Tax–trade nexus in Nigeria: An empirical analysis of oil and non-oil imports and exports

Aishatu Kabir[1*], Nasir Bukola Rasheed[2]

[1]Nile University of Nigeria.
[2]University of Abuja, Nigeria.

Corresponding author: Aishatu Kabir (*Email:* aishakbmaaji@gmail.com)

Abstract

This study examined the impact of taxation on oil and non-oil trade flows in Nigeria between 2011Q1 and 2024Q4. The study employs the Autoregressive Distributed Lag (ARDL) modelling framework to analyse the short- and long-run effects of key tax variables, customs duties (CDT), value-added tax (VAT), and corporate income tax (CIT), on oil and non-oil trade flows in Nigeria. The results reveal that positive shocks to customs duties significantly increase oil imports and non-oil exports in the short run. In contrast, VAT demonstrates limited influence across the different trade categories. Corporate income tax is found to stimulate non-oil exports in the short run but exerts minimal effects on imports. Exchange rate depreciation reduces both non-oil imports and exports. In the long run, customs duties remain a significant driver of trade flows, while both corporate income tax and VAT tend to constrain trade activities. The findings highlight the heterogeneous effects of taxation on different components of trade in Nigeria. While certain tax instruments, particularly customs duties, can stimulate trade flows, others may impose constraints that affect the performance of the external sector over time. The study suggests that policymakers should design tax strategies that balance revenue mobilisation with trade promotion. In particular, tax policies should account for sectoral differences between oil and non-oil trade, while also considering the interactions between taxation, exchange rate dynamics, and investment conditions to ensure sustained external sector stability and diversification of Nigeria's trade base.

Keywords: ARDL, International Trade, Non-Oil Trade, Oil Trade, Taxation.

Competing Interests: The authors declare that they have no competing interests.
Authors' Contributions: All authors contributed equally to the conception and design of the study. All authors have read and agreed to the published version of the manuscript.
Transparency: The authors confirm that the manuscript is an honest, accurate, and transparent account of the study; that no vital features of the study have been omitted; and that any discrepancies from the study as planned have been explained. This study followed all ethical practices during writing.

1. Introduction

Taxation is generally accepted as a very important policy tool that governments use to influence international trade, but its impacts are seldom consistent across various components of trade [1] The effect of taxation on exports and imports in economies where the trade structure is highly segmented, like in Nigeria, is likely to differ significantly between the oil and non-oil sectors. The trade profile of Nigeria is defined by the presence of a strong oil export industry and a comparatively underdeveloped non-oil export industry, with imports being divided into energy-related goods and a broad assortment of consumer and intermediate goods [2, 3]. This structural duality implies that variations in direct and indirect taxes can be transmitted differently in oil exports, non-oil exports, oil imports, and non-oil imports. Nevertheless, this critical difference has not been given much empirical focus in the available literature. Furthermore, from a theoretical standpoint, direct taxes such as corporate income tax affect trade primarily through firm-level channels, including profitability, investment decisions, and export capacity [4]. These mechanisms are expected to be more relevant for non-oil sectors, where domestic firms play a larger role, than for oil exports, which are largely driven by multinational corporations and governed by contractual and fiscal regimes that may dampen short-run tax sensitivity [5]. In contrast, indirect taxes, such as customs duties and value-added taxes, directly affect the prices of traded goods and therefore have more immediate implications for import and export volumes [6]. However, even these effects can vary with product categories, based on the elasticity of demand, strategic significance, and policy exemptions, especially in resource-dependent economies [7]. Moreover, despite the policy relevance of these distinctions, the majority of empirical research on the tax-trade nexus, especially in developing economies, has been based on aggregate trade measures or the aggregate balance of trade [8, 9]. These methods implicitly presuppose that the effects of taxes on sectors and products are homogeneous, which is not likely to be true in the Nigerian context. On the other hand, evidence from advanced economies already points to heterogeneous responses of trade flows to tax changes, varying by sector, tax type, and foreign direct investment exposure [10, 11]. The absence of comparable disaggregated evidence for Nigeria, therefore, represents a significant gap in the literature.

Against this backdrop, this study examines the differentiated effects of direct and indirect taxation on oil and non-oil exports and imports using a dynamic Autoregressive Distributed Lag (ARDL) framework, which captures both short-run dynamics and long-run equilibrium relationships. In this regard, the study re-examines the tax–trade nexus through a more refined and policy-oriented lens, offering insights that can guide tax policy reforms, promote trade diversification, and enhance the management of Nigeria's external sector.

2. Literature Review

A substantial body of empirical literature has examined the relationship between taxation and international trade, with evidence largely drawn from advanced and emerging economies. For example, Metelli and Natoli [12] explored the international spillover effects of U.S. tax shocks using a structural VAR framework and showed that shocks to personal income tax rates permanently raise both imports and exports above their steady-state levels. Benzarti and Tazhitdinova [6] focusing on EU member states, assessed the trade effects of value-added taxes and reported that trade elasticities with respect to VAT are generally small, even in the presence of sizable tax changes. Similarly, Jovanović [13] using data from 41 EU and OECD countries and a two-stage least squares panel model, found that labour taxes exert no significant influence on imports and affect exports only when domestic labour contributes substantially to value added. The study further revealed that corporate taxes influence exports and imports only in economies with large foreign direct investment (FDI) stocks, suggesting a limited overall role of taxation in driving trade expansion. Relatedly, Holzner, et al. [10] examined 34 EU and OECD economies and showed that corporate income taxes reduce both exports and imports only in countries with high FDI stocks, with stronger effects in the service sector and in low-tax jurisdictions. Adarov, et al. [14] also analysed labour taxation across 41 EU and OECD countries and found that higher labour taxes have no significant effect on imports but tend to depress exports, with the magnitude of the effect depending on the share of domestic labour value added across industries, countries, and time. Evidence from developing economies is comparatively sparse. For Nigeria, Nwagu, et al. [8] employed a cointegration approach and found that government expenditure and tax revenue adversely affect the trade balance in the long run, while exchange rate depreciation improves it. Other studies have expanded the scope to include tax compliance, welfare, and macroeconomic transmission channels. Bussy [15] using fixed-effects panel estimation for EU countries, reported that corporate taxes, VAT, and average effective tax rates negatively affect both imports and exports. Bond, et al. [16] adopting a general equilibrium framework for China, showed that partial VAT rebates on exports have limited welfare effects, while optimal export taxes reduce import volumes in some periods but increase them in others. Hayo and Mierzwa [11] applying a VAR model to the US, UK, and Germany, documented heterogeneous effects of tax shocks: personal income tax shocks reduced exports in the US and UK but increased them in Germany, while corporate income tax shocks generally reduced trade flows, with notable cross-country differences. Keskin and Bağcı [17] analysing 20 OECD economies with a random-effects model, found that higher trade taxes and exchange rate depreciation significantly reduce import volumes.

More recent contributions highlight the dynamic and shock-based dimensions of the tax–trade relationship. Rangkuty, et al. [9] sing VAR techniques for Indonesia, showed that tax and investment shocks improve the trade balance in the short run but worsen it in the long run, while exchange rate shocks exert positive effects across both horizons. Klein and Linnemann [18] focusing on the United States and employing a proxy-VAR approach, found that exogenous tax cuts lead to larger trade deficits and real exchange rate depreciation. At a broader cross-country level, Le, et al. [19] used instrumental variable estimation for 109 countries and documented a significant positive association between overall trade openness and tax performance. Finally, Auclert, et al. [20] applying an open-economy New Keynesian DSGE model to the

U.S. economy, showed that import tariff shocks trigger recessions and initially improve the trade balance, but retaliatory responses from trading partners ultimately worsen the trade balance and deepen the downturn.

A distinct research gap is evident in the existing literature. While numerous studies have analysed the tax–trade relationship (e.g., Benzarti and Tazhitdinova [6]; Holzner, et al. [10]; Hayo and Mierzwa [11]; Metelli and Natoli [12]; Jovanović [13] and Adarov, et al. [14] the empirical evidence is largely drawn from advanced and OECD economies, with limited attention to developing countries. Apart from a few studies such as Nwagu, et al. [8] and Rangkuty, et al. [9] developing economies, and Nigeria in particular, remain underexplored. Furthermore, existing findings are mixed and often context-specific, varying by tax category, empirical strategy, and structural characteristics of the economy. More importantly, the Nigerian literature has not examined the dynamic effects of distinct direct and indirect tax instruments on trade outcomes, nor has it accounted for potential asymmetric responses across trade components. This study addresses these gaps by providing Nigeria-specific evidence on the short- and long-run effects of direct and indirect tax on disaggregated trade flows within an ARDL framework, thus contributing to a deeper insight into the dynamics of the tax–trade nexus within developing economies.

3. Methodology
3.1. Model Specification

This study adopts the model of Bussy [15] with modifications to analysed tac-trade relationship in Nigeria. In their model, both export and import are expressed as functions of corporate taxes, VAT, and average effective tax rates. However, this model for this study is generally expressed as:

$$\text{Trade}_t = f\left(\text{CID}_t, \text{VAT}_t, \text{CIT}_t, \text{ExR}_t, \text{GDP}_t\right) \tag{1}$$

Where Trade is a vector of oil and non-oil import and export, CID is the customs duty, VAT is the import-VAT, CIT is the corporate tax, ExR is the exchange rate, and GDP is the gross domestic product. To parameterise the model, four distinct ARDL specifications are developed for each trade variable and are presented in their generalised unrestricted forms as shown below:

Model 1:

$$
\begin{aligned}
\Delta\ln(\text{OilM}_t) = {} & \phi_{10} + \sum_{i=1}^{p} \phi_{11i}\,\Delta\ln(\text{OilM}_{t-i}) + \sum_{i=0}^{q} \phi_{12i}\,\Delta\ln(\text{CID}_{t-i}) + \sum_{i=0}^{q} \phi_{13i}\,\Delta\ln(\text{VAT}_{t-i}) + \sum_{i=0}^{q} \phi_{14i}\,\Delta\ln(\text{CIT}_{t-i}) \\
& + \sum_{i=0}^{q} \phi_{15i}\,\Delta\ln(\text{ExR}_{t-i}) + \sum_{i=0}^{q} \phi_{16i}\,\Delta\ln(\text{GDP}_{t-i}) + \eta_{11}\ln(\text{CID}_{t-1}) + \eta_{12}\ln(\text{VAT}_{t-1}) + \eta_{13}\ln(\text{CIT}_{t-1}) \\
& + \eta_{14}\ln(\text{ExR}_{t-1}) + \eta_{15}\ln(\text{GDP}_{t-1}) \\
& + v_{1t}
\end{aligned}
\tag{2}
$$

Model 2:

$$
\begin{aligned}
\Delta\ln(\text{NoilM}_t) = {} & \phi_{20} + \sum_{i=1}^{p} \phi_{21i}\,\Delta\ln(\text{NoilM}_{t-i}) + \sum_{i=0}^{q} \phi_{22i}\,\Delta\ln(\text{CID}_{t-i}) + \sum_{i=0}^{q} \phi_{23i}\,\Delta\ln(\text{VAT}_{t-i}) + \sum_{i=0}^{q} \phi_{24i}\,\Delta\ln(\text{CIT}_{t-i}) \\
& + \sum_{i=0}^{q} \phi_{25i}\,\Delta\ln(\text{ExR}_{t-i}) + \sum_{i=0}^{q} \phi_{26i}\,\Delta\ln(\text{GDP}_{t-i}) + \eta_{21}\ln(\text{CID}_{t-1}) + \eta_{22}\ln(\text{VAT}_{t-1}) + \eta_{23}\ln(\text{CIT}_{t-1}) \\
& + \eta_{24}\ln(\text{ExR}_{t-1}) + \eta_{25}\ln(\text{GDP}_{t-1}) \\
& + v_{2t}
\end{aligned}
\tag{3}
$$

Model 3:

$$
\begin{aligned}
\Delta\ln(\text{OilX}_t) = {} & \phi_{30} + \sum_{i=1}^{p} \phi_{31i}\,\Delta\ln(\text{OilX}_{t-i}) + \sum_{i=0}^{q} \phi_{32i}\,\Delta\ln(\text{CID}_{t-i}) + \sum_{i=0}^{q} \phi_{33i}\,\Delta\ln(\text{VAT}_{t-i}) + \sum_{i=0}^{q} \phi_{34i}\,\Delta\ln(\text{CIT}_{t-i}) \\
& + \sum_{i=0}^{q} \phi_{35i}\,\Delta\ln(\text{ExR}_{t-i}) + \sum_{i=0}^{q} \phi_{36i}\,\Delta\ln(\text{GDP}_{t-i}) + \eta_{31}\ln(\text{CID}_{t-1}) + \eta_{32}\ln(\text{VAT}_{t-1}) + \eta_{33}\ln(\text{CIT}_{t-1}) \\
& + \eta_{34}\ln(\text{ExR}_{t-1}) + \eta_{5}\ln(\text{GDP}_{t-1}) \\
& + v_{3t}
\end{aligned}
\tag{4}
$$

Model 4:

$$
\begin{aligned}
\Delta\ln(\text{NoilX}_t) = {} & \phi_{40} + \sum_{i=1}^{p} \phi_{41i}\,\Delta\ln(\text{NoilX}_{t-i}) + \sum_{i=0}^{q} \phi_{42i}\,\Delta\ln(\text{CID}_{t-i}) + \sum_{i=0}^{q} \phi_{43i}\,\Delta\ln(\text{VAT}_{t-i}) + \sum_{i=0}^{q} \phi_{44i}\,\Delta\ln(\text{CIT}_{t-i}) \\
& + \sum_{i=0}^{q} \phi_{45i}\,\Delta\ln(\text{ExR}_{t-i}) + \sum_{i=0}^{q} \phi_{46i}\,\Delta\ln(\text{GDP}_{t-i}) + \eta_{41}\ln(\text{CID}_{t-1}) + \eta_{42}\ln(\text{VAT}_{t-1}) + \eta_{43}\ln(\text{CIT}_{t-1}) \\
& + \eta_{44}\ln(\text{ExR}_{t-1}) + \eta_{45}\ln(\text{GDP}_{t-1}) \\
& + v_{4t}
\end{aligned}
\tag{5}
$$

Where OilM is the oil import, NoilM is the non-oil import, OilX is the oil export, and NoilX is the non-oil export. In Equations (2-5), the summation terms capture the short-run dynamics, each associated with its respective short-run coefficient (ϕ). The parameters denoted by (η) reflect the long-run effects. The term (v) represents the white noise error, Δ indicates the first-difference operator, and p and q denote the lag lengths used in the conditional ARDL model.

3.2. Data

This study employed quarterly time series data spanning 2011Q1 to 2024Q4. Data on oil and non-oil exports and imports (₦ million), exchange rate (local currency per US dollar), and gross domestic product (₦ million) were obtained from the Central Bank of Nigeria (CBN) Statistical Bulletin. Data on tax variables, customs duties, value-added tax (VAT), and corporate income tax (CIT) revenues (₦ million) were sourced from the Federal Inland Revenue Service (FIRS) database.

4. Results

Table 1.
Descriptive statistics.

Variable	Mean	Std. Dev.	CV	Max.	Min.
OilM	3591.946	1528.451	0.426	8187.331	699.4284
NoilM	9537.5	2544.476	0.267	16208.67	5203.044
OilX	14371.09	5490.839	0.382	25321.22	5176.871
NoilX	1443.515	680.7483	0.472	3923.158	465.6258
CID	254730.9	200454.7	0.787	934433	91414
VAT	172980.7	319089.2	1.845	1472080	35530
CIT	488970.9	515512.1	1.054	2923540	112360
ExR	378.7129	340.499	0.899	1621.875	151.9973
GDP	34633052	16112173	0.465	81229105	14686114

Table 1 presents the descriptive statistics of the variables used in the study. The mean values reflect the average levels, while standard deviations and coefficients of variation (CV) capture the relative volatility over time. Oil exports (OilX) and non-oil exports (NoilX) averaged ₦14,371.09 million and ₦1,443.52 million, respectively, indicating the dominance of oil in Nigeria's export profile. Their CVs (0.382 for oil exports and 0.472 for non-oil exports) suggest that non-oil exports are relatively more volatile. Oil imports (OilM) and non-oil imports (NoilM) averaged ₦3,591.95 million and ₦9,537.50 million, respectively, with lower relative volatility in non-oil imports (CV = 0.267), implying steadier import demand. Among the tax variables, customs duties (CID) show substantial variability (CV = 0.787), while corporate income tax (CIT) and VAT revenues exhibit even higher dispersion (CVs of 1.054 and 1.845, respectively), reflecting sensitivity to economic conditions and policy changes. The exchange rate (ExR) records a mean of ₦378.71 per US dollar with a CV of 0.899, highlighting significant currency fluctuations. Nigeria's GDP shows moderate variability (CV = 0.465), indicating noticeable fluctuations in domestic output, consistent with the volatility observed in trade and tax series. Overall, the descriptive statistics underscore the heterogeneous behaviour of trade flows, tax revenues, and macroeconomic indicators in Nigeria over the study period.

Table 2.
Unit root test results.

Variable	ADF		Phillips-Perron		Remark
	@level	@diff	@level	@diff	
ln(OilM)	-4.041**	-11.55***	-4.068**	-16.83***	$I(0)$
ln(NoilM)	-2.862	-10.30***	-2.922	-10.17***	$I(1)$
ln(OilX)	-2.175	-8.236***	-2.317	-8.193***	$I(1)$
ln(NoilX)	-4.175***	-4.853***	-4.126**	-20.59***	$I(0)$
ln(CID)	-1.088	-5.562***	-0.779	-11.07***	$I(1)$
ln(VAT)	-1.626	-7.624***	-1.913	-7.625***	$I(1)$
ln(CIT)	1.520	-12.50***	-4.585***	-16.13***	Mix
ln(ExR)	0.129	-6.352***	-0.299	-6.337***	$I(1)$
ln(GDP)	-0.184	-3.379*	-2.148	-13.01***	$I(1)$

Note: *** $p < 1\%$, ** $p < 5\%$, * $p < 10\%$

Table 2 presents the results of the Augmented Dickey-Fuller (ADF) and Phillips-Perron (PP) unit root tests. The findings indicate mixed orders of integration among the variables, justifying the use of the ARDL framework. Specifically, oil imports (ln OilM) and non-oil exports (ln NoilX) are stationary at level [$I(0)$], while non-oil imports (ln NoilM), oil exports (ln OilX), customs duties (ln CID), VAT (ln VAT), exchange rate (ln ExR), and GDP (ln GDP) are stationary after first differencing [$I(1)$]. Corporate income tax (ln CIT) exhibits mixed integration, being stationary at the level under Phillips-Perron but requiring first differencing under Augmented Dickey-Fuller. These results confirm that all variables are

either I(0) or I(1), satisfying the precondition for ARDL bounds testing and enabling the analysis of both short- and long-run dynamics.

Table 3 presents the long-run and short-run estimates from the ARDL models for oil and non-oil imports and exports. The diagnostic tests (LM and heteroskedasticity) indicate no serial correlation or heteroskedasticity issues (none of the statistics are significant), while the F-bound tests confirm cointegration for oil imports and non-oil exports models at 1% and 5% significance levels. The bound test statistics for the non-oil import and oil export models show no evidence of cointegration, although their error-correction terms are significant, which implies weak cointegration [21]. The results show that in the short run, changes in CDT significantly increase oil imports (1.468, $p < 0.01$), while CIT positively affects non-oil exports (0.340, $p < 0.01$). Exchange rate changes negatively influence non-oil imports (-0.384, $p < 0.10$) and non-oil exports (-1.059, $p < 0.05$), highlighting the sensitivity of trade flows to currency fluctuations.

Table 3.
ARDL regression models estimates.

Independent Variable	Import		Export	
Long-run estimates	**Oil**	**Non-oil**	**Oil**	**Non-oil**
$\ln(CDT_t)$	1.988***	0.121	0.559	1.396**
	(0.499)	(0.497)	(1.004)	(0.691)
$\ln(VAT_t)$	-0.154	0.104	0.184	-0.258
	(0.192)	(0.206)	(0.378)	(0.275)
$\ln(CIT_t)$	-0.093	0.065	-0.036	-0.220
	(0.292)	(0.191)	(0.442)	(0.434)
$\ln(ExR_t)$	-0.484	-1.009*	-0.498	0.306
	(0.507)	(0.514)	(1.010)	(0.815)
$\ln(GDP_t)$	-1.634**	0.765	-0.762	-1.009
	(0.637)	(0.691)	(1.297)	(0.904)
Constant	17.67**	-1.844	16.86	11.64
	(7.347)	(7.823)	(14.78)	(10.52)
Short-run estimates				
$\Delta\ln(CDT_t)$	1.468***	0.046	0.104	-0.180
	(0.413)	(0.195)	(0.212)	(0.441)
$\Delta\ln(VAT_t)$	-0.113	0.039	0.034	-0.137
	(0.140)	(0.074)	(0.069)	(0.143)
$\Delta\ln(CIT_t)$	0.141	0.025	-0.007	0.340***
	(0.097)	(0.073)	(0.082)	(0.096)
$\Delta\ln(ExR_t)$	-0.357	-0.384*	-0.093	-1.059**
	(0.391)	(0.196)	(0.201)	(0.506)
$\Delta\ln(GDP_t)$	-1.206**	0.291	0.463*	-0.536
	(0.498)	(0.235)	(0.258)	(0.477)
Adjustment term				
ECT_{t-1}	-0.738***	-0.381***	-0.187***	-0.532***
	(0.121)	(0.099)	(0.070)	(0.091)
Adj. R2	0.340	0.214	0.142	0.499
LM Test	1.441	1.793	0.381	0.148
Het. Test	0.479	0.875	0.834	0.545
F-bound Test	4.743**	1.885	0.909	4.276**

Note: *** $p < 1\%$, ** $p < 5\%$, * $p < 10\%$

GDP shows mixed short-run effects, negatively impacting oil imports (-1.206, $p < 0.05$) but positively affecting oil exports (0.463, $p < 0.10$). On the other hand, in the long run, customs duties (CDT) have a significant positive effect on oil imports (1.988, $p < 0.01$) and non-oil exports (1.396, $p < 0.05$), indicating that higher CDT revenue is associated with increased trade in these segments. VAT and corporate income tax (CIT) show mostly insignificant long-run effects across trade categories, except for minor negative effects on non-oil exports. Exchange rate (ExR) depreciation significantly reduces non-oil imports (-1.009, $p < 0.10$) and GDP negatively affects oil imports (-1.634, $p < 0.05$), suggesting that macroeconomic conditions also influence trade flows. It can be noted that the error correction terms (ECT) are negative and significant for all models, confirming the existence of long-run equilibrium relationships and indicating that deviations from equilibrium adjust relatively quickly each period.

5. Discussions

The results reveal that customs duties stand out as a major driver, showing significant positive effects on oil imports in both the short run and long run, and on non-oil exports in the long run. These findings suggest that customs duties influence trade flows both as a revenue-raising instrument and as a regulatory tool. When government policies prioritise revenue generation through CDT, imports and exports can be stimulated; conversely, if the focus is on controlling trade, the effect

may be moderated. This dual role aligns with Nigerian trade policy, where customs duties often balance revenue collection and trade regulation. The results are consistent with global evidence: Holzner, et al. [10] and Jovanović [13] showed that taxes linked to trade flows can influence export and import decisions, particularly when integrated with investment incentives or foreign direct investment, although most of their focus was on OECD countries. Within the Nigerian context, the positive long-run association highlights the enduring importance of CDT in shaping trade patterns across different sectors. Also, value-added tax (VAT) shows mostly insignificant effects on both imports and exports, with a small negative long-run impact on non-oil exports. This finding suggests that VAT changes have a limited influence on trade flows, possibly due to tax exemptions, administrative inefficiencies, or sectoral compliance differences in Nigeria. These results are in line with Benzarti and Tazhitdinova [6] who report low trade elasticities with respect to VAT in the EU, highlighting that VAT's impact on trade is generally smaller than that of customs duties or tariffs. The limited responsiveness in the Nigerian context may also reflect the fact that VAT is primarily a domestic consumption tax, which indirectly affects trade only through production costs and competitiveness, rather than directly influencing import or export incentives. It is observed in the result that corporate income tax exhibits heterogeneous effects across trade categories. While largely insignificant for imports, CIT significantly increases non-oil exports in the short run but exerts a small negative long-run impact. This pattern indicates that corporate taxation can influence firms' export decisions differently over time. In the short run, reductions or incentives in CIT may encourage firms to expand export activity, particularly in the non-oil sector. Over the long run, however, high CIT may dampen profitability and investment, thereby limiting sustained export growth. These findings corroborate studies such as Holzner, et al. [10] and Jovanović [13] which show that corporate taxes primarily affect trade through multinational enterprises or firms with significant FDI exposure. In Nigeria, where the non-oil sector is dominated by domestic firms with limited international exposure, the long-run effect is muted, illustrating that the impact of corporate taxation on trade is context-specific.

Regarding the control variables, it was observed that exchange rate depreciation negatively affects non-oil imports and non-oil exports in the short run, indicating that trade flows are highly sensitive to currency fluctuations. The long-run effect on non-oil imports (-1.009, $p < 0.10$) reinforces the idea that sustained depreciation increases import costs, reducing demand for imported goods. These findings align with Nwagu, et al. [8] and Rangkuty, et al. [9] who document that exchange rate volatility significantly influences trade balances in developing economies. In Nigeria, where many non-oil imports are essential goods and production inputs, currency depreciation can constrain import volumes and disrupt export competitiveness, highlighting the importance of exchange rate stability in trade policy formulation. More so, GDP shows mixed effects on trade. Domestic output negatively affects oil imports in both the short run and long run, suggesting that domestic production may substitute for imported oil-related products or reduce reliance on imports during periods of higher output. For oil exports, GDP exerts a small positive short-run effect but an insignificant long-run impact, indicating that cyclical growth can temporarily boost exports, while structural constraints may limit sustained long-term export expansion. These results mirror [18] who found that macroeconomic conditions, including GDP growth, condition the responsiveness of trade to fiscal and tax policies. The mixed effects of GDP underscore the interaction between domestic economic performance and trade flows, particularly in a resource-dependent economy like Nigeria.

6. Conclusion

This study empirically analysed the effects of taxation on Nigeria's oil and non-oil trade using an ARDL framework. The short-run results showed that customs duties (CDT) significantly increase oil imports and have a positive, though smaller, effect on non-oil exports, while VAT has negligible short-run impacts across all trade categories. Corporate income tax (CIT) shocks increase non-oil exports in the short run but have a limited influence on imports, whereas exchange rate depreciation reduces non-oil imports and exports, reflecting the sensitivity of trade flows to currency fluctuations. In the long run, CDT remains a strong positive driver of oil imports and non-oil exports, whereas CIT exhibits slight negative effects on non-oil trade, and VAT continues to show limited influence. GDP negatively affects oil imports in both the short and long run, while its effect on exports is mixed. The study concludes that in Nigeria, customs duties are the most consistent positive driver of oil and non-oil trade, while corporate income tax and VAT tend to constrain trade. A key limitation of the study is its reliance on aggregate oil and non-oil trade measures, which may obscure sectoral or firm-level heterogeneity. Future research should use disaggregated sectoral trade data, explore interactions with investment and exchange rate dynamics, and extend the analysis to other developing economies to provide deeper policy insights.

References

[1]   R. Sharma, "Domestic taxes and international trade," 2025. https://ssrn.com/abstract=5483106
[2]   O. Ewere and A. Iwegbu, "Oil trading products and economic growth in Nigeria: A disaggregated case," *Journal of Management and Social Sciences,* vol. 11, no. 1, 2022. https://doi.org/10.53704/jmss.v11i1.406
[3]   J. T. Andohol, T. Tarzoor, and D. T. Nomor, "Trade liberalization, non-oil export and economic growth in Nigeria," *CBN Journal of Applied Statistics,* vol. 15, no. 1, pp. 83-115, 2024. https://doi.org/10.33429/Cjas.15124.4/8
[4]   C. M.-G. Umeaduma, "Corporate taxation, capital structure optimization, and economic growth dynamics in multinational firms across borders," *International Journal of Scientific Research Archives,* vol. 7, no. 2, pp. 724-739, 2022.
[5]   X. L. Liu, J. Nassios, and J. Giesecke, "To tax or to spend? Modelling tax policy responses to oil price shocks," *Energy Policy,* vol. 185, p. 113929, 2024. https://doi.org/10.1016/j.enpol.2023.113929
[6]   Y. Benzarti and A. Tazhitdinova, "Do value-added taxes affect international trade flows? evidence from 30 years of tax reforms," *American Economic Journal: Economic Policy,* vol. 13, no. 4, pp. 469-489, 2021. https://doi.org/10.1257/pol.20190492

[7]   M. Audi, "Exploring fiscal dynamics between resource and non-resource tax revenues in oil-dependent countries," *Journal of Energy and Environmental Policy Options,* vol. 7, no. 4, pp. 20-30, 2024.

[8]   G. U. Nwagu, A. Orji, I. O. Jude, J. E. Ogbuabor, O. I. Anthony-Orji, and L. C. Nwufo, "Fiscal policy, monetary policy, and trade balance nexus in Nigeria: A new empirical evidence," *Unisia,* vol. 40, no. 1, pp. 129-146, 2022. https://orcid.org/0000-0002-0603-7264

[9]   D. M. Rangkuty, L. N. Nasution, Z. Hasyyati, S. D. Siregar, and D. Firmansyah, "The monetary and fiscal policies on international trade in Indonesia," *The ES Economics and Entrepreneurship,* vol. 3, no. 1, pp. 1–11, 2024.

[10]   M. Holzner, B. Jovanović, and G. Vukšić, "How do corporate taxes affect international trade? ," Working Paper. No. 212, 2021.

[11]   B. Hayo and S. Mierzwa, "The effect of legislated tax changes on the trade balance: Empirical evidence for the United States, Germany, and the United Kingdom," *Journal of Macroeconomics,* vol. 78, p. 103564, 2023. https://doi.org/10.1016/j.jmacro.2023.103564

[12]   L. Metelli and F. Natoli, "The international transmission of US tax shocks: A proxy-SVAR approach," *IMF Economic Review,* vol. 69, no. 2, p. 325, 2021. https://doi.org/10.1057/s41308-021-00136-6

[13]   B. Jovanović, "New insights into the relationship between taxation and international trade," Policy Notes and Reports. No. 54, 2021.

[14]   A. Adarov, M. Holzner, B. Jovanović, and G. Vukšić, "Labour taxes and international trade: The role of domestic labour value added ", Working Paper. No. 205, 2021.

[15]   A. Bussy, "Corporate tax evasion: Evidence from international trade," *European Economic Review,* vol. 159, p. 104571, 2023. https://doi.org/10.1016/j.euroecorev.2023.104571

[16]   E. W. Bond, Y. Duan, T. Ji, and Y. Lu, "Trade and welfare effects of export tax: Theory and evidence from China's incomplete export VAT rebate," *Journal of Economic Behavior & Organization,* vol. 214, pp. 542-560, 2023. https://doi.org/10.1016/j.jebo.2023.08.007

[17]   M. Keskin and S. A. Bağcı, "The impact of taxation on international commerce and exchange rate on imports," *Politik Ekonomik Kuram,* vol. 8, no. 3, pp. 798-813, 2024. https://doi.org/10.30586/pek.1504659

[18]   M. Klein and L. Linnemann, "Tax shocks, firm entry, and productivity in the open economy," *Journal of International Money and Finance,* vol. 149, p. 103203, 2024. https://doi.org/10.1016/j.jimonfin.2024.103203

[19]   T. H. Le, P. T. B. Ngoc, and P. H. Van, "International trade and tax performance," *eJournal of Tax Research,* vol. 23, no. 1, pp. 162–190, 2025.

[20]   A. Auclert, M. Rognlie, and L. Straub, *The macroeconomics of tariff shocks (No. w33726).* Cambridge, MA: National Bureau of Economic Research, 2025.

[21]   Y. Wang, P. C. Phillips, and Y. Tu, "Limit theory and inference in non-cointegrated functional coefficient regression," *Journal of Econometrics,* vol. 249, p. 105996, 2025. https://doi.org/10.1016/j.jeconom.2025.105996