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Determinants of Tax Aggressiveness among Quoted Construction/Real Estate Companies in Nigeria

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Abstract
Tax aggressiveness, characterized by strategic efforts to minimize tax liabilities within legal boundaries, is a prevalent phenomenon in the business world, influencing tax compliance, revenue collection, and economic development. In view of this, this study investigated the determinants of tax aggressiveness among quoted Nigerian construction/real estate companies. However, the specific objectives were to assess the relationship between board independence, leverage, institutional ownership and effective tax rate of quoted construction/real estate companies in Nigeria. The study adopted ex-post facto research design and utilized a panel data of seventy (70) pooled observations gathered from seven (7) quoted construction/real estate companies in Nigeria over a period of ten (10) years (2014-2023) and employed a panel multiple regression technique to analyze the data via E-views 10.0 statistical package. The study findings revealed that Board independence (Coeff. = 1.542527{0.0286}) and Institutional ownership (Coeff. = 0.079938{0.0000}) have significant positive relationship with effective tax rate of quoted construction/real estate in Nigeria suggesting reduced tax aggressiveness while Leverage (Coeff. = -0.641556{0.0636}) have non-significant negative relationships with effective tax rate of quoted construction/real estate companies in Nigeria. It was thus concluded that board independence and institutional ownership are significant determinants of tax aggressiveness among quoted Nigerian construction/real estate companies at 5% significance level. It was recommended, amongst others, that quoted Nigerian construction/real estate companies should prioritize board independence by increasing the number of non-executive directors so as to ensure transparent tax practices at all times.

Keywords: tax aggressiveness; effective tax rate; institutional ownership; leverage; board independence.

1.1 Introduction

Taxation serves as a critical mechanism for governments, particularly in developing nations like Nigeria, to generate essential revenue for funding public programs and investments that are vital for promoting economic growth and societal progress. The primary source of government income is derived from taxes, which are collected through self-assessment system. The self-assessment system in Nigeria was introduced in 1993. Eka et al. (2024) highlighted that this approach allows taxpayers to independently calculate and report their tax obligations, enabling them to strategically manage their taxable income and potentially reduce their financial liabilities to the government. The provision of key services such as healthcare, education, and infrastructure is essential for creating a thriving and well-functioning society, and these services heavily rely on government revenue. Taxation plays a significant role in financing these services and upholding the social contract between citizens and the economy (Ebire et al., 2024). However, the level of taxation directly impacts businesses, influencing their decisions related to investment and expansion. In environment with high tax rates, companies may be more inclined to seek alternative strategies to mitigate tax-related expenses and optimize their operations, potentially leading to a reluctance to participate in the formal sector. This dynamic underscores the delicate balance government must strike between securing necessary revenue through taxation and ensuring a conducive environment for businesses to thrive and contribute to overall economic development.

Evi et al. (2023) noted that businesses view taxes as a burden that hinders their profitability, as there are differing goals between the Treasury, which seeks high and consistent tax revenues, and businesses, which aim to reduce the tax liabilities. All businesses must fulfill their tax obligations to the Federal Inland Revenue on a regular basis based on a preceding year's earnings. The government imposition of high corporate taxes incentivizes companies to explore strategies to minimize their tax obligations, potentially leading to a more aggressive or proactive approach towards tax planning. Tax planning are influenced by various factors that affect the inflow of revenue to the government and the outflow of revenue to firms (Kimea et al., 2023). According to Adefunke and Ivie (2024), many registered businesses and some individuals have been involved in aggressive tax planning including tax evasion and avoidance, resulting in a notable decline in government revenue. McClure (2018) envisaged that tax avoidance reduces the company's tax liability below the statutory rate, resulting in a lower explicit tax rate and the tax risk is the level of uncertainty surrounding the potential tax savings that may be subject to reversal in the event of a future tax audit.

Tax aggressiveness, or the degree to which companies engage in aggressive tax planning and avoidance strategies to minimize their tax liabilities and maximize profitability has become a significant focus of research in the fields of accounting and taxation. The determinants of tax aggressiveness refer to the factors that influence the extent to which companies engage in practices that may be legally permissible but ethically questionable in order to reduce the tax burden. Prawira and Sandria (2018) sees it as the means by which cooperate groups can use in order to reduce the tax liabilities. Furthermore, a company's propensity to engage in tax aggressiveness is determined by factors such as firm's characteristics, including profitability, leverage, and liquidity. Companies with higher profitability may be more incentivized to engage in aggressive tax planning to protect their earnings (Taufik et al., 2022), while those will higher leverage may be more constraint in the ability to engage in risky tax strategies (Azizam, 2023). Additionally, companies with greater liquidity may be more willing to invest in tax planning strategies that provide long-term benefits. The company's governance structure including the composition of board of director's and, the presence of independent directors and corporate culture are another imposing factors. Companies with weak internal controls, ineffective oversight mechanisms, and a culture that prioritizes short-term financial performance over ethical behavior may be more likely to engage in aggressive tax practices. On the other hand, companies with strong governance practices are more likely to adopt conservative tax strategies to avoid reputational and legal risk associated with aggressive tax planning.

Real estate investment companies play a crucial role in the Nigerian economy, contributing to gross domestic product growth, employment generation, and structure development. The real estate sector in Nigeria has witnessed significant growth in recent years due to urbanization, population growth, and increased investment property development. However, the sector is also known to be prone to tax avoidance practices, given the complex nature of real estate transactions and the potential manipulation of tax rules. For companies that own real estate, the income generated is subject to applicable rates under the Company Income Tax Acts Cap C21 Laws of the Federation of Nigeria 2004. Companies may be taxed at a maximum rate of 30% of their turnover depending on the earnings in the relevance period. It is important for companies and individuals involved in real estate to comply with the tax laws in Nigeria and accurately report their rental income. Failure to do so result in penalties and legal consequences (Ogebeide & Iyafekhe, 2018).

1.2 Statement of the problem

Tax aggressiveness, characterized by strategic efforts to minimize tax liabilities within legal boundaries, is a prevalent phenomenon in the business world, influencing tax compliance, revenue collection, and economic development. Real estate investment companies in Nigeria play a vital role in the economy, yet the extent and determinants of tax aggressiveness in this sector is unclear. Oyesode (2015) highlighted that the surge of tax injustice faced by Nigerian government due to tax aggressiveness strategies employed by companies has deprived government of the much needed revenue for growth. Efforts to address the issue of companies using tax aggressiveness strategies to evade or reduce their tax liabilities have not yielded significant results. Experts in finance and accounting meticulously plan and execute sophisticated methods to exploit legal loopholes and complex structures to diminish or eliminate tax responsibilities for their clients. By implementing intricate schemes like profit shifting, base erosion, and treaty shopping, these professionals strive to shift profits to jurisdictions with lower taxes and exploit the advantages offered by tax havens.

Previous empirical studies have examined determinants of tax aggressiveness in various industries and countries, including firm characteristics, industry-specific factors, corporate governance structures, and regulatory environments, as potential dynamic influencers. However, the unique dynamics of the real estate sector, including complex transactions, asset valuation challenges, regulatory ambiguities, may give rise to distinct determinants of tax planning behaviour in the Nigerian real estate investment companies. Overtime, many academicians and researchers have conducted series of investigation on the determinants of tax aggressiveness in different sectors, yet the outcome of the research on this topic were mixed and inconclusive. Studies by Martins and Sule (2024); Mustika and Nursiam (2024); Ibilola et al. (2022); Ajube and Jeroh (2023); A'zizah (2023); Udochukwu et al. (2022); Zubairu et al. (2022); Jaffar et al. (2021); Abubakar (2021); Aprinyanti and Arifin (2021); Eragbhe and

Igbinoba (2021); Hani and Muhammad (2021); Prawira and Sandria (2021); Sormin (2021); Abdulkadir et al. (2020); Kayode et al. (2020); Yahaya and Yusuf (2020) revealed a positive relationship, while other studies by Anyaduba and Ogbeide (2022); Ifeyinwa and Otusanya (2022); Paskalina and Murtianingsih (2021); Chukwu et al. (2020); Lukman et al. (2020); Panda and Nanda (2020); Kibiya and Aminu (2019); Ogebeide and Evbaziegbere (2019); Homonangan (2023); Uniamikogbo et al. (2019); Multazam and Rahmawaty (2018) indicated a negative correlation, studies by Inuaghata et al. (2021); Dibie and Ogbodo (2023); Kusumastuti et al. (2024) revealed an insignificant effect. Therefore, it was due to this lack of consensus in prior study's findings and their recommendations that this research was undertaken.

2.0 Literature review

2.1 conceptual framework

Board independence

According to agency theory, the relationship between shareholders and management is characterized by conflict of interests, as managers may act on their own self-interest rather than in the best interest of shareholders. One way to mitigate these conflicts is through the presence of independent directors on the board. Independent directors are individuals who are not affiliated with the company in any way other than serving on the board. They are considered to be unbiased and are expected to provide objective oversight of management decisions (Ajube & Jeroh, 2023). The presence of independent directors can help align the interest of shareholders and management, as they can act as a check on management behaviour and provide a voice for minority shareholders (Apriyanti & Arifin, 2021). Independent directors can play in role of monitoring and assessing the tax strategies employed by management. They can provide an independent perspective on the risks and benefits of certain tax planning decisions, helping to ensure that the company is not engaging in overly aggressive tax practice that could harm shareholders in the long run. By holding management accountable and promoting transparency and ethical behaviour, independent directors can help to mitigate the potential negative effects of tax aggressiveness on the company (Ebire et al., 2024). Suyanto (2012) envisaged that having a larger number of independent directors, results in increased supervision of management performance, leading to a reduction in aggressive corporate tax behaviour. This is because the presence of more independent directors enhances their influence on management, allowing for more effective monitoring and oversight. As a result, management is less likely to engage in aggressive tax practices, as their decisions and actions are subject to greater scrutiny and accountability. Board independence is measured by the ratio of non-executive directors on the board divided by total directors on the board.

$$\text{Board independence} = \frac{\text{Non} - \text{executive directors on the board}}{\text{Total directors on the board}} \times \frac{100}{1}$$

Leverage

The level of company leverage is another factor in this study that impacts the company's tax aggressiveness, as it indicates the extent to which a company's assets are financed by debt. Dibie and Ogbodo (2023) noted that company leverage mirrors the amount of debt integrated into the capital structure of the organization. Leverage or gearing is the use of fixed interest capital (debt and preference share capital) in financing a company's operation (Akinsulire, 2014). It involves operating, financial leverage and off or concealed statement of financial position leverage. Operating leverage is the factor that influences business risk while financial leverage is the factor that influences financial risk (Olowe, 2011). Pandey, (2015) described financial leverage as the use of fixed charge sources of fund, such as debt and preference share capital along with the owners' equity in the capital structure. Olowe, (2011) defined financial leverage as the rate of fixed interest sources. Oyinloye et al., (2020) defined financial leverage to mean the extent to which fixed income - securities (debts) are used by the firm with such debt having fixed obligations of interest payment of a firm. Suyono (2018) as cited in A'zizah (2023) noted that a higher level of a company's leverage results in increased interest expenses, leading to reduced profitability for the company. However, this can ultimately lower the corporate income tax expense for the company. This study measured leverage with debt to assets ratio, and is calculated as;

$$\text{Debt to total assets ratio} = \frac{\text{Total liabilities (debt)}}{\text{Total assets}} \times \frac{100}{1}$$

Institutional ownership

This represents the ownership stakes held by large financial institutions such as mutual funds, pension funds, and hedge funds, which typically have a significant amount of capital at stake and participate actively in corporate governance. Institutional investors are more likely to have a direct influence on a company's tax strategy and can exert pressure on management to engage in tax aggressive behaviour. A'zizah (2023) noted that institutional ownership involves managers responsible for overseeing company's operations to enhance performance, ensuring compliance with regulations, and accuracy in financial reporting. Lukman et al., (2020) opined that institutional ownership is the percentage of equity owned by the financial institutions, mutual funds, foreign financial institutions, foreign mutual funds and other institutions. Institutional ownership refers to shares held by registered institutions such as investment companies, insurance companies, money managers, and pension funds. It is calculated as follows;

$$\text{Institutional ownership} = \frac{\text{Number of shares owned by institutions}}{\text{Total number of outstanding shares}}$$

Liquidity

An organization is insolvent when its going concern value does not exceed the expected value of its liabilities (Doan, 2019). In normal times, when non-financial markets are strong, it is easy to identify insolvent non-financial firms. However, at times of crisis, it is difficult since solvency becomes so co-mingled with liquidity issues. The term Liquidity commonly referred to the ability of an entity to change their assets into cash within the shortest possible time without losing its value. In other word, liquidity also describes the ability of an organization to strategically manage and focuses on maintaining efficient levels of current assets and current liabilities to enable the firm to have a constant flow of cash to meet its short-term obligations thus continue to exist in the near future. Liquidity ratios indicate the capability of an entity to settle its short-term obligations, however, the weakness of the ratios values may portray that the organization is facing some challenges in meeting their short-term debt (Kusumastuti et al., 2024). The proxy for measuring liquidity in this study is the current ratio and is calculated as;

$$\text{Current ratio} = \frac{\text{Current assets}}{\text{Current liabilities}} : 1$$

Profitability

Profitability is a key measure of a company's financial health and performance. It refers to the ability of a company to generate profits from its operations after accounting for all expenses, including production costs, operating expenses, interest payments, and taxes (Yusuf & Adediran, 2024). In business, the analysis of performance whether financial, production, marketing (even managerial), or general activity is very necessary because the outcome of the very present decisions lie in the projection of the future (Martins & Sule, 2024). It also refers to the measure of a firms' earning power. The earning power of a company is the primary concern of its shareholders. Fukui et al. (2021) defined performance as the yield or results of activities carried out in relation to the purposes being pursued. Its objective is to strengthen the degree to which organization achieve their purposes.

Companies that are highly profitable typically have strong earnings and cash flows, which can be used to drive growth, reward shareholders, and invest in the business However, higher profit can result in increased tax liability (Ebire et al., 2024). The delicate balance between profitability and tax aggressiveness is a critical consideration for companies as they navigate complex financial and regulatory environments. While minimizing tax liability can enhance profitability by reducing expenses and increasing after-tax profits, companies must also consider the potential risks and consequences of engaging in overly aggressive tax planning practices. Striking a balance between profitability and responsible tax planning involves a thorough understanding of tax laws, compliance requirements, ethical considerations, and long-term business objectives. Companies that adopt a sustainable and transparent approach to managing their tax affairs are more likely to build trust with stakeholders, maintain a positive reputation, and create long-term value for shareholders. By considering both profitability and tax aggressiveness in conjunction with other factors, companies can develop a comprehensive financial strategy that promotes financial health, compliance, and responsible business practices. It is calculated as follows;

$$\text{Return on total assets (RETA)} = \frac{\text{Profit after tax (PAT)}}{\text{Average total assets}} \times \frac{100}{1}$$

Tax aggressiveness

Tax aggressiveness in real estate investment companies refers to the extent to which these firms engage in aggressive tax planning strategies to minimize their tax liabilities, maximize tax benefits, and enhance profitability. Real estate investment companies often face complex tax rules and regulations due to the nature of their business operations, which involve owning, managing, and investing in various properties. As a result, these companies may resort to tax aggressiveness to exploit legal loopholes, take advantage of tax incentives, and push the boundaries of tax laws to reduce their tax burden (Oyesode,2015). One common tax aggressive strategy employed by these companies is the use of tax shelters or tax havens to shelter income from taxation. Companies may establish entities in jurisdictions with favorable tax laws or offshore tax havens to channel income, profits, or investments in ways that minimize their tax obligations. By utilizing these tax shelters, companies can potentially reduce their effective tax rate and shield their earnings from high tax jurisdictions, thereby boosting their after-tax profits.

Moreover, real estate investment companies may engage in aggressive tax planning techniques such as transfer pricing, profit shifting, and tax arbitrage to artificially manipulate their taxable income, expenses, and deductions. By manipulating the pricing of transactions between related entities or subsidiaries, companies can shift profits to low-tax jurisdictions and shift expenses to high-tax jurisdictions, thereby reducing their overall tax liability (Adang & Wijoyo, 2023). Another form of tax aggressiveness in real estate investment companies involves the exploitation of tax loopholes, credits, deductions, and exemptions to gain tax advantages. For example, companies may strategically time their capital gains realizations, structure their financing arrangements, or utilize tax-deferred exchanges to defer or reduce capital gains taxes on property sales. Additionally, real estate investment companies may leverage tax incentives such as historic rehabilitation credits, energy efficiency tax credits, or opportunity zone tax benefits to maximize tax savings and enhance their investment returns. It is calculated as follows;

$$\text{Effective tax rate} = \frac{\text{Current tax expense}}{\text{Pre} - \text{tax income}}$$

Board independence and tax aggressiveness

The board comprised of executive and non-executive directors who are either dependent or independent directors. Tax-related decisions are an important tool for independent directors to mediate between company management and company owners in planning their strategies and policies in order not to violate the applicable regulations (Apriyanti & Arifin, 2021). The level of board independence within real estate investment companies can have a significant impact on their effective tax rate. A more independent board is often associated with stronger corporate governance practices, which can influence tax planning strategies and ultimately affect the effective tax rate of the company. One way in which board independence can impact the effective tax rate of real estate investment companies is through oversight of tax-related decisions (Ugwu et al., 2024). An independent board is more likely to scrutinize tax planning strategies, ensure compliance with tax regulations, and evaluate the potential risks and benefits of different tax approaches. This strong oversight can lead to more conservative tax practices, potentially reducing the company's tax liability and, consequently, its effective tax rate.

Moreover, an independent board can also contribute to a company's reputation and relationship with tax authorities. A board that is seen as objective and independent is more likely to foster trust and credibility with stakeholders, including tax authorities, which can be beneficial in tax audits, negotiations, and compliance matters. This positive relationship can reduce the risk of tax disputes, penalties, or reputational damage, which could impact the effective tax rate and overall financial performance of the company. A study by Ajube and Jeroh (2023); A'zizah (2023); Susilawati and Mayangsari (2023); Aditiya and Rustiana (2021); Christiana and Africano (2017), revealed that the proportion of the independent directors negatively tax aggressiveness. However, a positive and significant influence existed in the study of Jeroh (2023); Apriyanti and Arifin (2021); Chytis et al. (2020). But the study of Ugwu et al. (2024) showed an insignificant influence suggesting that board independence is expected to raise cash effective tax rates of financial companies in Nigeria.

Leverage and tax aggressiveness

Leverage plays a crucial role in determining the effective tax rate of real estate investment companies. By utilizing leverage, companies can increase their investment capacity and potentially generate higher returns. However, the level of leverage employed by a real estate investment company can have implications for its tax liabilities and effective tax rate. When real estate investment companies use debt to finance their operations, the interest paid on the borrowed funds is typically tax-deductible. This deduction reduces the taxable income of the company, leading to a lower tax liability and an overall lower effective tax rate. As a result, companies with higher leverage ratios may benefit from a reduced tax burden compared to those with lower leverage ratios. This tax advantage can incentivize real estate investment companies to leverage their capital structure to optimize their tax efficiency and enhance their after-tax returns. Empirical studies by Mustika and Nursiam (2024); Novianti and Sukender (2023); A'zizah (2023) revealed that leverage had a negative effect on tax aggressiveness, suggesting that when companies rely on debt to finance their operations, they incur high interest expenses, which can be used to reduce taxable income. Interest expenses are deductible against taxable income, which can reduce the tax burden leading companies to exploit this regulation to increase their debt and save on taxes (Sormin, 2020). However, the research result by Homonangan (2023); Yosephine and Gunawan (2023); Udochukwu et al. (2022); Prawira and Sandria (2021); Hidayat and Fitria (2018); Fiandri and Muid (2017), showed that leverage had a positive effect.

Institutional ownership and tax aggressiveness

One of the key ways institutional ownership can affect the effective tax rate of real estate investment companies is by exerting pressure for tax-efficient practices. Institutional investors typically seek to maximize returns on their investments and may push companies to adopt tax strategies that minimize their tax burden. This can lead to more conservative tax planning, such as taking advantage of tax credits, deductions, and incentives to reduce taxable income and lower the effective tax rate (Efenana & Egbunike, 2023). Furthermore, institutional investors often have a long-term perspective on their investments and are concerned with the overall financial health and sustainability of the companies they invest in. This focus on long-term value creation can incentivize real estate investment firms to engage in tax planning that enhances their competitiveness and profitability, ultimately leading to a lower effective tax rate. Based on the findings of the Jensen and Meckling (1979) study, institutional ownership serves as a key supervisory role within companies. By overseeing company operations and enhancing overall performance, institutional owners play a crucial role in ensuring compliance with regulations and promoting accuracy in financial reporting. This oversight by institutional owners creates a transparent environment where managers are more inclined to share public information openly. Consequently, this increased transparency helps mitigate the risks of information fraud, particularly in the realm of tax avoidance practices, as highlighted by the study conducted by Rahmawati et al. (2021). Empirical studies by Lukman et al. (2020) revealed that institutional ownership had a negative significant effect on tax aggressiveness. In contrast, the work of A'zizah (2023) revealed that institutional ownership had a positive effect on tax aggressiveness.

H_{01}: There is no significant relationship between board independence and effective tax rate of quoted construction/real estate companies in Nigeria.

H_{02}: Leverage have no significant relationship with effective tax rate of quoted construction/real estate companies in Nigeria.

H_{03}: There is no significant relationship between institutional ownership and effective tax rate of quoted construction/real estate companies in Nigeria.

2.2. Theoretical framework

Agency theory by Ross and Mitnick (1973)

This study was anchored on the agency theory. The development of agency theory can be attributed largely to the work of Ross and Mitnick (1973) and they examined the principal agent relationship both in the context of compensation or fees to the agent to encourage good behaviour as the principal preferred, and imperfections in behaviour as a preference for the principal in the context of agency agreements. Shareholders want management to maximize profits and shareholder wealth, while management may have their own incentives and preferences that might not align with those of the shareholders. This misalignment of interests can lead to tax aggressiveness, where management takes action to reduce the company's tax burden even if it involves aggressive tax strategies that may not be in the best interest of the shareholders.

Ross and Mitnick's earlier work paved the way for Jensen and Meckling (1976) seminal contribution by exploring key aspects of the principal-agent relationship, such as aligning incentives, mitigating moral hazard, and understanding the challenges of agency agreements. Jensen and Meckling (1976) defined agency theory as a contractual relationship between multiple parties, such as agents and principals. In this arrangement, principals delegate authority to agents to carry out specific tasks. For example, investors act as principals by entrusting managers with decision-making power within a corporate entity. This theory emphasizes the significance of aligning the interest of managers with those of the shareholders. Different factors such as board independence and institutional ownership play a critical role in achieving this alignment, including monitoring and influencing a company's tax aggressiveness (Udochukwu et al., 2022). In addition, the agency theory helps to explain the incentives and motivations that drive managers to engage in tax avoidance practices. Managers may have incentives to be tax aggressive in order to maximize shareholder wealth and performance metrics. This can lead to conflicts of interest between the principals, who may value ethical tax practices and compliance, and the agents, who may prioritize reducing tax.

Furthermore, agents are hired with the expectation of maximizing shareholders' wealth. To achieve this goal, cost reduction is essential, and one method is through legally compliant tax aggressiveness to minimize tax obligations (Ifeyinwa & Otusanya, 2022). Agency conflict arises in the context of tax management strategies, where executives of companies possess more specialize knowledge about their organization compared to government authorities. This knowledge asymmetry empowers these executives to engage in tax planning activities aimed at minimizing tax obligations. Consequently, tax aggressive practices are utilized by businesses to enhance their financial gains, often leading to reduced tax revenues for the government. This situation highlights the strategic use of tax minimization tactics by company leaders to prioritize profit maximization, potentially conflicting with the state's tax collection objectives (Otusanya et al., 2022).

2.3 Empirical framework

Ebire et al. (2024) examined the moderating effect of board independence on firm attributes and tax aggressiveness relationship in Nigerian banks spanning 2012 to 2022. The study concluded that boards with more independent directors tend to be less aggressive in tax activities. In addition, the study concluded that highly leveraged firms have a greater interest in minimizing taxes to enhance cash flows available for debt service. Furthermore, when the moderating effect of board independence was introduced, the study concluded that the relationship between profitability and tax aggressiveness was insignificant.

Kusumastuti et al. (2024) tested and analyzed the influence of liquidity, CSR, ROA, company size and capital intensity on the tax aggressiveness of food and beverage subsector companies listed on the IDX from 2019 to 2022. The population in this research was the food and beverage subsector companies registered on the IDX during the 2019-2022 period, totaling 24 companies. The results of this study showed that ROA influences tax aggressiveness. Meanwhile liquidity, CSR, company size and capital intensity do not affect tax aggressiveness.

Martins and Sule (2024) examined the firm characteristics of tax aggressiveness among quoted companies in Nigeria. The specific objectives were to determine the influence of firm size, profitability, liquidity and leverage on the tax aggressiveness of firms. The study adopted ex-post-facto and longitudinal study that spanned five years (2015-2019). The study showed that firm size and profitability have a significant influence and positive relationship with tax aggressiveness while liquidity has no significant influence on tax aggressiveness but has a positive relationship with it. Leverage had a significant influence while having a negative relationship with tax aggressiveness.

Mustika and Nursiam (2024) analyzed the effects of profitability, liquidity, and leverage on tax aggressiveness in food and beverages companies listed on the Indonesia Stock Exchange (IDX) during the period of 2017-2022. These findings uncovered that the profitability has significant impact on tax aggressiveness with t-value of 2.150 which goes beyond the critical value of 1.98827 and a significant value of 0.034 (<5%) thus confirming H1. Additionally, liquidity substantially impacts tax aggressiveness where t-value is -2.450 which exceeded the critical value by -1.98827 and its significance was 0.016 (<5%) this confirm H2. On the contrary, leverage had an adverse significant effect to tax aggressiveness as indicated by t-value of -4.136 being less than the critical value equal to -1.98827 and also had significance equal to 0.000 which is less than 5%, thus verifying the H3.

Taimako and Francis (2024) examined how the characteristics of firms influences tax aggressive behavior of listed conglomerate firms in Nigeria from 2012 to 2022. The result showed that capital intensity, leverage and firm size are the most important determinants of tax aggressiveness among listed conglomerate firms in Nigeria. While capital intensity is positively related with tax aggressiveness, in contrast, leverage and firm size are negatively related with tax aggressiveness. However, for inventory intensity and profitability, the study found no significant relationship with tax aggressiveness of listed conglomerate firms.

Ugwu et al. (2024) studied how board characteristics affect tax aggression among Nigerian listed deposit money banks from 2012 to 2022. The findings revealed that board independence and board size have no significant effect on the cash effective tax rate of Nigeria's listed deposit money banks over the study period. The findings also indicated that board gender diversity has a significant favourable effect on the cash effective tax rate of quoted deposit money banks in Nigeria over the period under consideration.

Yusuf and Adediran (2024) evaluated the determinants of tax aggressiveness in deposit money banks in Nigeria from 2012-2022. Result of Random effect robust regression was suggestive that firm size and firm age has negative and effect on book tax difference with correlation coefficient of -.0000185 and p-value of .0003 while return on asset has positive but non-significant effect on book tax difference of deposit money banks of Nigeria for the period under study having correlation coefficient of .3546 and p-value of 1.116. The study concluded that the explanatory variables (firm size, ROA and firm age) do not significantly affect tax aggressiveness of deposit money banks in Nigeria.

Adang and Wijoyo (2023) examined the influence of profitability, capital intensity, company size, liquidity, and leverage on tax aggressiveness in manufacturing companies listed on the Indonesia Stock Exchange (IDX) from 2020 to 2022. The results indicated that profitability and leverage significantly influence tax aggressiveness, with higher profitability leading to increased tax aggressiveness, while higher leverage results in reduced tax aggressiveness. On the other hand, capital intensity, company size, and liquidity were found to have no significant effect on tax aggressiveness.

Anisa and Usman (2023) analyzed profitability, leverage and company size as determinants of tax aggressiveness in pharmaceutical sub-sector manufacturing companies listed on the Indonesia Stock Exchange for the 2017-2021 period. The results of this research revealed that profitability and company size are not determinants of tax aggressiveness. Meanwhile, leverage is a determinant of tax aggressiveness in Pharmaceutical Sub-Sector Manufacturing Companies listed on the Indonesian Stock Exchange for the 2017-2021 period.

Ajube and Jeroh (2023) investigated the determinants of tax aggressiveness among Nigerian listed non-financial firms using inferential and descriptive statistics. For this study, 10 years' company-specific data were collected from MachameRatios Positive Accounting Database covering 2011 to 2020. It was found that return on assets (ROA) and gender diversity on the audit committee, does not significantly influence tax aggressiveness, whereas, real earnings management and independence of corporate boards have significant impact on the level of tax aggressiveness of listed non-financial firms in Nigeria.

Ariyani et al. (2023) determined, tested, and analyzed the effect of liquidity, leverage and capital intensity on tax aggressiveness moderated by profitability in pharmaceutical sector companies listed on the Indonesia Stock Exchange from 2016-2021. The results of this study indicated that liquidity and capital intensity have no effect on tax aggressiveness. And leverage has an effect on tax aggressiveness. Profitability was able to moderate (strengthen) the effect of liquidity, leverage and capital intensity on tax aggressiveness.

A'zizah (2023) investigated the impact of tax aggressiveness on profitability, leverage, an independent board of commissioners, company size, and institutional ownership. Manufacturing companies in the food and beverage industry sub-sector that are listed on the IDX for the 2018-2021 period comprise the research population. Profitability, firm size, and institutional ownership were found to have a positive effect on tax aggressiveness. Meanwhile, leverage and an independent board of commissioners have a negative effect on tax aggressiveness.

Dibie and Ogbodo (2023) the effect of corporate firm attributes on tax planning of listed industrial goods firms in Nigeria from 2013 to 2022. The findings showed that: firm leverage has a significant negative effect on the book-tax difference for listed industrial goods firms in Nigeria ($p<0.05$); firm liquidity has a non-significant negative effect on the book-tax difference for listed industrial goods firms in Nigeria ($p>0.05$); firm size has a non-significant negative effect on the book-tax difference for listed industrial goods firms in Nigeria ($p>0.05$).

Efenana and Egbunike (2023) examined the effect of ownership structure on tax aggressiveness among quoted industrial goods sector from 2009 to 2018 financial years using the ex-post facto research design. Results revealed that managerial ownership was a significant predictor of tax aggressiveness at a p value of 0.01. On the other hand, ownership concentration (p-value of 0.37; F= 1.0621), institutional ownership (p value of 0.32; F= 1.1804) and foreign ownership (p value of 0.77; F= 0.3755) had insignificant effects. Overall, the study model revealed that ownership structure influences tax aggressiveness of firms.

METHODOLOGY

The ex-post facto research design was adopted in this study and secondary data gathering technique was employed. Judgmental sampling technique was employed to select Seven (7) construction/real estate companies listed on the floor of the Nigerian Exchange Group during a 10-year period, 2014 to 2023. The data employed was analyzed using descriptive statistic technique, regression assumption tests and panel multiple regression analysis and the analytical software employed was E-views version 10. The descriptive statistics was used to evaluate the characteristics of the data: mean, maximum, minimum, and standard deviation and also check for normality of the data. Correlation analysis was employed to evaluate the association between the variables and to check for multicollinearity.

Model specification

The study adopted the model specified by Mustika and Nursiam (2024); Bousaidi and Hamed (2015) which was modified for the purpose of establishing the relationship between the dependent variables and the linear combinations of several determining variables captured in the study. Succinctly, the model for this study is stated as;

$$\mathrm{ETR} = \mathcal{F}(\mathrm{BI}, \mathrm{IS}, \mathrm{DETA})$$

This can be econometrically expressed as:

$$ETR_{it} = \beta_0 + \beta_1 BI_{it} + \beta_2 DETA_{it} + \beta_3 IS_{it} + \mu_{it}$$

Where:

ETR	=	Effective tax rate (Proxy for tax aggressiveness)
BI	=	Board independence (Proxy for corporate governance mechanism)
DETA	=	Debt to total assets ratio (Proxy for leverage)
IS	=	Institutional ownership (Proxy for ownership structure)
$\boldsymbol{\beta_0}$	=	Intercept of the model/constant
$\boldsymbol{\beta_1 - \beta_3}$	=	Slope coefficient of each independent variable
µ	=	Stochastic disturbance
i	=	i^{th} firm
t	=	time period

Table 1 Operationalization of variables

Variables	***Proxy***	***Measurements***	***Sources***	**Aprori expectation**
Independent variables				
Corporate governance mechanism	Board independence	Non-executive directors on the board divided by total number of directors on the board.	A'zizah (2023); Ajube and Jeroh (2023); Ugwu et al., (2024);	+
Leverage	Debt to asset ratio	Debt to asset in percentage is computed as total liabilities divided by total assets multiplied by 100	Prawira and Sandria (2021); Abubakar (2021); Udochukwu et al., (2022)	+

Ownership structure	Institutional ownership	Number of shares owned by institutions divided by total number of outstanding shares.	A'zizah (2023); Ezekwesili and Ezejiofor (2022)	+
Dependent variable				
Tax aggressiveness	Effective tax rate	The ratio of current tax expenses to pre-tax income	Homonangan (2023); Mustika and Nursiam (2024); Lukman et al., (2019); Hani and Muhammad (2021)	
Control variable				
Firm size		Natural logarithm of total assets.	Apriyanti and Arifin (2021); Amah et al., (2022)	+

Researcher's compilation (2024)

Analysis and discussion of results

Table 2 Descriptive statistics

	ETR	BI	DETA	IS	FSZ
Mean	0.130806	0.509017	0.428827	2.450379	16.09124
Median	0.126632	0.500000	0.431429	0.391780	16.25196
Maximum	5.817729	1.000000	0.983852	38.45415	20.04258
Minimum	-3.938698	0.333333	-0.510000	-0.004516	11.69454
Std. Dev.	1.009418	0.115720	0.377995	6.324006	2.187962
Skewness	0.847004	1.105351	0.129180	3.927679	-0.371533
Kurtosis	21.64558	5.959536	1.842811	19.22226	2.741660
Jarque-Bera	1022.371	39.80100	4.100355	947.5323	1.805087
Probability	0.000000	0.000000	0.128712	0.000000	0.405537
Sum	9.156424	35.63120	30.01792	171.5265	1126.387
Sum Sq. Dev.	70.30577	0.923995	9.858743	2759.521	330.3153
Observations	70	70	70	70	70

Source: Researcher's computation (2024) using E-views 10.0

Table 2 above presents the descriptive statistics of the variables of this study. On average, these companies exhibited moderate tax aggressiveness, with an effective tax rate of 13% (0.1308). This suggests that they employed tax optimization strategies to minimize their tax liabilities, potentially indicating efficient tax planning. Robust corporate governance structures are also evident, with non-executive directors comprising 51% (0.5091) of total directors, indicating effective oversight and monitoring. The companies maintained a moderate level of indebtedness, with debt accounting for 43% (0.4299) of total assets, suggesting manageable debt levels. Institutional ownership is relatively low, with institutional investors holding approximately 2.45% (Natural log: 2.4503) of total outstanding shares, potentially limiting their influence on company decisions. These findings imply that Construction/Real Estate companies in Nigeria prioritized stability and risk management over tax aggressiveness, but faced challenges in optimizing profitability.

The standard deviations for quoted Construction/Real Estate companies in Nigeria from 2014 to 2023 reveal variability and dispersion in key financial metrics. Tax aggressiveness shows moderate variability (1.0094), indicating differences in tax optimization strategies. Corporate governance composition exhibits low variability (0.1153), suggesting consistency in board structures. Leverage ratios demonstrate moderate variability (0.3779), reflecting differences in debt management. Institutional ownership displays high variability (6.3240), indicating significant differences in institutional investor influence. Firm size variability is moderate (2.1879), indicating diversity in company scale. This indicates varying levels of variability in the distribution with firm size indicating high variations in the distributions.

Table 3 Panel multiple regression result

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.444634	0.863553	-3.514889	0.0084
BI	1.542527	0.920216	-2.676265	0.0286
DETA	-0.641556	0.339813	1.887969	0.0636
IS	0.079938	0.017702	4.515819	0.0000
FSZ	-0.006100	0.049000	-5.124483	0.0013

R-squared	0.357022	Mean dependent var	0.130806
Adjusted R-squared	0.295786	S.D. dependent var	1.009418
S.E. of regression	0.847078	Akaike info criterion	2.600591
Sum squared resid	45.20505	Schwarz criterion	2.825440
Log likelihood	-84.02067	Hannan-Quinn criter.	2.689904
F-statistic	5.830267	Durbin-Watson stat	1.879616
Prob(F-statistic)	0.000070		

Source: Researchers' computation (2024) using E-views 10.0

The multiple regression line is as written below:

ETR = -0.444634318426 + 1.5425268097*BI - 0.641555869297*DETA + 0.0799376531263* - 0.0060996825725*FSZ + µ

The panel multiple regression in Table 3 above reveals an F-statistics of 5.830267 with p-value 0.000070 indicating that the model is fit for statistical inference and that the determinants factors have significant effect on the effective tax rate (ETR) of the companies under study. The model provided an R-squared value of 0.357022 implying that about 36% of the changes in the dependent variables can be explained by the independent variables of this study. However, the unexplained part is captured in the error term.

Discussion of findings

Board independence and tax aggressiveness (ETR)

The results obtained from the regression model in table 3 revealed that board independence (coef. 1.542527; p-value 0.0286; t-stat 2.676265) has a significant positive relationship with effective tax rate. Hence, the study fails to accept the null hypothesis with the conclusion that there is a significant relationship between board independence and effective tax rate of quoted construction/real estate companies in Nigeria. The rejection of the null hypothesis was further supported by the t-statistics of 2.676265 which goes beyond the critical value of t; 1.98827. This implies that companies with more independent boards tend to have higher effective tax rates, indicating reduced tax aggressiveness. Independent boards are more likely to prioritize transparency and compliance over tax optimization strategies. This finding suggests that board composition plays a crucial role in shaping tax policies and ensuring adherence to regulatory requirements. Ugwu et al. (2024); Ajube and Jeroh (2023) found that board independence significantly reduces tax aggressiveness, indicating that companies with more independent boards tend to have higher effective tax rates.

Leverage and tax aggressiveness (ETR)

The results from the regression model in table 3 shows a non-significant negative relationship between leverage and effective tax rate. Although the coefficient is -0.641556, the p-value of 0.0636, and t-statistic of 1.887969 indicates that the relationship is not statistically significant. This suggests that debt-to-asset ratios do not substantially influence tax aggressiveness in quoted Nigerian construction/real estate companies. Companies may employ debt financing without necessarily impacting their tax optimization strategies. Hence, leverage is not a primary driver of tax aggressiveness in this sector. Mustika and Nursiam (2024), Anisa and Usman (2023), Dibie and Ogbodo (2023) and this study found no significant relationship between leverage and tax aggressiveness, suggesting that debt-to-asset ratios do not substantially influence tax aggressiveness.

Institutional ownership and tax aggressiveness (ETR)

The result from panel multiple regression model in table 3 revealed that Institutional ownership exhibits a significant positive relationship with effective tax rate, with a coefficient of 0.079938, a p-value of 0.0000, and t-statistic of 4.515819. This indicates that companies with higher institutional ownership tend to have higher effective tax rates, suggesting reduced tax aggressiveness. Institutional investors may promote tax transparency and compliance, influencing companies to adopt more conservative tax strategies. This finding highlights the importance of institutional ownership in shaping tax policies and ensuring regulatory adherence. A'zizah (2023) found that institutional ownership significantly reduces tax aggressiveness, indicating that companies with higher institutional ownership tend to have higher effective tax rates.

Conclusion and recommendations

Based on the findings it was concluded that board independence and institutional ownership among other determinants factors significantly and positively influence effective tax rates of quoted construction/real estate companies in Nigeria, indicating reduced tax aggressiveness. Thus, it was recommended that construction/real estate companies should prioritize board independence by increasing the number of non-executive directors as this can lead to higher effective tax rates and more transparent tax practices. Construction/real estate companies should encourage institutional ownership by offering incentives to institutional investors, as higher institutional ownership is linked to reduced tax aggressiveness and higher effective tax rates. Although leverage does not significantly influence tax aggressiveness, the management of these companies should still monitor and optimize their debt-to-asset ratios to maintain financial stability and minimize potential risks.

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