statistically significant relationship between FDI and inequality. Furthermore, there is little evidence on the relationship between official development aid and inequality, which confirms the findings of Chong, Gradstein, and Calderon (2009). The negative relationship between trade openness and inequality is contrary to the findings of Kunawotor et al. (2020) who found no relationship between inequality and trade openness. However, Furceri and Ostry (2019) identified trade openness as a significant driver of income inequality. Most African

countries generate a significant amount of taxes from trade. It was expected a priori that there would be a negative and statistically significant relationship between trade openness and income inequality. This finding is contrary to Dorn et al. (2022) whose study was inconclusive on the links between trade openness and inequality. The study found that the association between trade openness and inequality varies across countries; where in low- and middle-income countries trade openness disproportionately benefits the poor, unlike in high-income countries where inequality increases with an increase in trade openness (Dorn et al., 2022).

The study found no significant effect of control of corruption on income inequality for the sample of countries in the study, even though the finding has a negative relationship as expected a priori. Although the relationship between control of corruption and inequality is not significant, the finding of a negative relationship between the variables is similar to the finding of Kunawotor et al. (2020). Furceri and Ostry (2019) argued that in economies with insufficient control of corruption, biased tax systems are created, affecting the effectiveness of the government to redistribute income as taxes are evaded. Some studies have argued that there is an indirect relationship between inequality and corruption as it affects economic growth and tax evasion. Hence, corruption promotes tax evasion, which affects the role of tax revenue according to the proponents of an indirect relationship between control of corruption and income inequality (Chu & Hoang, 2020; Sulemana & Kpienbaareh, 2018). Ndikumana (2014) findings suggested that in economies with low institutional quality, 8 percent of natural resource rents from petroleum end up in a tax haven. As expected, the regulation quality is negatively related to inequality. This finding contradicts Kunawotor et al. (2020) who found no statistically significant relationship between inequality and regulatory quality. Improvements in regulatory quality, however, do reduce income inequality.

5. CONCLUSION, POLICY RECOMMENDATIONS AND LIMITATIONS

Inequality is a complex and global concern such that it needs a holistic approach in tackling this global scourge. Sufficient tax revenue is essential for effective income distribution programmes by the state. Governments in emerging and developing economies are regularly advised to tax the rich more, but there is a dearth of empirical research on the links between tax revenue and income distribution. The objective of the study was to examine the inequality-tax revenue nexus and contribute to the debate on the empirical relationships of the two variables. The results from this study show a positive and significant relationship between inequality and tax revenue. Suggesting higher tax revenue increases income inequality in the countries in this study. However, Sulla et al. (2022) argued that there are two distinct ways in which tax revenue and inequality affect each other. Specifically, the study focuses on how individuals share the tax system's burden and how it should be distributed across different income classes. Hence, this study contributes to the body of knowledge on tax revenue-inequality nexus.

5.1. Policy Implications and Future Research

Policymakers are advised to understand the complex nature of inequality and that not only tax revenue in isolation is sufficient to address the inequality gap. Policymakers should strike a balance in generating additional revenues without generating economic inefficiencies that exacerbate inequality. Lessons for policymakers are that increases in tax revenue do not necessarily filter to reduced income inequalities, as other factors such as corruption and regulation quality are also essential. It is not clear if the drive to increase tax revenue in low- and middle-income countries should be applied on a one-size-fits-all basis; hence, policymakers are encouraged to be cognisant of which specific potential revenue sources governments generally underexploit so that targeted domestic resource mobilisation is followed to increase revenue collected as taxes. Most emerging and developing economies have a vibrant shadow economy; it is therefore recommended that policymakers incorporate part of the informal economy into the formal economy to increase the collected revenue. Even when enough tax revenue is collected, the composition of government expenditure is essential for effective income distribution.

Further research is therefore recommended on how the composition of public spending shapes income distribution in low- and medium-income countries. It is recommended for coordinated research to examine the effect of taxation on poverty and inequality rather than a silo analysis. More often, reducing inequality does not necessarily mean poverty reduction. It is not clear whether higher taxes increase collected revenue or if there is an optimal tax rate that maximises revenue collected for the state to fund its endeavours. It is further recommended to isolate the tax structures to analyse which tax structure is most effective in reducing income inequality in addition to their suitability to the respective countries economic systems. Collected revenue with ineffective redistributive policy can be counterintuitive to reducing income inequality. Further research on the effectiveness of some tax and expenditure policies employed in emerging and developing economies shows they can distort incentives and reduce economic efficiency. Further research is therefore recommended on how the composition of public spending shapes income distribution in low- and medium-income countries. It is recommended for coordinated research to examine the effect of taxation on poverty and inequality rather than a silo analysis. More often, reducing inequality does not necessarily mean poverty reduction. It is not clear whether higher taxes increase collected revenue or if there is an optimal tax rate that maximises revenue collected for the state to fund its endeavours. It is further recommended to isolate the tax structures to analyse which tax structure is most effective in reducing income inequality in addition to their suitability to the respective countries economic systems. Collected revenue with ineffective redistributive policy can be counterintuitive to reducing income inequality. Further research on the effectiveness of some tax and expenditure policies employed in emerging and developing economies can distort incentives and reduce economic efficiency.

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