EVALUATING THE EFFECT OF TUNNELLING ON TAX AGGRESSIVENESSAMONG LISTED NON-FINCIAL MULTINATIONAL CORPORATIONS (MNCS) IN NIGERIA

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Abstract

Purpose – This research aimed to examine the effectof tunnelling on tax aggressiveness (proxy by Effective Tax Rate (ETR) and Cash Effective tax rate (CAETR) among listed multinational corporations (MNCs) in Nigeria, alongside exploring how managerial ownership moderates this relationship.

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Design/Population/Sample Size and Methodology – A quantitative approach was adopted, employing an ex post facto and longitudinal design to analyse the interplay between variables. Secondary data was sourced from the financial statements of multinational manufacturing firms listed on the Nigerian Exchange Group over a decade, from 2012 to 2022. The population included 14 non-financial multinational corporations listed in Nigeria by the end of the 2022 financial year. Based on availability of data, 10 firms were purposively selected as sample size. Panel regression techniques, specifically the random effects model, were applied to evaluate the relationships between the variables.

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Findings – The findings from the panel regression analysis indicated that tax tunnelling positively and significantly influenced tax aggressiveness when assessed by Effective Tax Rate (ETR) (β=2.568, $p<0.05$), while it had a negative and significant effect when evaluated through Cash Effective Tax Rate CAETR (β= -60.244, $p<0.05$).

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Originality – This study builds on existing research concerning tax aggressiveness by focusing on the influence of tunnelling among multinational corporations in Nigeria and investigating the moderating effect of managerial ownership on the relationship between tax tunnelling and tax aggressiveness within this context.

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Keywords - Agency theory, managerial ownership, multinational corporations, tax aggressiveness, tunnelling.

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1.0 Introduction

Maintaining a sound tax system is beneficial to all economies worldwide. Taxation, being the main sources of government revenue has been facing some challenges Shimawua (2018), This results from certain taxpayers' perceptions, particularly those of multinational corporations (MNCs). Because they saw taxes as a burden that would lower their profit, these corporations engaged in tax planning strategies, such as tax aggressiveness, to reduce their tax liability and increase profits, to accomplish their corporate purpose of maximizing profits and shareholder wealth. (Irawan*et al*., 2020; Jihene&Moez, 2019; Rani *et al.*, 2018; Ruwanti&Ningsih 2024).

Tax aggression is the practice of abusing tax laws to reduce tax obligations while boosting earnings. presents serious obstacles for the world economy. (Johannesen *et al*. 2020)

suggested that developing countries suffer significant revenue losses because of multinational companies' (MNCs) aggressive tax practices. This makes it harder for the government to pay for vital public services like infrastructure development, healthcare, and education.

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presents serious obstacles for the world economy.

Less developed nations are especially susceptible to aggressive profit shifting, according to the OECD, as MNCs exploit use of legal loopholes to reduce their tax obligations. Governments may raise taxes on local companies and citizens to make up for lost revenue from MNCs, this can exacerbate economic inequality because lower-income people often pay more in taxes than do wealthy individuals and corporations (Alepin 2018). Fuest and Riedel (2010) noted that the public's confidence in government institutions may be weakened by the prevalence of tax aggression. When the public believes that firms and rich individuals are not paying their fair share of taxes, it can cause disenchantment with the tax system and lower overall compliance.

Aggressive taxation exacerbates economic inequality. Rich people and businesses can more easily take advantage of tax loopholes, whereas lower-class people pay higher effective tax rates and have less options to be tax aggressive. Governments' ability to invest in sustainable development goals is limited by their inability to collect sufficient tax revenue. Additionally, governments may find it difficult to implement effective tax policies due to the complexities posed by international profit shifting, which can impede progress in reducing poverty and improving health, education, and education outcomes. (Alepin 2018; Fuestand Riedel 2010; Shaxson& Christensen 2016; Nyonyoh*et al*. 2024).

This practice affects public budgets and impedes economic progress by causing significant income losses for governments across the globe. Research has demonstrated that tax avoidance and evasion techniques cost governments billions of dollars every year; estimates have the annual losses from tax avoidance and evasion at $15 billion worldwide (Janský&Palanský, 2019; Payne &Raiborn, 2018). These practices erode government revenues needed to run economies efficiently and fairly.

Corporations may use a range of tax-aggressive methods, tax havens, transfer pricing, tunnelling, and thin capitalization to boost earnings and capital. In this context, the study is concentrating on tunnelling as a strategy used by MNCs to reduce their tax obligations. But these tactics lead to a loss of tax revenue, which erodes the credibility of the government and impedes social and economic progress. (Durowaiye& Sadiq 2024). MNCs can move profits between jurisdictions by taking advantage of transfer pricing. Companies can successfully lower their overall tax burden by setting prices for intercompany transactions that benefit subsidiaries located in low-tax jurisdictions. Although tunnelling can conceal the underlying goal of resource diversion, this approach is frequently defended as a sound corporate strategy. (Tarmidi et.al. 2023; Eyitayo 2017).

Solikhah*et al*. (2024) and Ullah et ai. (2021) pointed out that related party transactions (RPTs), which are designed to offer tax advantages while concurrently transferring profits to majority owners, are frequently involved in tunnelling. Insiders may benefit from these transactions at the expense of minority shareholders, all the while appearing to be legal. Multinational corporations have the potential to develop complex organizational structures that obfuscate financial flows and make tax reporting more difficult. In addition, this intricacy do not only aid tax aggressiveness but also makes it easier for management to participate in covert tunnelling, which raises agency costs and information asymmetry (Asiriuwa*et al*. 2021)

However, Oyedele*et al*. (2013) said thatbased on guidelines from the Organization for Economic Co-operation and Development (OECD), Nigeria created its own transfer pricing laws in an effort to control the menacing attitudes of multinational corporations. The final rules, known as The Income Tax (Transfer

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Pricing) Regulations No. 1, 2012, were released by the FIRS in September 2012 after the draft guidelines for transfer pricing were released in May 2012. ButDurowaiye, and Sadiq (2024) stated that due to inconsistencies and gray areas that allow MNCs to take advantage of the system and reduce their tax responsibilities, the implementation and enforcement of these regulations have proven difficult.

Tax aggressiveness affects revenue collection and the efficacy of government programs, which poses a serious obstacle to fiscal and economic progress in emerging nations like Nigerian (Asomba*et al*., 2023). Multinational corporations frequently use aggressive tax planning strategies, which makes it more difficult for the nation to collect taxes. This reduces government revenue and raises the possibility of economic distortions. Consequently, there are fewer funds available for social welfare, infrastructure development, and public services, making it more difficult for the government to fund vital initiatives for societal well-being and economic growth (Jaffar *et al*., 2021),

Additionally, it makes economic inequality in Nigeria worse by permitting certain people or organizations to avoid paying taxes, which denies the government funding for social services and fair wealth distribution. This disparity impedes attempts to alleviate poverty and social injustices, erodes public resources available for investments, and undermines governance (Otusanya*et al*.,2023). Nigeria, although being the biggest nation in Africa, has struggled with sluggish economic growth; this results from a low tax revenue to GDP ratio. Evidence showed that Nigerian's tax revenue to GDP as at 2019, 2020 and 2021 was 8.50%, 5.50% and 10.86 respectively which, in comparison to its counterparts, is the lowest for example Tunisia (25.9%, 32.5%, 32.54%), South Africa (28.2%, 26.5 % and 27 %), Ghana (13.3% 12.0% and 14.1%) (OECD, 2023; Revenue Statistics in Africa, 2023).

This has been ascribed to the Nigerian governments' encouragement of multinational corporations to engage in a number of aggressive tax strategies by utilizing the tax laws to lower their tax obligations under those same laws. Furthermore, these problems are made worse by Nigeria's weak regulatory frameworks and enforcement procedures, which let MNCs take advantage of legal gaps largely unabated (Eluka*et al*.2016).Government tax collection targets may be lowered as a result of tunnelling (Novitaria, 2021). Within the economic framework, tunnelling may be defined as an immoral conduct in which insiders or majority shareholders misappropriate corporate funds for their own benefit, hence causing harm to minority shareholders.

This might involve activities such as selling off assets, guaranteeing personal loans, paying exorbitant CEO salaries, giving improper incentives, depleting the company's cash reserves, and adversely influencing its valuation. Such acts demonstrate the damaging effects of such immoral conduct on a nation's economy by jeopardizing a company's financial stability and general economic health (Johnson *et al*., 2000). A large loss of tax income might make it more difficult to pay for public services like healthcare, education, and infrastructure in emerging nations like Nigeria, where public revenue is essential for social services and economic growth. Gandhi and Olenski (2024) noted that by increasing prices of products and services artificially between connected firms, tunnelling may facilitate tax aggression. This lowers an organization's total tax obligation by enabling multinational firms to transfer profits from high-tax to low-tax nations.

Numerous investigations on tunnelling have been carried out in other nations; for instant in China; Qu et .al (2020) explored the connection between tax avoidance and tunnelling in Chinese listed local government-controlled (LG) enterprises, as

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well as the factors that underlie this relationship; Brazil; De Oliveira Aguiar *et al.* (2020) carried out a study in Brazil titled "Tunnelling and Tax Aggression," which examined the relationship between tax aggression and tunnelling in businesses listed between 2010 and 2017 on the Brazilian Securities Exchange (B3).

Furthermore, the bulk of research on tax aggressiveness and tunnelling carried out in developing nations was done in Indonesia, however the results were inconsistent; Rohmani and Amin (2022) studied the correlation between tax avoidance, profitability, firm size, and tunnelling incentives using transfer pricing as a moderator. The results demonstrated the beneficial effects of both tunnelling incentives and transfer pricing on tax avoidance. Tax avoidance was positively impacted by tunnelling incentives. Suripto and Novitaria (2021)provided research evidence on the effects of tunnelling incentives, corporate characteristics, and risk management on tax avoidance. The results of their findings showed that tax avoidance is significantly and positively influenced by tunnelling incentives.

Waluyo*et al.* (2023)used transfer pricing as a mediating variable to examine the connections between tax avoidance and debt covenant, tunnelling incentive, and bonus program. The findings demonstrated that there was no appreciable difference in tax avoidance caused by the tunnelling incentive.Pranatio and Sutrisno (2024) examined the influence of bonus systems, tax minimization, multinationality, intangible assets, and tunnelling incentives on the transfer pricing decision-making process in consumer cyclical and non-cyclical enterprises that are listed on the Indonesian Stock Exchange. According to their findings, tax avoidance attitudes are considerably impacted negatively by tunnelling incentives. Nurulita and Yulianto (2023) examined the connections between tax avoidance and profitability, institutional ownership, corporate social responsibility, and tunnelling incentives. They found that tunnelling incentives had an adverse effect on tax avoidance.

Sari *et al.* (2022) analysed the relationship between tax avoidance and bonus plans, debt covenants, business size, and tunnelling incentives using transfer pricing as an intervening variable. The findings demonstrated that tax avoidance was not significantly affected by tunnelling incentives. and Tarmidi*et al.* (2023) examined how debt covenants and tunnelling incentives affected company tax policy, with transfer pricing acting as a moderator. The analysis revealed that tunnelling incentives had no effect on corporate tax policy. Nigerian multinational corporations are increasingly adopting tax-aggressive methods as a means of reducing their tax obligations. These strategies include transfer pricing and tunnelling. Research indicates that a notable proportion of businesses participate in active tax planning, potentially resulting in huge revenue losses for the government.

Research, for example, shows that many firms take advantage of tax law gaps, highlighting the need to comprehend the processes behind these behaviours and their consequences for public finance and corporate governance (Bilicka*et al.*2023; Osho& Adisa2022). Nigeria's capacity to raise revenue may be significantly impacted by the aggressive tax strategies used by MNCs. Since taxes are the main source of funding for governments, aggressive avoidance strategies that reduce the tax base can make it more difficult for the government to invest in infrastructure and other necessities like public services. An investigation into the ways in which tunneling practices contribute to these issues is necessary because this has wider implications for social welfare and economic development (Bilicka*et al.*2023; Osho& Adisa2022; Temitayo2024).

The Nigerian tax environment has been developing, with government efforts

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aiming at diversifying income streams and ensuring corporate compliance. However, the effectiveness of these policies can be undermined by aggressive tax techniques aided by tunnelling (Osho& Adisa2022; Temitayo2024). Though lots of research has been done on tax aggressiveness worldwide, very few of these studies have focused on tunnelling and how it affects tax behaviour in Nigeria, this study introduced managerial ownership to investigate the mediating effect of management ownership on tunnelling and tax aggressiveness, since managers with larger ownership holdings stand to suffer more from the possible repercussions of aggressive tax methods, managerial ownership can mitigate the effect of tunnelling on tax aggression. Managers are more inclined to align their interests with shareholders' when they own a sizable ownership position in the firm. They may be less likely to participate in tunnelling activities that might result in aggressive tax methods because of this alignment of interests.

To close this knowledge gap and improve comprehension of these intricate relationships, this study will provide empirical data and insights that will benefit both scholarly debate and real-world corporate finance and taxation policy applications. The anticipated outcomes of this investigation are to offer additional understanding into one of the elements impacting businesses' choices regarding aggressive taxation, along with the consequences of such actions on Nigeria's economic growth. Therefore, in addition to theoretical contributions to the literature on accounting and taxation, this research will also have practical ramifications for businesses and regulators in terms of bettering policies pertaining to tax aggressiveness practices among multinational corporations listed on the Nigeria Exchange Group.

Based on this presentation, it aroused the interest of researchers to accessing the effect of tunnelling on tax aggressiveness practices among multinational companies listed on the Nigeria exchange group for the period 2012 to 2022 and to look at moderating influence of managerial ownership on the link between tunnelling, and tax aggressiveness.

2.0 LITERATURE REVIEW

2.1 Conceptual Review

This section defines the dependent variable (tax aggressiveness), the independent variable (tunnelling) and the moderating variable (managerial ownership)

2.1.1 Tax aggressiveness

According to Alkausar*et al*. (2023), tax aggressiveness refers to a company's inclination to minimise its tax liabilities through strategies involving tax avoidance and, at times, tax evasion. Such aggressive practices exploit the weaknesses in tax legislation without outrightly breaching the law. Ardillah and Vanesa (2022) noted that tax aggression has been a persistent issue in societies with tax systems since the inception of taxation.

Siburian and Kuntadi (2023) highlighted that both legal (tax avoidance) and illegal (tax evasion) tax planning activities can manipulate taxable income, collectively referred to as tax aggressiveness. These practices can detrimentally affect the economy by diminishing the funds available for public investments and social welfare initiatives (Appah&Duoduo, 2023).

Tax avoidance, tax planning, tax reduction, and tax sheltering are other terms for tax aggressiveness (Ogbeide&Iyafekhe, 2018). It is usually performed by companies by exploiting the loopholes in the taxation regulation. Ogbeide and Iyafekhe (2018) ascertained that Tax aggressiveness refers to management's attempts to minimize tax expenses. Depending on how much of the manipulation of tax expenses is done within the bounds of tax law, these efforts may be legitimate (avoidance) or illegal (evasion).

Tax aggressiveness may be defined as a deliberate strategy used by businesses to

reduce their tax responsibilities using a variety of ways, which may include both illicit (tax evasion) and lawful (tax avoidance). This behaviour takes use of tax loopholes to reduce tax costs, hence increasing profits for the corporation and its shareholders. Sari *et al*. (2022) defined tax avoidance as attempts to lower an organization's tax liability by exploiting gaps in tax rules and regulations. Taxes are regarded as a major expense for businesses, limiting the cash flow accessible to their owners (Surant*aet al*., 2020).

In this context, the Effective Tax Rate (ETR), and Cash Effective Tax Rate (CAETR serve as indicators of a company's tax aggressiveness. The effective tax rate reflects the proportion of a business's pre-tax earnings that is actually paid in taxes. Meanwhile, the Cash Effective Tax Rate (CAETR) is a similar measure that examines the actual cash payments made by a company over a specific timeframe. This figure can vary from the tax amounts recorded in accrual-based income statements. CAETR emphasises the cash implications of taxes, providing insight into the cash resources a company allocates to meet its tax commitments.

Several researchers had used Effective Tax Rate (ETR) (for example; Abubakar *et al.*, 2021; Hamzah and Bahri2023; MacCarthy 2021; Sari *et al*. 2022; Rini*et al*. 2022) and Cash Effective Tax Rate (CAETR) (for example; Gunawan and Surjandari, 2022; Hanum and Febyola, 2023; Khamisan and Christina, 2020; Sadjiarto et al., 2020) but the simultaneous use of both metrics were scarcely used by previous researchers. In this study, the two metrics would be made used of to allow for comparison in other to know which one will reveal the company that is highly tax aggressive.

2.1.2 Tunnelling

Supriyati*et al*. (2021) defined tunnelling as the behaviour exhibited by shareholders with concentrated ownership, allowing them to exercise control over cash flows and company assets. These shareholders, known as controlling shareholders, can redirect a company's resources for their own benefit, often at the expense of minority shareholders. Tareq*et al.* (2021) described tunnelling as involving self-dealing transactions—non-arm's length dealings between controlling owners and related parties that serve their personal interests.

Common examples of tunnelling include withholding dividends, selling company assets to affiliated firms at undervalued prices, and favouring family members for key roles within the organisation (Putra &Rizkillah, 2022). Tran Quoc and Nguyen (2023) noted that majority shareholders often prefer transfer pricing strategies, which shift assets for their benefit instead of distributing dividends to minority shareholders. Tunnelling incentivises the transfer of resources—such as assets and profit-sharing—favouring the majority shareholder while disadvantaging minority shareholders (Novitaria, 2021).

Recent studies have explored the relationship between tunnelling and tax avoidance, highlighting various dimensions and their impacts. Sintia and Suripto (2024) found that tunnelling incentives and firm size positively correlate with tax avoidance. Ullah *et al*. (2021) examined this phenomenon in the context of business groups, revealing that tax aggressiveness linked to tunnelling negatively affects firm value, a situation that can be alleviated through strong corporate governance. Both Bauer*et al.* (2019); Lestari and Solikhah (2019) identified a positive association between tunnelling incentives and tax avoidance, further supported by Aguiar *et al.* (2020), who indicated that tax aggressiveness significantly predicts tunnelling behaviour. Irawan (2022) added that tunnelling activities and corporate governance positively influence transfer pricing, indicating that these actions primarily benefit controlling shareholders at

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the detriment of the firm and minority owners.

Previous studies employed different metrics to measure tunnelling for example; Tareq*et al.* (2021), used related party transactions, it is assumed that abnormal or unreasonable related party transactions, especially those involving the controlling shareholder, can be an indicator of tunneling. Transactions that deviate from arm's length standards may be used to transfer value. Surant*aet al*. (2020); Tran Quoc and Nguyen (2023) used dividend Policy to measure tunnelling; controlling shareholders may prefer to tunnel resources out of the company rather than pay dividends to minority shareholders. Unusually low dividend payouts can suggest tunnelling is occurring and Novitaria (2021) used presence of pyramid ownership structures; the existence of pyramid ownership structures indicates a situation where a shareholder controls a company through a chain of ownership, can facilitate tunnelling. This structure makes it easier to transfer resources between entities. This study employed the ratio of total foreign ownership to total shares outstanding.

2.1.3 Managerial Ownership

Managerial ownership was defined by Sholikhah and Nurdin (2022) as the portion of shares that are owned by management. A shareholder with managerial ownership is one who actively engages in the internal business operations of the organization (Multazam&Rahamwaty, 2018). According to Amalia and Gunawan (2020), when a firm has managerial ownership, its management also assumes the role of a shareholder, putting them in close contact with the risks and outcomes of their actions. Furthermore, Multazam and Rahamwaty (2018) proposed that managerial ownership gives managers the chance to participate in ownership, aligning their position with that of shareholders.

Managerial ownership was calculated as the ratio of total managerial shares to total outstanding shares. This is because management ownership plays a significant role in coordinating managers' interests with those of shareholders. Managers have a stake in the long-term performance and value development of the firm when they possess a sizable portion of its shares. Managers may be encouraged to take actions that maximize shareholder value and benefit shareholders because of this alignment of interests.

2.2 Theoretical Framework

The agency theory is built on several key assumptions: Principals and agents have different objectives and risk preferences, leading to potential conflicts of interest, another assumption is that agents possess more information and control over resources than principals, creating an imbalance that can result in self-serving behaviour, furthermore, Managers are seen as economically rational individuals who may prioritize personal interests over those of shareholders(Sri Utaminingsih*et al*.,2022).

Jensen and Meckling (1976) argue that these dynamics can lead to agency problems, particularly in contexts like tax aggressiveness, where managers might engage in strategies to reduce tax liabilities through aggressive measures, possibly leading to severe effects for shareholders and other stakeholders. Tax aggressiveness is viewed as a moral hazard where agents attempt to minimize the company's tax burden without significantly affecting earnings. The theory elucidates the dynamics of agency disputes regarding tax issues, emphasizing how conflicts of interest and knowledge asymmetry influence managerial behaviour (Alkausar*et al.*, (2023).

Research has shown that agency theory is instrumental in analyzing tax aggressiveness, such as Gunawan and Surjandari (2022); Indrastuti and Apriliawati(2023); Irawan*et al.* (2020); MacCarthy (2021); Yeye and Egbunike

(2021). These studies provide insights into the relationship between the company owners, the managers, and agency conflicts, supporting the application of agency theory in understanding tax-related behaviours. Tunnelling can lead to tax avoidance strategies that favour certain parties within a firm, typically undermining overall tax revenues. This behaviour is driven by agency problems, where managers prioritize their own interests over those of shareholders. Consequently, they may employ tax strategies that facilitate cash transfers through related-party transactions, exacerbating conflicts of interest among stakeholders (Susanto *et al*., 2017).

2. 3 Empirical Review

2.3.1 Tunnelling and tax aggressiveness

Novitaria (2021) investigated how tunnelling incentives, risk management, and firm characteristics affect tax avoidance, with Corporate Social Responsibility (CSR) acting as a moderating factor. This study analysed secondary data from the annual financial reports of mining companies listed on the Indonesia Stock Exchange between 2016 and 2019. The results from panel data regression analysis suggested that both tunnelling incentives and company size have a positive impact on tax avoidance.

Ariyani and Yasa (2023) explored the interplay between firm size, bonus plans, tunnelling incentives, and tax avoidance related to transfer pricing in manufacturing firms on the Indonesia Stock Exchange. The data, analysed through logistic regression and Moderated Regression Analysis, indicated that while bonus plans exert minimal influence on transfer pricing, tunnelling incentives positively affect both transfer pricing and tax avoidance. Furthermore, firm size did not moderate the effect of bonus schemes on transfer pricing.

Yuliana *et al.* (2023) focused on the direct relationship between taxes and tunnelling incentives in relation to transfer pricing, moderated by foreign ownership, specifically within multinational manufacturing firms listed on the Indonesian Stock Exchange from 2019 to 2020. Their multiple linear regression analysis revealed that both taxes and tunnelling incentives significantly affect transfer pricing; however, while taxes have a positive influence, tunnelling incentivesdo not show a notable individual impact.

Qu *et al.* (2020) assessed how tax avoidance and tunnelling incentives influence the value of local government-controlled enterprises in China, using data from listed firms between 1999 and 2006. Through regression analysis of financial statements and stock market data sourced from the China Stock Market and Accounting Research (CSMAR) database, the study found that tax avoidance does not enhance the business value of firms with less than 40% government ownership. Additionally, the detrimental effects of tunnelling are intensified when control rights are held by local governments, though these effects are lessened by the presence of other significant shareholders.

Imaniah (2023) examined the impact of tunnelling incentives, thin capitalisation, financial distress, and earnings management on tax aggressiveness in Indonesian manufacturing firms listed on the Indonesia Stock Exchange from 2017 to 2021. Using purposive sampling, the research gathered 420 observations from 213 companies and employed panel data regression analysis. The findings indicated that tax aggressiveness is influenced by thin capitalisation, financial distress, and earnings management, but not by tunnelling incentives.

Ullah *et al.* (2021) explored the relationship between tax avoidance, tunnelling, and firm value, moderated by corporate governance, in a sample of 160 non-financial Pakistani firms from 2009 to 2018. The analysis, conducted using Two-Stage Least Squares Regression (2SLS)

models, revealed significant associations between tax aggressiveness and group ownership, management ownership, and tunnelling, alongside corporate governance's role in mitigating conflicts of interest within group firms.

Lestari and Solikhah (2019) investigated the links between tax avoidance and various factors such as CSR, tunnelling incentives, fiscal loss compensation, debt policy, profitability, and company size in manufacturing firms on the Indonesia Stock Exchange from 2012 to 2016. Their multiple linear regression analysis indicated that tax avoidance is positively affected by tunnelling incentives, fiscal loss policies, and profitability, while debt policies negatively influence tax avoidance. CSR and company size were found to have no significant effect.

Putri and Evana (2024) studied how transfer pricing, thin capitalisation, capital intensity, and tunnelling incentives affect tax avoidance in mining firms listed on the Indonesia Stock Exchange from 2018 to 2022. Statistical regression analysis showed that tax avoidance is negatively impacted by tunnelling incentives, while thin capitalisation and capital intensity have a significant positive effect. Conversely, transfer pricing appeared to have little impact on tax avoidance. Additionally, fiscal loss policies and profitability positively influence tax avoidance, whereas debt policies have a negative effect, with CSR and company size showing no significant influence.

Jafri and Mustikasari (2018) examined the influence of tax planning, tunnelling incentives, and intangible assets on transfer pricing behaviour in manufacturing firms listed on the Indonesia Stock Exchange between 2014 and 2016. Using purposive sampling to select 71 companies from a pool of 134, their explanatory correlational analysis revealed significant effects of tax planning and tunnelling on transfer pricing decisions, whereas intangible assets had no substantial impact.

Putri (2023) explored how transfer pricing decisions are affected by tunnelling incentives, bonus mechanisms, and debt covenants in the consumer goods sector listed on the Indonesia Stock Exchange from 2015 to 2020. Employing purposive sampling, the study selected 16 firms out of 26 in the sector. Linear logistic regression analysis of the collected financial data showed that all three factors significantly influenced transfer pricing decisions.

Research by Herman *et al.* (2023) analysed the effects of tunnelling incentives, bonus mechanisms, and debt covenants on transfer pricing decisions in consumer goods companies listed on the Indonesia Stock Exchange from 2016 to 2020. Using panel data regression analysis on a sample of 10 companies, the study found that none of the examined independent variables—tunnelling incentives, bonus mechanisms, or debt covenants—significantly impacted transfer pricing within the sampled firm

Putri and Lindawati (2023) explored the impact of tax minimisation, exchange rates, and tunnelling incentives on transfer pricing decisions in manufacturing firms listed on the Indonesia Stock Exchange between 2015 and 2020. Using a purposive sampling method, the researchers selected 11 companies from a total of 138. Data analysis was conducted with E-Views 9, based on financial reports published by the firms. The results indicated that while tax minimisation does not affect transfer pricing decisions, both exchange rates and tunnelling incentives have a positive and significant impact.

Osho and Adisa (2022) investigated the influences of tax expenses, tunnelling incentives, and foreign exchange exposure on tax disclosure among multicultural companies in Nigeria. Adopting an ex-post-facto research design, they utilised secondary data from 76 companies over an 11-year period (2010–2020). Data were

collected from annual reports and analysed using the Generalized Method of Moments (GMM) estimator, yielding a panel dataset of 760 observations. The findings revealed that tax expenses and tunnelling incentives significantly enhance tax transparency, although the effect of foreign exchange exposure was not clearly defined.

From this review, the following hypothesis was proposed:

H01: Tunnelling does not have a significant effect on tax aggressiveness among multinational corporations in Nigeria.

2.3.2 Managerial ownership and tax aggressiveness

Deef*et al.* (2021) examined how managerial ownership and foreign ownership influence tax avoidance among 69 non-financial firms listed on the Egyptian Stock Exchange (EGX 100) from 2015 to 2019. The study employed multiple regression models to analyse data from the firms' financial reports, concluding that managerial ownership positively and significantly affects tax avoidance, whereas foreign ownership showed no significant impact.

Olanisebe*et al.* (2023) studied the mediating role of profitability in the relationship between managerial ownership and tax avoidance among listed companies in Nigeria. Using a correlational research design, the analysis covered data from the Nigeria Exchange Group (NGX) over a 12-year period from 2010 to 2021. The findings revealed that managerial ownership significantly influences both company profitability and tax avoidance behaviour.

Qawqzeh (2023) conducted research within the Jordanian context to examine the moderating effect of audit quality on the relationships between different types of ownership structures and tax avoidance practices. The study utilised secondary data from companies listed on the Amman Stock Exchange, covering the period from 2009 to 2020. The findings, based on the effective tax rate (ETR) and the cash flow effective tax rate (CFETR) as proxies for tax avoidance, revealed that family and management ownership intensify tax avoidance activities. In contrast, institutional and board ownership types positively influence ETR and CFETR, indicating their mitigating effect on tax avoidance.

Research by Salaudeen and Ejeh (2018) and Sani (2020) provided mixed results regarding ownership structure and tax aggressiveness. Salaudeen and Ejeh's 2018 study focused on 40 non-financial firms listed in Nigeria, analysing data from their annual reports between 2010 and 2014. Using a fixed effect model with control variables, the study found that while management ownership negatively impacted tax aggressiveness, ownership concentration had a positive yet insignificant effect.

Sani (2020) investigated the relationship between management ownership and the financial performance of Nigerian listed firms, assessing the moderating role of board independence. The study revealed a strong inverse relationship between managerial ownership and company performance, highlighting that higher management ownership tends to lead to entrenchment behaviour. This effect can be counterbalanced by having a significant number of independent directors on the board.

Based on this review, the following hypothesis was formulated:

H02: Managerial ownership does not have a significant moderating effect on the relationship between tunnelling and tax aggressiveness among multinational corporations in Nigeria.

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3.0 Methodology

3.1 Research Design

This study is quantitative in nature and a longitudinal and ex post facto research design, The ex post facto design was chosen due to the use of existing secondary data, which are naturally unmanipulated and reflect past occurrences. Additionally, the longitudinal aspect allowed for data collection from multiple multinational corporations over an extended period.

3.2 Population of the Study

The study's population consists of non-financial multinational corporations (MNCs) operating in Nigeria as of the end of the 2022 financial year. Specifically, this population includes fourteen (14) listed non-financial MNCs registered in Nigeria at that time (Nigerian Exchange, 2022).

3.3 Sample Size and Sampling Techniques

Based on availability of financial data for the pertinent study period, ten listed nonfinancial multinational businesses made up the sample size. The sample technique used was purposeful sampling. To make sure that the sample only contained companies that satisfied the study's requirements, four companies were eliminated since they were not listed during the study's base period.

Table 1: Listed multinational companies on the Nigeria exchange group as at dec.2022

S/N	COMPANY	TICKER	SECTOR	DATE LISTED	DATE INCOR.
1	GLAXO SMITHKLINE CONSUMER NIG. PLC	GLAXOSMITH	HEALTHCARE		JUNE 23, 1971
2	JULIUS BERGER NIG PLC	J BERGER	CONSTRUCTION/ REAL ESTATE		FEBRUARY 18, 1970
3	SEPLAT ENERGY PLC	SEPLAT	OIL AND GAS		JUNE 17, 2009
4	TOTAL ENERGIES MARKETING NIG PLC	TOTAL	OIL AND GAS		JANUARY 6, 1956.
5	MTN NIGERIA COMMUNICATION PLC	MTNN	ICT	MAY 16, 2019	NOVEMBER 8 2000
6	AIRTEL AFRICA PLC	AIRTELAFRI	ICT	JULY 9, 2019	JULY 12, 2018
7	BUA CEMENT PLC	BUA CEMENT	INDUSTRIAL GOODS	JANUARY 9, 2020	MAY 30, 2014
8	DANGOTE CEMENT PLC	DANGOTE	INDUSTRIAL GOODS	OCTOBER 26, 2010	NOVEMBER 4, 1992
9	BUA FOODS PLC	BUAFOODS	CONSUMER GOODS	JANUARY 5, 2022	APRIL 13, 2005
10	CADBURY NIGERIA PLC	CADBURY	CONSUMER GOODS		JANUARY 9, 1965
11	GUINNESS NIG PLC	GUINNESS	CONSUMER GOODS	JANUARY 2, 1965	APRIL 29, 1950
12	NESTLE NIGERIA PLC	NESTLE	CONSUMER GOODS	APRIL 20, 1979	SEPTEMBER 25, 1969
13	NIGERIAN BREW PLC	NB	CONSUMER GOODS	SEPTEMBER 5, 1973	NOVEMBER 16, 1946
14	UNILEVER NIGERIA PLC	UNILEVER	CONSUMER GOODS	APRIL 1, 1973	NOVEMBER 4, 1923

Source:Exchange Group as at Dec. 2022

3.4 Sources and Method of Data Collection

To assess the influence of tunnelling on tax aggressiveness among multinational companies in Nigeria, this study utilised secondary data. Employing a quantitative approach, the research adopted content analysis to extract relevant information from secondary sources. Specifically, data were gathered from the financial statements of multinational companies listed on the Nigerian Exchange Group, covering the period from 2012 to 2022.

3.5 Model Specification

Evaluating the influence of tunnelling (TUN) on tax aggressiveness (ETR; and CAETR), moderated by managerial ownership (MAO), the study adapted the model of MacCarthy (2021), which is stated below;

$ETR_{it} = \beta_0 + \beta_1(EM)_{it} + \beta_2(DEF)_{it} + \beta_3(TP)_{it} + \beta_4(LEV)_{it} + \beta_5(ROA)_{it} + \varepsilon_{it}$ (3.1)

Where.

The dependent variable is ETR = Effective tax rate used to proxy tax avoidance

The independent variables are EM = earnings management.

DEF = deferred tax and

TP = transfer pricing.

The control variables are LEV = leverage and

ROA = return on assets.

This model was modified by removing EM; DEF; TP; LEV; ROA and replacing with tunnelling (TUN); managerial ownership (MAO), to form equation (3.2, and 3.4), this is done to be in line with the study's objectives because the present study is having different research questions and objectives requiring a modified set of variables to address the specific research objectives.

The models were specified thus;

$ETRit = \beta_0 + \beta_1 TUN_{it} + \beta_2 MAO_{it} + \beta_3 TUN*MAO_{it+}\varepsilon_{it}$ (3.2)

$CAETRit = \beta_0 + \beta_1 TUN_{it} + \beta_2 MAO_{it} + \beta_3 TUN*MAO_{it+}\varepsilon_{it}$ (3.3)

Where;

ETR = Effective tax rate;

CAETR = Cash Effective tax rate;

TUN = tunnelling;

MAO = managerial ownership

β_0 = the constant or the intercepts on the regression equation;

β_1, β_2, β_3 and β_4 and are the regression coefficients to be estimaed;

t is the time series of the study (t = 1, 2, and 3);

i is the cross-section (the number of non-financial multinational companies listed on the Nigerian Exchange Group);

ε is unique error or error term.

4.0 DATA ANALYSIS AND INTERPRETATIONS

This section focused on the results and discussion of findings obtained from the analysis of the objective. This study analysed data through the descriptive and inferential statistics such as correlation analysis and panel estimation techniques.

4.1 Descriptive Statistics

Table 2**Summary of descriptive analysis**

	ETR	CAETR	TUN	MAO
Mean	2.116	19.344	0.521	0.045
Median	1.594	14.169	0.500	0.002
Maximum	12.303	216.282	0.950	0.853
Minimum	0.000	-81.581	0.080	0.000
Std. Dev.	2.316	34.470	0.217	0.130
Skewness	1.949	2.242	0.195	4.782
Kurtosis	8.191	15.231	2.330	28.342
Jarque-Bera	193.189	777.784	2.755	3362.836
Probability	0.000	0.000	0.252	0.000
Sum	232.711	2127.802	57.290	4.932
Sum S Dev.	584.652	129515.0	5.111	1.846
Observations	110	110	110	110

Source:Author's Computation(2024)

The Table 2 presented the descriptive analysis of the variables used in the study. This aided in obtaining preliminary understanding of the characteristics of the study's variables. The variables included thee Effective tax rate (ETR), Cash Effective tax rate (CAETR), and tunnelling (TUN). The results indicated that ETR had a mean of 2.116 which indicated that the proportion of 2.12% pre-tax income that was actually paid in taxes by company was minimal and not encouraging.

The cash effective tax rate revealed the average value of 19.34 which indicated that several businesses paid about 20% in cash during a specific time out of the profit after tax and standard deviation is 34.47 indicated that there was widely spread around the average estimated value. had mean value of -11.09 which implies that on the current year's tax expenses relative to the current year's pre-tax income was an inverse due to some companies runs into loss and not encouraging. Tunnelling (TUN) had an average of 0.521, It suggests that around 51% of the chosen companies had foreign shareholders. The greater the number of foreign shareholders, the more capable the company is of using tax avoidance strategies such as tunnelling to shift advantages to other nations.

Managerial ownership had a mean value of 0.045, implies that the percentage of ownership among sampled companies was low, the maximum and minimum values are 0.853 and 0.000 with standard deviation of 0.134. The probability of Jarque-Bera of almost variables were less than a 0.05 level of significance except and TUN, which indicates that the data were normally distributed.

4.2 Correlation Analysis

Table 3 Correlation matrix

	ETR	CAETR	TUN	MAO
ETR	1.000			
CAETR	-0.116	1.000		
TUN	0.202	-0.245	1.000	
TIN	0.091	-0.109	-0.260	
AEM	0.144	0.067	-0.015	
MAO	0.034	-0.118	0.005	1.000

Source: Author's Computation (2024)

The results presented in Table 2 indicate a weak negative relationship between the Cash Effective Tax Rate, and the Effective Tax Rate, with estimated correlation coefficients of -0.116 and -0.096, respectively. Additionally, a positive correlation was found between tunnelling and the Effective Tax Rate of the sampled multinational companies, as indicated by a correlation coefficient of 0.202. However, tunnelling displayed a weak negative correlation with Cash Effective Tax Rate, with coefficients of -0.245. Furthermore, managerial ownership showed a positive association with the Effective Tax Rate, reflected in a correlation coefficient of 0.034. Conversely, it exhibited weak negative correlations with the Cash Effective Tax Rate, with coefficients of -0.118. The results also highlighted weak relationships among the explanatory variables, as none of the correlation coefficients exceeded 0.5. This suggests that multicollinearity is unlikely to be an issue within this study.

4.3. Diagnostic Tests

Table 4. Variance inflation factor for the study

Variable	**Model 1**			**Model 2**		
	Coeff.	Uncent.	Cent.	Coeff	Uncentered	Centered
Variable	Variance	VIF	VIF	Variance	VIF	VIF
C	0.5080	11.028	NA	110.9954	11.0289	NA
TUN	1.0660	7.3534	1.0753	232.9275	7.3534	1.0753
MAO	2.8540	1.1642	1.0396	623.5917	1.1642	1.0396

Source: Author's Computation (2024)

Table 4presents the mini and maxi VIF for each model and summarizes the results of the Variance Inflation Factors (VIF) for multicollinearity. According to the data, the models' minimum VIF value was 1.0297, and their maximum VIF value was 1.0957. The study's whole model is free from the multicollinearity issue as neither the lowest nor greatest VIF of any of the models comes near the threshold of 10.

4.4 Regression Results

Table 5Summary of Panel Regression Results ETR

Subject to this model;

$ETRit = \beta_0 + \beta_1 TUN_{it} + \beta_2 MAO_{it} + \beta_3 TUN*MAO_{it+}\varepsilon_{it}$

Variables		**Pooled Effect**	**Fixed Effect**	**Random Effect**
TUN	Coef.	2.741**	2.375**	2.568**
S.E		0.811	1.140	1.134
	t-v	(2.288)	(2.084)	(2.264)
MAO	Coef.	1.832	5.550	3.729
S.E		11.269	11.107	10.854
	t-v	(0.163)	(0.499)	(0.344)
TUN*MAO	Coef.	-1.030	-6.377	-3.671
S.E		11.307	11.110	10.875
	t-v	(-0.091)	-0.574)	(-0.338)
Constant	Coef.	-0.065	0.228	0.073
S.E		0.8111	0.776	0.798
	t-v	(-0.079)	(0.294)	(0.091
R^2		0.193	0.274	0.182
F-stat		2.491	2.0467	2.306
p-val		0.013	0.016	0.015
Breusch-Pagan Test:		24.574		
p-value		(0.006)		
Hausman Test		8.709		
p-value		(0.274)		

t- stat. values in parentheses, P-val<0.01*** P-val<0.05**, P-val<0.1*

Source: Author's Computation (2024)

The findings in Table 5 indicate that the random effects model is the most suitable for this study, supported by a Hausman Test P-value of 0.274. The Breusch-Pagan Test further corroborated this conclusion, yielding a P-value of 0.006, which helped determine the appropriateness of the panel regression methods—Pooled OLS, random effects, and fixed effects. The results in Table 5 suggest that random effects were the best estimation method, as indicated by the Hausman Test P-value being less than 0.05, while a pooled effects model was deemed unsuitable.

The chosen explanatory factors were well-selected, as evidenced by a probability value below 0.05 and an F-statistic of 2.306, indicating that the model is both fit and significant at the 5% level. The explanatory variables account for 18.2% of the total variation in the Effective Tax Rate (ETR), leaving 81.8% attributed to the random error term.

As shown in Table 5, tunnelling had a positive and significant effect on the ETR, with a t-value of 2.264 ($p < 0.05$). This suggests that higher levels of foreign share ownership are associated with an increased likelihood of employing tax avoidance strategies, such as tunnelling, to shift advantages to other jurisdictions. This finding aligns with previous research by Novitaria (2021) and Sintia and Suripto (2024), which also found a positive relationship between tunnelling incentives and tax avoidance.

Conversely, managerial ownership had a positive but insignificant effect on the ETR, with a t-value of 0.344 ($p > 0.05$). This indicates that managerial ownership does not significantly influence the ETR, which contradicts the findings of Andari*et al.* (2022), Deef*et al.* (2021), and Ogbeide

and Obaretin (2018), who reported a strong positive correlation between management ownership and tax avoidance. Additionally, the moderating effect of managerial ownership on tunnelling was found to have no significant impact on the ETR.

Table 6Summary of Panel Regression Results CAETR
Subject to this model;
$CAETRit = \beta_0 + \beta_1 TUN_{it} + \beta_2 MAO_{it} + \beta_3 TUN*MAO_{it} + \varepsilon_{it}$

Variables		Pooled Effect	Fixed Effect	Random Effect
TUN	Coef.	-60.244***	-63.200***	-60.244***
	S.E.	17.454	17.973	17.789
	t-v	(-3.452)	(-3.516)	(-3.386)
MAO	Coef.	-146.948	-132.237	-146.948
	S.E.	164.158	175.126	167.320
	t-v	(-0.895)	(-0.755)	(-0.878)
TUN*MAO	Coef.	168.943	138.274	168.943
	S.E.	164.706	175.178	167.879
	t-v	(1.026)	(0.789)	(1.006)
Constant	Coef.	57.293***	58.749***	57.293***
	S.E.	11.816	12.238	12.043
	t-v	(4.849)	(4.801)	(4.757)
R^2		0.131	0.186	0.131
F-stat		2.197	1.234	2.197
p-val		0.040	0.255	0.041
Breusch-Pagan Test:		7.153		
p-value		(0.011)		
Hausman Test		5.196		
p-value		(0.636)		

t- stat. values in parentheses, P-val<0.01*** P-val<0.05**, P-val<0.1*
Source: Author's Computation (2024)

The findings in Table 6 indicate that the random effects model is the most suitable, as evidenced by a Hausman Test P-value of 0.636. The Breusch-Pagan Test further confirmed this, yielding a P-value of 0.011, which was used to determine the appropriate panel regression method among Pooled OLS, random effects, and fixed effects. As shown in Table 6 the results suggest that random effects should be employed, with the Hausman Test P-value being less than 0.05, while the pooled effects model was found to be inappropriate.

The model is both fit and significant at the 5% level, as indicated by a probability value below 0.05 and an F-statistic of 2.197. The explanatory variables account for approximately 13% of the total variance in the Cash Effective Tax Rate (CAETR), leaving 87% of the variance unexplained, which is captured by the random error term.

As illustrated in Table 6, tunnelling had a negative and significant effect on the CAETR, with a t-value of -3.386 ($p < 0.05$). This suggests that the negative effects of tunnelling-related tax aggressiveness can be mitigated by effective corporate governance. Tunnelling incentives typically arise from the desire of majority shareholders to gain more than minority shareholders. This finding

aligns with Ullah *et al*. (2021), who noted a direct association between tunnelling and tax aggressiveness. Similar results have been reported by Waluyo*et al.* (2023), Putri and Evana (2024), and Nurulita and Yulianto (2023), all of whom found a negative correlation between tunnelling and tax avoidance.

Conversely, managerial ownership had a negative and insignificant effect on the CAETR, with a t-value of -0.878 ($p > 0.05$). This indicates that managerial ownership does not significantly influence the cash effective tax rate, which contradicts the findings of Andari*et al.* (2022) and Deef*et al.* (2021), who identified a positive and significant relationship between managerial ownership and tax avoidance. Furthermore, the moderating effect of managerial ownership on tunnelling was found to have no significant impact on the cash effective tax rate.

table 7 Summary of findings on research hypotheses

Hypo	Hypotheses Statement	**ETR**	Remark	**CA ETR**	
1	Tunnelling does not have significant effect on tax aggressiveness among multinational corporations in Nigeria	(t-v=2.264, p<0.05)	Null hypothesis not accepted at 5%	(t-v = -3.386, p<0.05	Null hypothesis not accepted at 5%
2	moderating effect of TUN*MAO	t-v =-0.338, p>0.05	Null hypothesis not rejected at 5%	t-v =1.006, p>0.05	Null hypothesis not rejected at 5%

Source: Author's Computation (2024)

4.4.1 Test of Hypothesis One

The first hypothesis posits that tunnelling does not significantly affect tax aggressiveness among multinational corporations in Nigeria. The results from the panel regression analysis indicate that the null hypothesis is rejected at the 5% significance level. This suggests that tunnelling has a positive and significant impact on the effective tax rate, while exhibiting a negative significant influence on the cash effective tax rate among Nigerian listed multinational corporations.

4.4.2 Test of Hypothesis Two

The second hypothesis states that managerial ownership does not significantly moderate the relationship among tunnelling, and tax aggressiveness in multinational corporations in Nigeria. The summarized results in Table 7 show that the null hypothesis is not rejected at the 5% significance level. Therefore, managerial ownership does not have a significant moderating effect on the interplay between tunnelling, and tax aggressiveness among the multinational corporations studied.

4.5 Discussion of Findings

The findings reveal that tunnelling positively and significantly affects the effective tax rate, while it negatively impacts the cash effective tax rate. This aligns with the work of Novitaria (2021) and Sintia and Suripto (2024), who found that tunnelling incentives positively influence

tax avoidance.The incentives for tunnelling often stem from the desire of majority shareholders to gain more than minority shareholders, which is consistent with findings by Ullah *et al.* (2021). This is further supported by De Oliveira Aguiar *et al.* (2020), who demonstrated that tax aggressiveness is a significant predictor of tunnelling. Irawan and Ulinnuha (2022) expanded on this by showing a significant positive relationship between tunnelling activities and corporate governance's impact on transfer pricing.

Moreover, the positive and significant effect of tunnelling corroborates agency theory, suggesting that managers may exploit tunnelling to benefit themselves at the expense of shareholders.

5.0 Conclusion and Recommendations

This study investigated the impact of tunnelling on tax aggressiveness among multinational corporations in Nigeria. The findings indicate that tunnelling has a positive and significant effect on the effective tax rate while negatively influencing the cash effective tax rate. The prevalence of tax aggressiveness among these firms has resulted in significant revenue losses. Consequently, it is concluded that tunnelling significantly affects tax aggressiveness within the context of multinational corporations in Nigeria.

5.1 Recommendations

Considering the conclusions drawn, the following recommendations are proposed:

Strengthening Regulatory Frameworks: Regulatory bodies should enhance existing frameworks to mitigate tunnelling practices, which contribute to increased tax aggressiveness (ETR) and reduced cash tax payments (CAETR). Implementing effective monitoring, enforcement mechanisms, and penalties for non-compliance can deter and identify instances of tunnelling.

5.2 Contribution to Knowledge

This study contributes to the existing body of knowledge in several significant ways. Firstly, it provides a nuanced understanding of the complex relationship between tunnelling and tax aggressiveness among multinational corporations in Nigeria. Secondly, it employs multiple proxies for measuring tax aggressiveness, including the effective tax rate (ETR), cash effective tax rate (CAETR). By utilizing these diverse measures, the research offers a more comprehensive view of tax aggressive behaviours, facilitating accurate comparisons and the identification of highly tax-aggressive firms, thereby addressing inconsistencies found in previous studies.

5.3 Limitations of the Study

This study's findings are specific to multinational corporations in Nigeria and may not be generalizable to domestic companies or multinational corporations in other countries with different tax regimes and business environments.

5.4 Suggestion for Further Studies

Future research could incorporate other variables that may influence tax aggressiveness, such as corporate governance structures, board diversity, or CEO characteristics. This would provide a more comprehensive understanding of the factors driving tax aggressive behaviours in multinational corporations.

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