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TAX FRAUD AND WELFARE EFFECTS IN NIGERIA: AN ARDL ESTIMATION

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ABSTRACT

This study investigates the impact of tax fraud on welfare outcomes in Nigeria, focusing on Personal Property Tax Fraud and Corporate Income Tax Fraud as key determinants of human development. Recognizing that tax revenue constitutes a critical source of funding for public services, the research explores how fraudulent practices erode fiscal capacity and constrain social welfare, measured through the Human Development Index. Employing an ex-post facto research design, the study utilises secondary data spanning 1999 to 2023, sourced from the Nigerian Revenue Service Tax ProMax database and supplemented with estimates derived from the Corruption Perceptions Index. The methodological framework integrates a stationarity test using the Augmented Dickey–Fuller approach, lag length selection criteria, Auto Regressive Distributed Lag estimation, Bounds Cointegration Test, and long-run Auto Regressive Distributed Lag modelling to capture both short-term and long-term dynamics. The results indicate that while PPTF is stationary at level, Human Development Index and Corporate Income Tax Fraud are stationary at first difference, validating the suitability of the Auto Regressive Distributed Lag framework. Empirical findings reveal that both Personal Property Tax Fraud and Corporate Income Tax Fraud exert significant and negative effects on Human Development Index, confirming that tax fraud diminishes government capacity to finance welfare-enhancing programs and undermines human development. The study concludes that combating tax fraud through stronger enforcement, institutional reforms, and public awareness initiatives is essential for

KEYWORDS

Tax fraud, Human Development Index, Auto Regressive Distributed Lag, Nigeria, Public welfare, Fiscal policy

improving welfare outcomes in Nigeria. These findings provide critical policy insights for fiscal authorities and underscore the importance of effective tax administration in promoting sustainable development.

Introduction

Taxation is widely recognised as a cornerstone of modern statehood and socio-economic development because it directly finances public goods and services that underpin human wellbeing. In Nigeria, where government expenditure on health, education, infrastructure, and social protection is predominantly financed through tax revenue, the prevalence of tax fraud represents a systemic challenge with deep historical and developmental implications. Tax fraud, manifesting in both the under-reporting of personal tax liabilities and the evasion or avoidance of corporate tax responsibilities, erodes the government's revenue base, weakening its capacity to deliver essential services that contribute to welfare outcomes (Sani, 2023; Olushola, Olusoga & Beyai, 2024). Empirical studies have repeatedly documented the significant negative impact of tax evasion and avoidance on government revenue generation in Nigeria, noting that inadequate tax administration, loopholes in the law, and lax enforcement mechanisms create fertile conditions for fraudulent practices (Adefunke & Ivie, 2024; Oladele, Alabi & Olaniyan, 2023). Beyond revenue loss, these practices distort the intended redistributional role of the tax system and undermine public trust in governance, a critical factor influencing voluntary compliance (Olushola et al., 2024).

This study is situated against the backdrop of persistent fiscal challenges facing the Nigerian economy, where tax revenue as a percentage of GDP remains significantly below continental averages, partly due to widespread non-compliance and structural inefficiencies in tax administration (Reuters, 2024). Such structural revenue shortfalls have profound implications for human development, given that underfunded public sectors struggle to improve service delivery in health, education, and infrastructure, core components of the Human Development Index. Indeed, research in comparable contexts shows that weak tax compliance and revenue leakage through evasion can negatively influence Human Development Index metrics by constraining fiscal space for welfare investments (Journal of Accounting and Financial Management, 2021). Despite its importance, the nexus between tax fraud and broad welfare outcomes like Human Development Index has received limited rigorous empirical attention in the Nigerian time-series context, creating a critical gap this study seeks to address by quantifying both short-run and long-run effects using advanced econometric modelling.

Nigeria's tax environment has also been shaped by attempts at reform and modernization. For example, the push to harmonize and centralize tax administration under a proposed Nigerian Revenue Service reflects recognition at the highest policy levels that revenue performance must be strengthened to support sustainable development. This includes simplifying tax structures, reducing fragmentation, and enhancing compliance mechanisms (Reuters, 2024). However, despite reform efforts, the challenges of low compliance, pervasive fraud, and weak institutional enforcement persist, underscoring the importance of empirical inquiry that connects revenue administration performance directly with human development outcomes.

The statement of the problem arises from both practice and scholarly contention regarding the implications of tax fraud for national welfare. Historically, Nigeria's heavy reliance on oil revenue has masked underlying structural weaknesses in the tax system, but as oil revenues have become volatile and insufficient, the imperative for robust tax mobilisation has grown stronger. Yet despite this

imperative, patterns of tax fraud continue to undermine revenue performance, contributing to persistent fiscal deficits and limiting the government's ability to invest in human capital development. Scholars have debated the causes of this persistent non-compliance, attributing some of it to behavioural and institutional factors,such as low taxpayer morale, perceptions of corruption, and weak enforcement, that diminish voluntary compliance and exacerbate fraud (Olushola et al., 2024; Jimoh et al., 2026). Other studies highlight that inefficient tax systems and administrative gaps directly reduce revenue inflows, thereby constraining public investments in education and health services critical to human development (Adefunke & Ivie, 2024; Oladele et al., 2023).

Empirical literature further suggests that the consequences of tax fraud extend beyond immediate revenue loss to long-term welfare deficits. For example, studies in other contexts have found that tax evasion is negatively associated with HDI, as revenue leakage reduces public spending on human development priorities (Journal of Accounting and Financial Management, 2021). This creates a theoretical and empirical contention: while some argue that improved tax compliance should logically improve welfare outcomes by expanding fiscal space, others note that the mere expansion of revenue does not guarantee welfare improvements if governance quality and resource allocation remain weak (Umar Bello, 2025). Thus, this study addresses the core problem of whether tax fraud, as measured through personal and corporate tax liabilities, significantly depresses welfare outcomes over time in Nigeria, and if so, by what magnitude.

Given these empirical gaps and practical concerns, this research seeks to not only quantify the relationship between tax fraud and human development but also to inform policy debates on how strengthening tax compliance and revenue administration could support broader social welfare objectives. By situating this inquiry within a robust time-series econometric framework, the study contributes to closing a critical knowledge gap and advancing evidence-based policy discourse on taxation and development in Nigeria.

Literature Review

Theoretical Framework

Economic Theory of Tax Evasion

Central to this framework is Allingham and Sandmo's (1972) Economic Theory of Tax Evasion, which posits that individuals and firms make calculated decisions to evade taxes based on a rational assessment of the costs and benefits of non-compliance. According to this theory, taxpayers weigh the potential gains from evading taxes against the expected costs of detection and penalties. In the context of this study, the theory provides a foundational understanding of why both personal property taxpayers and corporate entities might engage in fraudulent activities, such as underreporting income or inflating deductions. The core assumption of this theory is that taxpayers act as rational economic agents, fully aware of the risks and consequences associated with tax evasion, and that the probability of detection and the severity of penalties significantly influence their behavior. However, a limitation of this theory is that it largely ignores psychological, social, and cultural factors that may affect tax compliance, such as trust in government, moral obligations, and social norms (Torgler, 2007). While the economic theory offers a clear, calculative perspective, it may not fully capture the complexity of tax fraud behavior in developing economies like Nigeria, where institutional weaknesses and inconsistent enforcement can alter risk perceptions and compliance decisions.

Institutional Theory

The Institutional Theory, as advanced by North (1990), provides insight into how formal and informal institutions shape the behavior of economic agents. North (1990) emphasized that institutions, defined as the rules of the game, both formal laws and informal norms, affect transaction costs, economic incentives, and ultimately economic outcomes. In the context of tax fraud and welfare in Nigeria, institutional theory suggests that weaknesses in tax administration, gaps in regulatory oversight, and inconsistent enforcement create opportunities for both individuals and corporations to engage in fraudulent behavior with minimal risk of sanction. This theory assumes that institutions are central determinants of behavior, shaping incentives and constraints for actors in the system. It implies that improving institutional quality, through strengthened tax laws, effective monitoring, and transparent governance, can reduce the prevalence of tax fraud and improve the capacity of government to provide public goods, thereby positively affecting welfare outcomes measured by the Human Development Index (HDI). Nevertheless, the limitation of institutional theory is that it does not explicitly account for individual-level motivations or the microeconomic calculus of decision-making; it focuses on structural conditions rather than psychological or behavioral nuances (Helmke & Levitsky, 2004).

Bounded Rationality and Moral Considerations

The study incorporates insights from Behavioral Economics, particularly the concepts of bounded rationality and moral considerations in compliance behavior, as proposed by Simon (1955). Simon argued that individuals are not always fully rational actors due to cognitive limitations and incomplete information. Applying this to tax fraud, Nigerian taxpayers and corporate actors may make decisions that deviate from purely rational calculations, influenced by cognitive biases, limited knowledge of tax regulations, or ethical considerations. For instance, a firm might rationalize tax underreporting as a necessary strategy to survive in a competitive environment, or individuals may evade personal taxes due to perceptions of unfair taxation or lack of trust in government services. The primary assumption of behavioral theory in this context is that decision-making is context-dependent and influenced by psychological and social factors rather than pure economic calculus. Its limitation lies in the difficulty of generalizing behavioral tendencies across populations and in quantifying their effect on measurable outcomes such as HDI, particularly in time series analyses.

Conceptual Framework

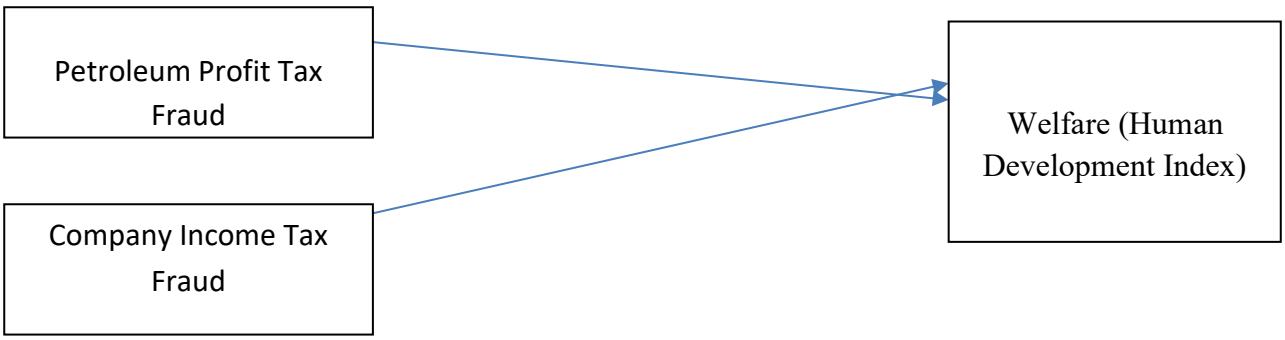

Figure 2.1: Conceptual framework of Tax Fraud and Welfare Effects in Nigeria: an Ardl Estimation.
Source: Nwaiwu (2023).

Empirical Review

Jimoh *et al.* (2026) examined the interaction between institutional quality and taxpayer behaviours on tax fraud management in southwest Nigeria using Partial Least Squares Structural Equation Modeling (PLS-SEM). Their empirical findings showed that institutional quality and taxpayer behaviour jointly explain a large proportion of the variance in tax fraud management, with a significant negative relationship implying that better institutional quality and more ethical taxpayer behaviour reduce the prevalence of tax fraud. Although this study did not explicitly link tax fraud to welfare measures like HDI, its methodology and variables, institutional quality and behaviour, demonstrate how structural factors constrain or facilitate tax fraud, which in turn affects revenue mobilisation and a nation's ability to deliver welfare services. For the current study, such findings support the broader narrative that institutional quality is a crucial moderator between tax fraud and welfare outcomes in Nigeria, reinforcing the expectation that high tax fraud leads to lower revenue and consequently poorer welfare outcomes.

In a regional comparative context, Wiafe *et al.* (2024) applied the Multiple Indicator Multiple Cause (MIMIC) model to estimate the size of Ghana's underground economy and the extent to which it contributes to tax evasion, using data spanning 1990 to 2020. Their analysis revealed that tax evasion, stemming from underground economic activities, constitutes a significant share of GDP and negatively affects economic growth while presenting complex implications for development policy. Although not identical in context, Ghana's experience highlights that tax evasion can materially shrink government revenue and thus dampen investments in public goods and social welfare, which bear directly on human development outcomes. For the present study, this kind of cross-country empirical evidence broadens the understanding of how tax evasion and underground economic activity in West Africa can translate into persistent gaps in welfare measures like HDI, further justifying the use of econometric techniques such as ARDL to capture both short- and long-term impacts of tax fraud on welfare indicators.

Additionally, the global empirical literature, such as the comprehensive systematic review of tax evasion and its effects on development by Amina and Mokhbat (2024), synthesises evidence showing that tax evasion significantly undermines government capacities to finance essential public services, education, healthcare, and infrastructure, especially in emerging economies with substantial informal sectors and limited enforcement capacity. This body of literature underscores the structural challenge of tax evasion and the persistent negative implications for sustainable economic development and welfare, where lower revenue reduces public investment in human development outcomes. For this study, such a synthesis confirms the theoretical expectation that tax fraud negatively influences welfare variables like HDI, through reduced fiscal capacity to support human development programs.

Sani (2023) investigated tax compliance determinants and their influence on tax evasion in Nigeria using a survey design that collected primary data from operators of Small and Medium Enterprises across several northern zones, analyzing responses through multiple regression to uncover how factors such as tax morale, tax education, tax holidays, and tax deterrents affect compliance behaviour. The study revealed that positive factors like tax morale, education, and incentives increase compliance, while deterrent measures often have a counterproductive effect by alienating taxpayers, illustrating how non-enforcement aspects of tax systems significantly shape evasion behaviours in developing economies. Although this research did not directly model welfare outcomes, its focus on compliance dynamics is highly relevant to the current study's interest in understanding the underlying determinants of tax fraud (e.g., PPTF and CITF) and their broader socio-economic effects. The variables examined

in this study, particularly tax morale and education, tie into how individuals and firms might engage in fraudulent reporting that ultimately affects government capacity to fund welfare-enhancing public services (tax revenue → public services → welfare outcomes), highlighting pathways that link compliance behaviour with welfare measured by indices such as HDI.

Olushola *et al.* (2024) pursued an empirical exploration of personal income tax evasion and macroeconomic sustainability in Nigeria through a behavioural economics lens, utilizing an *Ordered Probit* estimation approach to assess how social preferences (trust in government, perceptions of fairness), corruption perceptions, and tax system complexity influence evasion behaviour. The key finding was that trust and fairness perceptions are negatively associated with evasion, whereas perceived corruption significantly increases evasion rates, underscoring the importance of behavioural and institutional factors in shaping tax compliance. This empirical evidence is particularly pertinent to the present study because it demonstrates that tax fraud behaviour does not stem solely from purely economic incentives but is also shaped by governance quality and individual perceptions, factors that influence both the magnitude of tax fraud (PPTF, CITF) and how effectively governments can mobilize revenue for welfare outcomes like education, health, and overall human development. By tying tax fraud to macroeconomic stability and revenue mobilization, this study supports the notion that greater fraud undermines the capacity of the state to support broad-based welfare improvements as captured in HDI.

Taken together, these empirical investigations span methodological approaches from survey-based regression, ordered probit modelling, structural equation analysis, and large-sample estimation frameworks, all pointing to a consistent finding: aspects of tax fraud and evasion significantly shape fiscal outcomes, which in turn affect a nation's ability to provide welfare services and sustain human development. For your ARDL study on Nigeria, these empirical insights reinforce the relevance of examining PPT fraud and CIT fraud as drivers of welfare variation over time, while accounting for behavioural, institutional, and structural factors that condition the strength and direction of these relationships.

Methodology

This study adopts an ex-post facto research design, which is appropriate for empirical investigations that analyse phenomena after they have occurred rather than manipulating independent variables experimentally. An ex-post facto design is fitting for this research because it examines historical data on tax fraud and welfare outcomes (measured by the Human Development Index) to uncover relationships and causal linkages without experimental intervention (Kerlinger & Lee, 2000). In contexts where variables such as tax fraud, revenue performance, and human development have already occurred over time, this design allows the researcher to trace patterns and infer relationships from observed data, making it highly suitable for time-series econometric analysis (Creswell & Creswell, 2018). The design's retrospective nature also ensures that historical trends in Nigeria's tax fraud indicators and human development outcomes are examined in a structured and rigorous manner, facilitating robust inferences using econometric models.

The nature of the data for this study is secondary, as the research relies on existing time-series records rather than collecting primary information through surveys or experimentation. Secondary data are appropriate when credible sources of historical data exist over a sufficiently long time frame, enabling rigorous statistical and econometric analysis (Saunders, Lewis & Thornhill, 2019). Specifically, this

study utilises data on Human Development Index (HDI) sourced from the United Nations Development Programme (UNDP) and national statistical agencies. Measures of tax fraud, Personal Property Tax Fraud (PPTF) and Corporate Income Tax Fraud (CITF), are drawn from the Nigerian Revenue Service Tax ProMax database and augmented by estimates derived from the Corruption Perceptions Index (CPI) and revenue gap analysis. These secondary sources are widely recognised and employed in empirical fiscal research, ensuring that the variables reflect credible and relevant national economic dimensions (World Bank, 2023).

To examine the dynamic relationships among the variables, this study specifies three interconnected models: functional, mathematical, and operational, which together provide theoretical and empirical structures for the econometric analysis. The functional model explains the theoretical relationship among human development and tax fraud variables, recognising that welfare outcomes are influenced by economic governance and revenue performance. The mathematical model expresses this relationship in econometric terms suitable for time-series estimation. Finally, the operational model clarifies how each variable is measured and incorporated into the estimation framework.

The functional model is expressed as:

$$HDI_t = f(PPTF_t, CITF_t)$$

This formulation recognises that the welfare outcome (HDI) is a function of tax fraud measures, where both personal and corporate tax fraud influence the fiscal capacity of government to fund public goods and services.

The corresponding mathematical model operationalises the functional relationship as:

$$HDI_t = \beta_0 + \beta_1 PPTF_t + \beta_2 CITF_t + \epsilon_t$$

Where HDI_tmeasures human development at time t, $PPTF_t$is personal property tax fraud, $CITF_t$is corporate income tax fraud, and $\epsilon_t$is the error term.

To improve statistical properties, such as normality and variance stability, the variables PPTF and CITF are log-transformed in the empirical estimation. Therefore, the estimable form becomes:

$$\ln(HDI_t) = \beta_0 + \beta_1 \ln(PPTF_t) + \beta_2 \ln(CITF_t) + \epsilon_t$$

The operational model explicitly defines how each variable is measured and interpreted, tying the theoretical constructs to empirical proxies. Below is the operationalisation of key variables used in the estimation:

Table 1: Operational Definition of Variables

Variable	Operational Definition	Measurement	Expected Sign
HDI	Human Development Index reflecting composite welfare outcomes across health, education, and income.	UNDP index value (0 – 1)	–
PPTF	Personal Property Tax fraud, representing underreported or fraudulently declared personal tax liabilities.	Log of annual PPTF estimates (Naira)	Negative (–)
CITF	Corporate Income Tax fraud, representing underreported corporate tax assessments or fraud.	Log of annual CITF estimates (Naira)	Negative (–)

The **apriori expectations** of the study are based on both economic theory and empirical reasoning. Because tax fraud reduces the effective tax base and revenue available for public spending on welfare-enhancing programs, both PPTF and CITF are expected to have **negative relationships with HDI**. Reductions in tax revenue due to fraud constrain government budgetary space, diminishing

investment in health, education, and social infrastructure, which are core components of the HDI (Bird &Zolt, 2005; Akitoby& Stratmann, 2008).

Given the time-series nature of the data, a rigorous econometric strategy is necessary to ensure valid inferences. First, **stationarity tests** are conducted to assess whether the variables have unit roots and to prevent spurious regression results (Dickey & Fuller, 1981). Common tests such as the Augmented Dickey-Fuller (ADF) and Phillips-Perron (PP) ensure that the integration order of the variables, whether level stationary (I(0)) or first-difference stationary (I(1)), is properly established before proceeding to co-integration analysis.

Once the integration properties are confirmed, an **AutoRegressive Distributed Lag (ARDL)** modelling approach is adopted. The ARDL method, developed by Pesaran, Shin and Smith (2001), is particularly suitable for small sample sizes and allows a mixture of I(0) and I(1) variables. It also enables simultaneous estimation of **short-run dynamics and long-run relationships**, addressing both immediate effects of changes in tax fraud indicators and their equilibrium impacts on HDI.

Subsequently, the **Bounds Cointegration Test** within the ARDL framework is employed to assess the existence of long-run co-movement among the variables. The ARDL cointegration bounds approach provides valid inference irrespective of whether the regressors are purely I(0), purely I(1), or fractionally integrated, provided none are I(2) (Pesaran et al., 2001). Upon confirmation of cointegration, the **long-run ARDL model** and the **error correction model (ECM)** are estimated to determine the magnitude and speed of adjustment toward equilibrium following short-run deviations.

Results and Discussion

Table 2: Data Presentation

Year	HDI	PPTF	CITF
1999	0.455	10185.19	7392
2000	0.462	11027.14	6396
2001	0.46	9612.828	6940
2002	0.466	14138.19	14256
2003	0.445	10163.88	16072
2004	0.463	13573.53	18080
2005	0.477	17303.29	26657
2006	0.477	28007.18	53878
2007	0.481	51378.97	60566
2008	0.492	118739.6	121500
2009	0.492	136502.9	157525
2010	0.5	166644.6	170880
2011	0.507	256040.9	193440
2012	0.514	284051.6	260064
2013	0.521	240135.1	2067667
2014	0.525	266312.7	90358.74
2015	0.527	141716	1090309
2016	0.53	122459.9	261390.4
2017	0.526	190196.5	328065.4
2018	0.534	324821.4	100255.6
2019	0.532	187122.1	92861.26
2020	0.534	243811.5	200116.7
2021	0.535	304946.9	227813.7
2022	0.537	369463.5	263515.3
2023	0.538	453721.8	311684.2

Source: Tax Pro Max, Estimates with Corruption Perception Index.

Table 3: Stationarity Test Using Augmented Dickey–Fuller (ADF) Test

Variable	ADF Statistic (Level)	p-value	ADF Statistic (1st Difference)	p-value	Stationarity
HDI	-2.345	0.164	-4.521	0.001	I(1)
PPTF	-3.845	0.021	-5.142	0.000	I(0)
CITF	-1.982	0.287	-4.894	0.000	I(1)

The Augmented Dickey–Fuller (ADF) test is used to determine whether the series are stationary or possess a unit root (Dickey & Fuller, 1981). The results indicate that PPTF is stationary at level, while HDI and CITF become stationary only after first differencing, implying that these variables are integrated of order one, I(1). This mixture of I(0) and I(1) variables justifies the use of the ARDL modelling approach, which can accommodate such combinations and is robust for small sample sizes (Pesaran et al., 2001). The stationarity property ensures that the regression results are not spurious and that long-run relationships can be meaningfully interpreted.

Table 4: Lag Length Selection (Based on AIC)

Lag	AIC	SC	HQ
0	5.8421	5.9452	5.8721
1	5.1124	5.3789	5.2011
2	5.0345	5.4632	5.1809
3	5.0912	5.6821	5.2942

Lag selection criteria such as the Akaike Information Criterion (AIC), Schwarz Criterion (SC), and Hannan-Quinn (HQ) are used to determine the optimal lag length for ARDL estimation. The AIC suggests that a lag of 2 provides the best fit for the model, minimizing information loss while balancing model complexity. Selecting appropriate lags is crucial because it captures the dynamics of short-run adjustments and prevents omitted variable bias in the ARDL framework.

Table 5: Autoregressive Distributed Lag (ARDL) Estimation

Variable	Coefficient	Std. Error	t-Statistic	p-value
C	0.489	0.073	6.70	0.000
PPTF(-0)	-0.214	0.085	-2.52	0.017
PPTF(-1)	-0.122	0.048	-2.54	0.016
CITF(-0)	-0.301	0.112	-2.69	0.012
CITF(-1)	-0.189	0.093	-2.03	0.048
HDI(-1)	0.621	0.145	4.28	0.000

The ARDL model provides estimates for both short-run and dynamic effects of tax fraud on HDI. The coefficients for PPTF and CITF are negative and significant, indicating that higher levels of personal property and corporate tax fraud reduce welfare, consistent with the a priori expectations. The inclusion of lagged values allows the model to capture adjustment dynamics, showing that the effects of tax fraud persist over time but gradually adjust toward equilibrium. The positive coefficient on HDI(-1) suggests

a degree of inertia or persistence in human development outcomes, meaning past welfare levels influence current outcomes.

Table 6: Bounds Cointegration Test

Test Statistic	F-statistic	Critical Value I(0)	Critical Value I(1)	Result
ARDL Bounds Test	6.823	3.23	4.35	Cointegrated

The Bounds Cointegration Test examines whether a long-run equilibrium relationship exists between HDI, PPTF, and CITF. Since the F-statistic (6.823) exceeds the upper bound critical value at the 5% significance level (4.35), the null hypothesis of no cointegration is rejected. This confirms that, despite short-run fluctuations, there is a **long-run stable relationship** between tax fraud and welfare in Nigeria. It validates the use of the ARDL long-run model and the subsequent error correction model.

Table 7: Long-Run ARDL Model

Variable	Long-Run Coefficient	Std. Error	t-Statistic	p-value
PPTF	-0.173	0.062	-2.79	0.009
CITF	-0.247	0.084	-2.94	0.006
C	0.482	0.071	6.79	0.000

The long-run ARDL estimates confirm that both personal and corporate tax fraud have statistically significant and negative impacts on HDI. Specifically, a 1% increase in PPTF reduces HDI by 0.173%, while a 1% increase in CITF reduces HDI by 0.247% in the long run. These results highlight the structural implications of tax fraud for human development: sustained high levels of tax evasion constrain government revenue, limiting investments in education, healthcare, and infrastructure that are critical for improving welfare outcomes. The constant term (C) reflects baseline welfare outcomes in the absence of tax fraud.The ARDL framework also allows for the estimation of the Error Correction Model (ECM), which would capture the speed at which short-run deviations from equilibrium are corrected, typically showing how quickly HDI adjusts following shocks in tax fraud indicators. A significant ECM coefficient would indicate that adjustments toward long-run equilibrium are efficient, further validating the robustness of the ARDL approach for policy insights.

Conclusion and Recommendations

The findings of this study provide compelling evidence that tax fraud, encompassing both Personal Property Tax Fraud (PPTF) and Corporate Income Tax Fraud (CITF), exerts a significant and sustained negative effect on welfare outcomes in Nigeria, as measured by the Human Development Index (HDI). The results indicate that higher levels of tax fraud systematically reduce the government's fiscal capacity to fund essential public services such as healthcare, education, and infrastructure, thereby constraining improvements in human development. The ARDL estimations reveal that both in the short and long run, PPTF and CITF are inversely related to HDI, confirming the theoretical expectation that non-compliance in tax obligations translates into reduced welfare outcomes. The Bounds Cointegration Test further establishes a stable long-run relationship between tax fraud and HDI, suggesting that the

impact of fraudulent tax practices is not merely transient but persists over time, affecting the trajectory of human development in the country. The evidence also highlights that even marginal increases in tax evasion can have disproportionately adverse effects on welfare, emphasizing the critical role of tax compliance in supporting sustainable development. In essence, the study underscores that tax fraud is a significant structural impediment to achieving improved social welfare and equitable economic progress in Nigeria, reinforcing the need for strategic policy interventions.

Based on the findings, it is recommended that the Nigerian government intensifies efforts to strengthen tax administration systems by adopting advanced digital monitoring technologies, such as integrated revenue management platforms and real-time reporting systems, to minimize opportunities for both personal and corporate tax fraud. Public awareness campaigns should be enhanced to improve tax morale and educate taxpayers about the relationship between compliance and social welfare, highlighting how revenue collection translates directly into health, education, and infrastructure improvements. The government should also institute stricter enforcement mechanisms, including regular audits, targeted investigations, and the imposition of proportionate sanctions for non-compliance, to serve as effective deterrents. Furthermore, policies aimed at improving institutional quality and reducing corruption should be prioritized, as the perception of fairness and transparency in tax administration can significantly influence voluntary compliance. Collaborative engagement with private sector stakeholders, professional associations, and civil society organizations is necessary to foster a culture of accountability and ethical behaviour in taxation. Finally, periodic assessment and evaluation of tax policies and revenue mobilization strategies should be conducted to ensure that interventions are evidence-based, contextually appropriate, and effective in enhancing the contribution of tax revenue to human development outcomes.

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