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Examining the effect of corporate social responsibility and audit quality on corporate tax aggressiveness

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Abstract

Purpose – This paper investigates the effect of corporate social responsibility and audit quality on corporate tax aggressiveness.

Design/methodology/approach – The authors employed a panel data set from 2011 to 2020 using firms listed on the Ghana Stock Exchange. The results were estimated using the fixed effect model estimator.

Findings – The results of the fixed effect model reveal that although entities engage in corporate social responsibility (CSR) activities to improve the welfare of society, some of these entities have ulterior motives to use these CSR activities to engage in corporate tax aggressiveness (CTA), thereby reducing the amount of tax payable to the state. The results also confirm that entities trade-off tax payments for CSR, proving that, on average, CSR and tax payment act as substitutes rather than being complementary. The findings demonstrate that the extent to which entities use CSR to reduce the amount of tax payable to the tax authorities depend on management's perception of the quality of the audit carried out on the financial affairs of the corporate entities.

Originality/value – To the best of our knowledge, this study is the premier one investigating how CSR and audit quality affect the CTA of firms operating in Ghana.

Keywords Corporate social responsibility, Audit quality, Corporate tax aggressiveness

Paper type Research paper

1. Introduction

In this paper, we seek to contribute to the extant corporate social responsibility (CSR), corporate tax aggressiveness (CTA), and audit quality literature by examining the association between CSR and corporate tax aggressiveness, the relationship between audit quality and corporate tax aggressiveness, and the moderating role of audit quality in this relationship.

Globally, CSR is considered one of the best strategies for entities to attain recognition in the societies in which they operate (Abid and Dammak, 2022). Entities engage in CSR activities, such as providing donations, contributing to scholarship schemes, supporting development projects, and the like, to improve the well-being of society and, in return, earn recognition. In the literature, CSR is a voluntary action adopted by corporate entities to enhance the welfare of society (Mao, 2019). Laguir *et al.* (2015), speaking from Carroll (1991) asserts that firms engage in CSR activities for ethical, philanthropic, economic or legal purposes, or combination of these. These authors consider tax payments as the legal aspect of CSR, suggesting that entities use tax payments as a medium to contribute their quotas to the broader society. Rakia *et al.* (2024) postulate that tax revenue is the bread of life of society. Governments use this tax revenue to provide social goods for society's welfare, meaning corporate entities engage in indirect CSR through the government when paying their fair amount of tax (Lanis and Richardson, 2013). However, tax payment is a significant cost to every entity (Davis *et al.*, 2016). Hence, management of every entity aims to increase their profit to maximize shareholders' wealth, by employing strategies to minimize their tax liability. One key strategy espoused in literature is CTA (Mao, 2019), defined as the downward management of taxable income through tax planning activities which can be legal or illegitimate (Abdul Wahab *et al.*, 2017). Examples include over-claiming of donations, underreporting income, and transfer pricing manipulations (Amri *et al.*, 2023).



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Davis *et al.* (2016) posit that managers use CTA to reduce taxes to maximize profit. Likewise, Lanis and Richardson (2013) argue that some entities substitute legal CSR for philanthropic activities to achieve profit levels. Mao (2019) posits that CSR is used to manage the risk associated with CTA, causing firms to increase their CTA engagement. Some entities engage in philanthropic CSR to attain a good reputation, motivating tax-aggressive behaviours without fear of being sanctioned.

CTA has become a global issue. For instance, in the United States of America, the Internal Revenue Service (IRS) estimated average annual losses of \$350 billion due to tax-aggressive behaviours (Austin *et al.*, 2020). According to the International Monetary Fund (IMF) report, Ghana lost US\$ 39 million due to CTA (IMF Report, 2015). Some of the contributing factors include loopholes in tax laws (Ameyaw *et al.*, 2016) and voluntary CSR reporting (Welbeck *et al.*, 2017). Therefore, entities may engage in publicly visible CSR for legitimacy while secretly pursuing CTA.

Existing studies on CSR and CTA have produced conflicting evidence. For instance, studies (e.g. Laguir *et al.*, 2015; Mgbame *et al.*, 2017; Lanis and Richardson, 2018) reveals that entities that engage in CSR do not engage in CTA. However, other studies (e.g. Davis *et al.*, 2016; Mao, 2019; Rakia *et al.*, 2024) established that entities use CSR as a strategy to reduce the amount of tax payable to the tax authorities. Consequentially, Gras-Gil *et al.* (2016) found no relationship between CSR and CTA, perceiving both variables as independent strategies for maximizing shareholders' wealth. According to Aronmwan and Igbino (2021), these mixed findings may result from variations in countries' tax laws. For instance, Ameyaw *et al.* (2016) cite loopholes in Ghana's tax laws that create tax fraud opportunities. This diversity of findings motivates our research question: *Do entities operating in Ghana have ulterior motives to reduce the amount of tax payable when they engage in CSR activities?*

Audit quality is a corporate governance feature that controls managers' actions by reporting non-compliance behaviours and deterring accounting manipulation and fraudulent activities (DeAngelo, 1981). However, studies on CTA have focused mostly on determinants of CTA and CSR, while audit quality have received less attention (Jihene and Moez, 2019). The few available studies (e.g. Klassen *et al.*, 2016; Gaaya *et al.*, 2017; Jihene and Moez, 2019) suggest that entities engage in tax aggressiveness due to lack of audit quality. Consequently, when audit quality is high, auditors may reduce CTA levels. We argue that audit quality levels may motivate or demotivate management's use of CSR to reduce tax liability, potentially moderating the CSR-CTA relationship.

Theoretically, this study draws on legitimacy theory and economic deterrence theory. Legitimacy theory suggests firms engage in CSR to align with societal values (Suchman, 1995), explaining why firms may use CSR to mitigate reputational damage from tax aggressiveness. Economic deterrence theory posits that entities refrain from illegal actions when costs outweigh benefits (Becker, 1968), providing a framework for understanding audit quality's role in deterring CTA.

Consequently, this paper contributes to existing literature in four ways. First, it contributes to limited empirical literature on CSR-tax aggressiveness relationships in developing economies, specifically Ghana. By focusing on Ghana, a developing economy with unique regulatory frameworks and cultural norms, the study enriches the global understanding of how CSR influences tax-related decisions in emerging markets, adding diversity to the existing body of knowledge on CSR and tax practices. Second, it examines audit quality as both predictor and moderating factors in CSR-tax aggressiveness relationships. Thus, demonstrates how high-quality audits by the Big 4 audit firms, can mitigate the potential for CSR to be used as a shield for aggressive tax planning. This adds depth insight to existing literature on audit quality's role in enhancing ethical tax behaviours and corporate transparency.

Third, it offers policymakers and regulatory bodies insights into CSR and audit quality's role in shaping corporate tax behaviour. The findings offer actionable knowledge that can inform the design of policies and regulations aimed at curbing aggressive tax practices, following an ongoing global discussion on tax avoidance and the pressure for greater corporate

accountability, particularly paramount in developing economies like Ghana, where tax revenues are critical for economic development and social welfare. Fourth, it provides valuable insights for corporate managers and auditors by highlighting audit quality and responsible CSR practices. For firms where CSR is increasingly integrated into business strategies, understanding the impact of CSR on tax practices and the role of quality audits in ensuring compliance guides ethical business decisions, improve investor confidence, and foster long-term sustainability. This practical relevance underscores the value of the study for corporate governance and management practices in both local and international contexts.

The rest of the paper is as follows: [Section 2](#) presents corporate social responsibility, audit quality, corporate tax standards, reforms and regulations in Ghana; [Section 3](#) presents the theoretical framework; [Section 4](#) highlights the empirical literature and hypothesis development; and [Sections 5, 6, and 7](#) present the research design, empirical findings and discussion, and summary and conclusion, respectively.

2. Corporate social responsibility, audit quality and corporate tax standards, reforms and regulations in Ghana

2.1 Corporate social responsibility (CSR) in Ghana

Corporate social responsibility (CSR) has emerged as a key element in shaping business practices globally, including Ghana. According to [Carroll's \(1991\)](#) pyramid of CSR, businesses must fulfil economic, legal, ethical, and philanthropic responsibilities. In Ghana, CSR addresses socio-economic issues like poverty alleviation, education, and environmental sustainability. While primarily voluntary, businesses in mining and energy sectors increasingly align CSR strategies with national development goals ([Ofori, 2021](#)).

The adoption of CSR practices in Ghana is not only driven by the desire for corporate legitimacy but also by the need to meet international expectations regarding sustainability and social governance. Ghana Stock Exchange-listed companies are encouraged to integrate CSR into operations, emphasizing long-term value creation ([Amponsah-Tawiah et al., 2016](#)). These efforts are supported by national policies like the Ghana National CSR Policy, which aligns corporate activities with national development ([Osei-Tutu et al., 2022](#)). Despite these developments, CSR integration remains inconsistent across industries, making external oversight through audit quality critical in ensuring businesses demonstrate tangible CSR outcomes beyond mere claims of adherence.

2.2 Audit quality in Ghana

Audit quality is fundamental to ensuring financial reporting integrity, supporting effective corporate governance and tax compliance. According to [DeAngelo \(1981\)](#), audit quality refers to the probability that an auditor will both detect and report accounting system breaches. In Ghana, auditors' role in enhancing corporate transparency has gained prominence following high-profile corporate scandals that eroded public trust. The Ghana Audit Service, operating under the Ministry of Finance, maintains public sector audit integrity, while large corporations rely on audit firms to ensure compliance with international standards and national regulations ([Fafali et al., 2020](#)).

Audit quality in Ghana has improved through reforms aimed at enhancing accounting and auditing standards. The implementation of International Financial Reporting Standards (IFRS) and International Standards on Auditing (ISA) has raised the bar for audit quality across public and private sectors ([Oppong et al., 2021](#)). Furthermore, audit quality extends beyond financial reporting, proving instrumental in assessing corporate tax compliance, particularly in the context of corporate social responsibility.

2.3 Corporate tax standards and reforms in Ghana

Corporate tax compliance remains a critical issue in Ghana, where government reforms aim to enhance tax revenue collection and reduce tax evasion. The Ghana Revenue Authority (GRA),

JAEE

established in 2009, has implemented initiatives to improve tax administration, including e-tax systems, the automation processes, and digital payment platforms to facilitate tax payments (Mbroh and Attom, 2020). These reforms reflect the global trend toward corporate tax transparency and minimizing aggressive tax avoidance. Despite significant improvements, challenges like weak enforcement, tax evasion, and corruption persist (Asiedu, 2021).

Recent reforms have focused on aligning Ghana's corporate tax standards with international norms. Ghana participates in the OECD's Base Erosion and Profit Shifting (BEPS) initiative to prevent profit shifting to low-tax jurisdictions (Akorsu and Adeniran, 2020). Additionally, transfer pricing regulations and strengthened tax audit mechanisms help ensure corporate tax compliance (Aggemang and Yeboah, 2021).

However, enforcement challenges remain, particularly in the informal sector where businesses evade taxes due to weak oversight, undermining revenue and system credibility (Oppong et al., 2021). Consequently, the GRA has increased focus on tax audits for compliance, highlighting audit quality's paramount importance.

2.4 Corporate tax aggressiveness

Abdul Wahab et al. (2017, p. 23) defined CTA "as the downward management of taxable income through tax planning activities which can be legal or illegitimate; or activities that fall into a grey area". Issues of CTA continue to be of interest to many researchers in the global environment because of the increase in the reported cases of CTA (Mao, 2019; Jin et al., 2022). Davis et al. (2016) posit that entities engage in CTA to reduce the amount of tax payable to tax authorities. Tax payments significantly influence social and economic development as the main funding source for infrastructure and social goods. Aronmwan and Igbinoba (2021) suggest tax payment increases government revenue, enabling more social and economic development projects. Globally, most government revenues come from taxes. The UK budget revealed 73% of total revenue in 2020 came from tax. In Ghana, tax revenue constitutes 82% of government revenue excluding oil, and 18.8% of GDP (Austin et al., 2020). It is therefore alarming when corporations engage in tax-aggressive activities to reduce liability. In literature, CSR has been identified as one key strategy used by entities to engage in CTA (Davis et al., 2016; Mao, 2019).

3. Theoretical framework

3.1 Legitimacy theory

Legitimacy theory has become central in explaining corporate behaviour, particularly motivation behind engaging in CSR activities. Developed by Dowling and Pfeffer (1975), the theory posits that organizations need to conform to societal values, norms, and expectations of the public to maintain legitimacy. According to legitimacy theory, organizations engage in actions they believe align with societal expectations to ensure survival and success (Deegan, 2002).

Seminal works by Dowling and Pfeffer (1975) and Lindblom (1994) established how corporations use CSR to gain legitimacy as a strategic response to societal pressure. CSR serves as a mechanism to reduce public scrutiny risks, regulatory penalties, and reputational damage. CSR is a mechanism through which companies reduce the risk of public scrutiny, regulatory penalties, and reputational damage. Carroll's (1991) pyramid of CSR, which includes economic, legal, ethical, and philanthropic responsibilities, further solidifies the role of CSR in balancing corporate profit-making objectives with societal expectations. Building on Carroll's (1991) CSR pyramid, Lanis and Richardson (2013) argue firms may engage in CSR to cover corporate tax aggressiveness (CTA), minimizing tax liabilities through strategic planning. CSR thus functions as "reputation management" (Hemingway and MacLagan, 2004), emphasizing philanthropic contributions while diverting attention from aggressive tax strategies.

More recent studies have expanded the CSR-CTA linkage through legitimacy theory. Davis *et al.* (2016) highlight's CSR dual nature, where firms pursue both ethical and economic goals. They argue that firms engage in CSR to fulfil ethical and philanthropic responsibilities, as outlined by Carroll's (1991) pyramid while simultaneously pursuing economic objectives through engaging aggressive tax planning. This trade-off enables profit maximization while presenting a socially responsible image. In the context of tax aggressiveness, firms may downplay legal responsibilities (paying taxes) in favor of more visible philanthropic activities better perceived by the public (Davis *et al.*, 2016). This substitution maintains legitimacy despite controversial tax practices. Laguir *et al.* (2015) note this motivation strengthens when firms operate in sectors less prone to public scrutiny. Mao (2019) provides evidence of how firms use CSR as a risk management strategy to counterbalance the reputational risks associated with CTA. In environments where aggressive tax practices may lead to penalties or reputational damage, visible CSR activities offset these risks. This aligns with CSR as "insurance" or "risk buffer," where firms increase CSR engagement to mitigate negative impacts of controversial behaviours (Lanis and Richardson, 2013; Mao, 2019). CSR thus becomes a strategic tool managing trade-offs between legal obligations and economic objectives.

Having said the above, the core premise of legitimacy theory is that firms must continuously align themselves with societal values to secure their social license to operate. However, firms face conflicting pressures: contributing to societal welfare through CSR versus maximizing shareholder profits through tax avoidance. This tension creates an environment where firms strategically use CSR to signal societal alignment while engaging in tax aggressiveness that reduces state contributions (Rakia *et al.*, 2024). Legitimacy theory thus explains how firms manage these competing demands. That is, legitimacy theory helps explain the use of CSR as a means of deflecting scrutiny from other aspects of corporate behaviour, such as tax aggressiveness.

3.2 Economic deterrence theory

Economic deterrence theory (Allingham and Sandmo, 1972), has been widely used to explain the decision-making process behind tax compliance and CTA. The central tenet of the theory is that individuals and organizations weigh the costs and benefits of engaging in non-compliance activities such as CTA. Specifically, the theory suggests that taxpayers are deterred from engaging in tax non-compliance when the probability of detection is high, and the penalties associated with such behaviours are severe. The theory emphasizes three key factors influencing tax compliance behaviour: tax rates, the probability of detection, and the severity of penalties. When penalties are harsh, and there is a strong likelihood of detection, the cost of engaging in CTA outweighs the potential benefits, leading to higher compliance rates (Allingham and Sandmo, 1972).

The role of audit quality in reducing CTA can be understood through economic deterrence theory. The theory suggests that the imposition of penalties and the likelihood of detection are key factors influencing a firm's decision to engage in tax aggressiveness. Audit quality, particularly when conducted by larger and more reputable firms, acts as the mechanism through which detection is made more likely. The Big 4 audit firms, due to their extensive resources, advanced audit methodologies, and emphasis on independence, are particularly effective at uncovering tax non-compliance behaviours (Kanagaretnam *et al.*, 2016). The threat of exposure, coupled with the reputational damage and financial penalties associated with being caught, deters firms from engaging in CTA (Rajgopal *et al.*, 2021). More so, the economic deterrence theory explains why firms with poor-quality audits likely to engage in CTA. When detection probability is low, expected non-compliance costs (penalties) decrease, increasing incentives for tax aggressiveness. Firms audited by less reputable auditors may feel confident evading detection, as these auditors may lack resources or expertise to thoroughly scrutinize tax practices. Consequently, firms likely exploit tax loopholes when detection risk seems minimal (Mao, 2019; Aronmwan and Igbino, 2021).

In addition, the economic deterrence theory provides a robust framework for understanding the moderating role of audit quality in the CSR-CTA relationship. While CSR can enhance a firm's legitimacy and potentially mask tax avoidance behaviours, high-quality audits expose inconsistencies between its public commitments to CSR and private tax strategies. By increasing the probability of detection, high-quality audits force firms to align their tax strategies with CSR activities, reducing the likelihood of CTA. For instance, a firm using CSR to enhance reputation while engaging in CTA will struggle maintaining this dual strategy under high-quality audit scrutiny. The audit exposes tax non-compliance, complicating reconciliation between socially responsible image and aggressive tax behaviour. This aligns with economic deterrence theory, which posits firms avoid risky behaviours like CTA when expected costs (penalties, reputational damage) outweigh benefits. Hence, audit quality's moderating role in the CSR-CTA relationship directly applies economic deterrence theory.

4. Empirical review and hypotheses development

4.1 Corporate social responsibility and corporate tax aggressiveness

Carroll (2016) asserts that CSR constitutes legal, economic, philanthropic, and ethical aspects, which society expects from corporate entities. Philanthropic CSR refers to voluntary donations and contributions made by entities to society to improve their welfare. Legal CSR explains the entity's compliance with the laws and regulations that are laid down, including taxation. Laguir *et al.* (2015) posit that entities can consider tax payments as legal aspect of CSR, suggesting that entities use tax payments as a medium to contribute their quota towards the broader society. However, it forms a more significant portion of entities' costs, which managers tend to concentrate on and, thus, are desirous to engage in corporate tax aggressively to reduce the tax liabilities as a cost of doing business (Mao, 2019).

Empirical results show a mixed association between CSR and CTA. Studies (e.g. Mgbame *et al.*, 2017; Lanis and Richardson, 2018) found a negative relationship between CSR and CTA, suggesting that entities that engage in CSR do not engage in CTA. Notwithstanding, other studies documented a positive relationship between CSR and CTA. For instance, Hoi *et al.* (2013) reveal that socially irresponsible firms engage in CTA more, suggesting a significant and positive relationship between CSR and CTA. Lanis and Richardson (2013) added that entities perform CSR to win legitimacy from society while secretly engaging in CTA. Davis *et al.* (2016) also confirm a significant and negative association between CSR and tax payment, suggesting that entities substitute payment of right amount of tax for CSR performance. That is, entities used CSR activities as a tax reduction strategy to pay less tax. Likewise, Mao (2019) posits that some entities use CSR to avoid paying the right taxes to the tax authorities. This author also reports that CSR is used by some entities to manage the risks linked to tax avoidance, such as bad publicity and payment of penalties, causing firms to engage more in tax avoidance activities.

Drawing on the legitimacy theory, organizations in high-scrutiny industries may experience greater pressure to balance CSR with responsible tax practices, as stakeholders are more likely to scrutinize their tax-related decisions and the potential impact on societal welfare. By strategically investing in CSR, firms can signal their legitimacy and commitment to society, even as they pursue tax strategies that minimize their tax obligations. Hence, this study hypothesizes that:

- H1. There will be a significant positive relationship between corporate social responsibility and corporate tax aggressiveness.

4.2 Audit quality and corporate tax aggressiveness

Literature indicates that a high-quality audit demotivate management from engaging in CTA (Gaaya *et al.*, 2017). Thus, exposure to non-compliance behaviours will demotivate management from engaging in them. During audit, external auditors investigate client's tax

planning position and whether the client's management has engaged in CTA, which could be detected by the tax authorities (Davis *et al.*, 2016). According to Kanagaretnam *et al.* (2016), external auditors who assist the taxpayer in preparing financial statements and filing tax returns are not expected to aid or abet their clients to indulge in CTA but rather conduct a quality audit that will expose tax non-compliance activities of the business.

In Ghana, Section 76 of the Revenue Administration Act 915 stipulates that a person will pay a penalty of 100% of the underpayment tax when that person knowingly abets or aids another person in committing an offence (Nyamekye, 2024), potentially causing reputational damage and litigation. Additionally, Gaaya *et al.* (2017) posit that tax-aggressive firms expose auditors to reputational risks and high legal costs. Consequently, audit firms concerned with maintaining good reputations avoid reputation-damaging actions, instead prioritizing quality audits. Empirically, Big 4 audit firms are associated with high-quality audits due to reputational concerns (Kanagaretnam *et al.*, 2016). Kanagaretnam *et al.* (2016) linked Big 4 auditing firms to less tax aggressiveness when serving tax preparers, citing their capacity, experience, more scepticism and protection of independence and reputation. They claimed Big 4 firms produce quality audits demotivating management from engaging in CTA. Madah Marzuki and Al-Amin (2021) confirmed audit quality demotivates CTA practices among Thai corporate entities. Drawing on the economic deterrence theory, companies audited by reputable audit firms with high standards (like Big Four) are more likely to disclose accurate financial and tax information. This thoroughness creates a deterrent effect by increasing the likelihood of exposure for companies employing aggressive tax practices, which can lead to reputational damage, financial penalties, and regulatory consequences (Lennox *et al.*, 2013). Accordingly, this study hypothesizes that:

- H2. There will be a significant negative relationship between audit quality and corporate tax aggressiveness.

4.3 Audit quality as moderating variable

Studies (e.g. Klassen *et al.*, 2016; Gaaya *et al.*, 2017) suggest that entities use tax reduction strategies to engage in CTA due to a lack of audit quality. High quality audit expose such tax reduction strategies, potentially reducing CTA. Jihene and Moez (2019) investigated the relationship between CEO compensation and corporate tax avoidance using audit quality as a moderator and found that managers engage in risky activities to avoid tax, when compensated. However, this relationship changed in well-audited firms, supporting audit quality's moderating effect. Therefore, high-quality audits may expose tax non-compliance behaviours hidden behind CSR activities, hence, reducing CTA.

Drawing on the economic deterrence theory, high-quality audits increase the likelihood of exposing aggressive tax strategies Firms engaged in CSR, knowing high-quality auditors will scrutinize their tax practices, may be less incline to pursue aggressive tax strategies to avoid reputational harm and penalties, as these would undercut their CSR efforts (Francis *et al.*, 2014). This heightened scrutiny serves as an economic deterrent, reducing the appeal of tax aggressiveness by raising its potential costs and risks. Therefore, this study hypothesizes that:

- H3. Audit quality moderates favourably with CSR and CTA.

5. Research design

The study employs the quantitative methodology with a deductive approach to test hypotheses and establish relationships among variables since the hypotheses were tested to establish relationships among the variables under study. Quantitative research verifies phenomena-related theories using rigid tools and structured approaches for data collection (Creswell, 2013).

5.1 Data sources

This study uses firm-level data drawn from the financial information of 27 firms listed on the Ghana Stock Exchange from 2011 to 2020. The authors chose listed firms due to the availability and reliability of their data. This timeframe was chosen because most listed firms began reporting CSR activities in 2011. The study excludes newly listed companies without 10-year data, companies reporting in foreign currencies, those with non-disclosure information, and firms in Ghana Freezones with unexpired tax concessions. Loss-making firms were included as they manage earnings to avoid tax (Yorke *et al.*, 2016).

5.2 Sample selection

In selecting the sample, a rigorous and systematic process was undertaken to ensure the representativeness and reliability of the dataset. The study focused on firm-level data drawn from the financial information of 27 firms listed on the Ghana Stock Exchange (GSE) from 2011 to 2020. The GSE was chosen because it provides reliable and comprehensive financial data that allows for the analysis of key variables relevant to CTA, CSR, and AQ.

To arrive at the final sample, a series of steps were taken to exclude firms that did not meet the criteria for the study. These steps are outlined below in Table 1.

5.3 Sample characteristics

The sample used in this study encompasses firms across different industries, providing a diverse representation of the corporate landscape in Ghana. A breakdown of the sample by industry is provided in Table 2.

The firms included in the sample span key sectors such as financial services, manufacturing, telecommunications, and mining, ensuring the generalizability of the findings. These industries are known for their significant contributions to Ghana's economy and for being subject to corporate social responsibility disclosures and tax regulations.

5.4 Variable measurements

Corporate Tax Aggressiveness as the dependent variable was measured using the Effective Tax Rate (ETR) approach. ETR is the total tax expense divided by the pre-tax profit (Noor *et al.*, 2010), indicating that CTA only seeks to reduce tax burden. However, Amidu *et al.* (2016) reveal that CTA goes beyond just reducing the tax burden to include deferment of tax payments. To resolve this "deferment objective of CTA", it is appropriate to amend the numerator by deducting deferred tax expense from the total tax expense. This study measures ETR as a "total tax expense minus the deferred tax all divided by pre-tax profit". Yorke *et al.* (2016) and Amidu *et al.* (2016) measured CTA by comparing the ETR of the entity to the Statutory Tax Rate (STR) applicable to that same entity. When the STR exceeds the ETR, the excess is considered a CTA outcome. This study, therefore, measures CTA by using the

Table 1. Sample selection process

Step	Description	Number of firms excluded	Remaining firms
1	Initial list of firms listed on GSE (2011–2020)	–	37
2	Excluded newly listed firms without 10 years of data (e.g. listed after 2015)	5	32
3	Excluded companies reporting in foreign currencies	2	30
4	Excluded companies in the Ghana Free Zones enclave due to tax exemption	3	27
5	Included loss-making firms	0	27

Source(s): Field Work (2024)

Table 2. Industry breakdown of sample firms

Industry	Number of firms	Percentage of total
Financial services	10	37%
Manufacturing	7	26%
Telecommunications	4	15%
Mining	3	11%
Other services	3	11%
Source(s): Field Work (2024)		

Journal of
Accounting in
Emerging
Economies

difference between STR and ETR. This approach's strength is that researchers could access the data regarding both STR and ETR required for analysis without directly contacting the tax authorities, taxpayers, or firms.

Corporate social responsibility, as the independent variable was measured using a disclosure index based on ISO 26000's seven core subjects: environmental protection, community involvement, human rights, organizational governance, fair operating practices, consumer issues, and labor practices ([International Organisation for Standardisation, 2010](#)). ISO 26000 is appropriate as it was developed by 450 multi-stakeholders ([Moratis, 2018](#)). The index was calculated by scoring 1 for each disclosed core subject or 0 for non-disclosure, then dividing by seven.

Audit Quality served as the moderating variable for this study. Due to measurement difficulties noted by [Rajgopal et al. \(2021\)](#), this study used firm size, following [DeAngelo \(1981\)](#) and [Kanagaretnam et al. \(2016\)](#) who demonstrated larger audit firms produce higher quality audits. Audit Quality was measured using a dummy variable: 1 if audited by a Big 4 firm, 0 otherwise.

5.5 Control variables

We also include a set of control variables in our regression models referring to firm characteristics that may affect CTA.

Leverage was measured using the ratio of total long-term debts to equity which is in line with [Mao \(2019\)](#) measurement of leverage. Previous studies reveal that firms with a high debt ratio are more likely to engage in CTA behaviours than firms with a low debt ratio. For instance, [Amidu et al. \(2016\)](#) indicate that firms in different tax jurisdictions use debt financing to avoid paying taxes. This is possible because interest on debt is tax-deductible from the business income.

Firm Performance was measured using the return on asset method. [Gaaya et al. \(2017\)](#), revealed that firms use CTA to reduce tax costs and increase profit. That is, high-profit earner firms engage more in CTA. Accordingly, profitable entities have more motivation to engage in corporate tax avoidance to reduce their tax burden than low-profit earner firms.

Board Independence was measured using a non-executive directors' ratio to total board members ([Lanis and Richardson, 2011](#); [Aronmwan and Igbino, 2021](#)). [Lanis and Richard \(2011\)](#) revealed that the more non-executive directors on the board, the less likely managers will engage in aggressive tax activities. The authors suggest that the board of directors monitor management's activities ensure compliance with rules and regulations. A board with more non-executive directors will strengthen the independence of that board and ensure that managers do not engage in non-compliance behaviours.

Firm Size was measured using a log of the firm's assets. Previous studies (e.g. [Mao, 2019](#); [Davis et al., 2016](#)) also employed this method to measure firm size. [Lanis and Richardson \(2013\)](#) suggest that larger firms are more likely to use unacceptable tax reduction strategies to reduce tax than smaller firms, revealing that larger firms have the skilled personnel, capability, and economic and social power to engage in non-compliance behaviours (see [Table 3](#)).

Table 3. Operationalization of variables

Variable	Type	Description	Measurement
Corporate Tax Aggressiveness (CTA)	Dependent	The degree to which firms engage in activities to reduce their tax burden	Effective Tax Rate (ETR) = (Total Tax Expense – Deferred Tax)/Pre-Tax Profit. The difference between ETR and Statutory Tax Rate (STR) reflects tax aggressiveness
Corporate Social Responsibility (CSR)	Independent	The extent of a firm's engagement in socially responsible activities	CSR Disclosure Index based on ISO 26000. Score of 1 for disclosure of each of 7 subjects, total divided by 7 to create an index (0–1)
Audit Quality (AQ)	Moderator	The quality of audit services provided to a firm influences its financial reporting integrity	Dummy variable: 1 = audited by Big 4, 0 = audited by non-Big 4
Leverage (LEV)	Control	The ratio of a firm's total long-term debts to its equity	The ratio of total long-term debts to equity
Firm Performance (ROA)	Control	The return on assets represents firm profitability	Return on assets; ROA = Net Income/Total Assets
Board Independence (BIND)	Control	The ratio of non-executive directors to total board members reflects board independence	Ratio of non-executive directors to total board members
Firm Size (SIZE)	Control	The size of the firm is used as a control variable	Natural logarithm of total assets

Source(s): Field Work (2024)

5.6 Model specification

To achieve the objective of this study, we developed two separate econometric models where CTA remains unchanged in all cases. The first model captures audit quality and CSR as independent variables, and the second model uses the first model and includes the interaction term of audit quality and CSR (i.e. $AQ * CSR_{it}$). The authors adapted the models from [Lanis and Richardson \(2013\)](#) and [Gaaya et al. \(2017\)](#).

Model 1. Base Model (CSR and Audit Quality as Predictors)

$$CTA_{it} = \alpha_0 + B_1 CSR_{it} + \beta_2 AQ_{it} + \beta_3 BIND_{it} + \beta_4 SIZE_{it} + \beta_5 LEV_{it} + \beta_6 ROA_{it} + Lag.CTA_{it} + \varepsilon_{it} \quad (1)$$

Model 2. Moderation Effect of Audit Quality (Interaction Term)

$$CTA_{it} = \alpha_0 + B_1 CSR_{it} + \beta_2 AQ_{it} + \beta_3 AQ * CSR_{it} + \beta_4 BIND_{it} + \beta_5 SIZE_{it} + \beta_6 LEV_{it} + \beta_7 ROA_{it} + Lag.CTA_{it} + \varepsilon_{it} \quad (2)$$

Where:

(1) CTA_{it} is the level of corporate tax aggressiveness of firm i in year t .

- (2) CSR_{it} is the CSR disclosure index of firm i in year t .
- (3) AQ_{it} is the audit quality of firm i in year t .
- (4) $AQ \times CSR_{it}$ is the interaction term between audit quality and CSR.
- (5) $BIND_{it}$, $SIZE_{it}$, LEV_{it} , and ROA_{it} are the control variables for board independence, firm size, leverage, and performance, respectively
- (6) ε_{it} is the error term.

6. Empirical findings and discussion

6.1 Descriptive statistics

Table 4 presents the descriptive statistics for CTA, CSR and audit quality. It also captured the control variables used for this study, namely leverage, firm performance, firm size, and board independence.

The descriptive statistics show that CTA has a minimum value of -0.170 and a maximum value of 0.380 ; and the standard deviation and mean of CTA are 0.110 and 0.071 , respectively. This implies that not every entity engages in tax-aggressive behaviour as evidenced by the overall minimum value of -0.170 ; however, the mean value of 0.071 and maximum value of 0.380 explain that some of the selected firms listed on the Ghana Stock Exchange engage in tax-aggressive behaviours. The results also reveal the presence of CSR activities among the sampled firms for this study, as evidenced by a maximum value of 0.600 and a mean value of 0.242 . However, not all firms perform CSR activities yearly, as shown by the minimum value of 0.000 . The mean of 0.242 with a maximum value of 0.600 denotes that not all firms aggressively engage in CSR activities. The summary statistic indicates that AQ has a standard deviation and a mean of 0.443 and 0.733 , respectively. The results denote that most of the sampled firms listed on the Ghana Stock Exchange are audited by the Big 4 auditing firms, as evidenced by the mean value of 0.7333 . In contrast, the minimum value of 0.000 depicts that not every firm sampled for the study is audited by the big 4 firms.

In the case of the control variables, leverage (LEV) has a mean of 0.289 , indicating that although the sampled firms do finance the business with some level of debt, not all the firms have debt in their capital structure, as shown by the minimum value of 0.000 . On the other hand, firm size (SIZE) recorded a standard deviation of 1.408 and a mean value of 5.197 with a minimum value of 1.300 and a maximum value of 7.200 . This explains that most of the sampled firms for this study are large firms, and only a few firms are small in size. Firm performance (ROA) has a mean value of 0.099 , denoting that most of the sampled firms make

Table 4. Descriptive statistics

Variable	Mean	Std. dev	Min	Max
CTA	0.071	0.110	-0.170	0.380
CSR	0.242	0.126	0.000	0.600
AQ	0.733	0.443	0.000	1.000
LEV	0.289	0.342	0.000	3.200
SIZE	5.197	1.408	1.300	7.200
ROA	0.099	0.102	-0.139	0.520
BIND	0.771	0.117	0.567	0.929

Note(s): CTA: Corporate Tax Aggressiveness; CSR: Corporate Social Responsibility; AQ: Audit Quality; LEV: Leverage; ROA: Firm Performance and BIND: Board Independence

Source(s): Field Work (2024)

small returns from the assets they have invested in their business. The maximum value of 0.520 indicates that some firms make huge returns on their investment, and others do not make any returns at all, as shown by the minimum value of -0.139 . The summary statistics indicate that board independence (BIND) has an overall mean of 0.771 and a standard deviation of 0.117. The minimum and maximum values are 0.567 and 0.929, respectively. This implies that most of the board members of the sampled firms are non-executive.

6.2 Correlations matrix

Table 5 presents a Pairwise correlation that establishes the relationship between the variables under study.

From **Table 5**, CSR correlates positively with CTA, suggesting that socially responsible firms engage in CTA to reduce the tax they pay to the state. However, audit quality (AQ) correlates negatively with CTA. This suggests that audit quality demotivates management from engaging in tax-aggressive activities. LEV correlates positively with CTA, indicating that entities that finance their business with huge debt are likely to engage in CTA. SIZE has a positive correlation with CTA, depicting that large firms are more likely to avoid tax than smaller firms. Also, the results show that ROA correlates positively with CTA. This implies that high-profit-earner firms engage in tax-aggressive behaviour more than low-profit earners. However, BIND has a negative correlation with CTA.

6.3 Discussion of results

This section presents the study's empirical results based on the research objectives. From **Table 6**, Model 1 and Model 2 are corrected for serial correlation. Model 1 has an R squared of 81%. This indicates that the predictor variables explain 81% of the variation in CTA. The F – statistics of Model 1 have a p -value of 0.000, less than 0.05. This suggests that Model 1 has significant predictive power, making it essential for policy-making. Model 2 has an R squared of 86%. This indicates that the predictor variables explain 86% of the variation in CTA. The F – statistics of Model 2 have a p -value of 0.000, less than 0.05. This indicates that Model 2 has great predictive power, which makes it relevant to policy-making. The two regression models control for leverage (LEV), firm size (SIZE), firm performance (ROA), and board independence (BIND).

The results of Model 1 in **Table 3** indicate that CSR has a positive relationship with CTA. The relationship between CSR and CTA is considered statistically significant at a 1% significant level ($p = 0.000$, $\text{co. eff} = 0.113$), validating **H1**. The coefficient of the relationship between CSR and CTA is 0.113, implying that a one-unit increase in CSR activities is associated with an 11.3% increase in CTA. The results imply that with a unit increase in CSR activities, listed firms on the Ghana stock exchange have an 11.3% more likely chance of

Table 5. Correlations matrix with p -values

Variables	CTA	CSR	AQ	LEV	SIZE	ROA	BIND
CTA	1.000						
CSR	0.543	1.000					
AQ	-0.808	-0.556	1.000				
LEV	0.528	0.199	-0.397	1.000			
SIZE	0.632	0.378	0.628	-0.211	1.000		
ROA	0.616	0.446	-0.485	-0.309	-0.611	1.000	
BIND	-0.270	-0.247	0.182	-0.179	0.217	-0.278	1.000

Note(s): CTA: Corporate Tax Aggressiveness; CSR: Corporate Social Responsibility; AQ: Audit Quality; LEV: Leverage; ROA: Firm Performance and BIND: Board Independence

Source(s): Field Work (2024)

Table 6. Regression results

Variables	Model 1	Model 2
	CTA Coef (t-stats)	CTA Coef (t-stats)
Intercept	21.489 (5.31)	7.469** (2.54)
CSR	0.113*** (3.27)	0.559*** (6.94)
AQ	-13.226*** (-9.03)	5.938** (2.03)
LEV	0.074*** (3.80)	0.042** (2.36)
SIZE	0.523 (1.28)	0.524 (1.39)
ROA	0.16*** (3.56)	0.095** (2.26)
BIND	-0.054 (-0.63)	-0.008 (-0.25)
LagCTA	-0.104*** (-3.04)	0.256*** (4.76)
CSR * AQ		-0.579*** (-6.46)
R-squared	0.812	0.857
p-value of F-statistics	0.000	0.000
Observation	243	243
Time effect	Yes	Yes
Industry effect	Yes	Yes

Note(s): CTA: Corporate Tax Aggressiveness; CSR: Corporate Social Responsibility; AQ: Audit Quality; LEV: Leverage; ROA: Firm Performance and BIND: Board Independence. The stars ***, ** and * indicate significant at 1, 5 and 10% significant level, respectively

Source(s): Field Work (2024)

engaging in CTA. This indicates that not all listed firms on the Ghana Stock Exchange engage in CSR activities purposely to improve the well-being of the societies. Some of these firms have ulterior motives for using CSR activities to create an opportunity to commit tax fraud. This affirms the proposition that some of these entities trade-off tax payments for the performance of CSR activities, providing evidence that CSR and tax payments are seen as substitutes rather than complements. The idea that companies use CSR strategically to shield themselves from regulatory scrutiny and reputational damage is consistent with previous studies (e.g. [Lanis and Richardson, 2013](#); [Davis et al., 2016](#); [Mao, 2019](#)). From a theoretical perspective, the positive relationship between CSR and CTA confirms the legitimacy theory stipulating that entities engage in CSR activities to maintain their societal acceptance and legitimacy to attain a good reputation while continuing behaviour that may be perceived as unethical such as tax aggressiveness. [Dowling and Pfeffer \(1975\)](#) and [Suchman \(1995\)](#) argue that corporations undertake CSR activities not only for ethical and philanthropic purposes but also as a strategic tool to align themselves with societal expectations. This is consistent with [Lanis and Richardson's \(2018\)](#) findings, suggesting that firms use CSR as a cover to maintain a positive reputation, particularly in industries prone to public scrutiny.

The results also provide some insights into the behaviour of firms in Ghana, where tax compliance is a key concern for policymakers. Ghana's tax system has undergone reforms aimed at minimising tax avoidance among others ([Akorsu and Adeniran, 2020](#)). Despite the regulatory efforts, entities still exploit legal loopholes to reduce tax liability, particularly when they engage in high-profile CSR activities as evidenced by the positive relationship between CTA and CSR. This aligns with the findings from [Mao \(2019\)](#), who assert that CSR is often used as risk-management strategy by entities that engage in CTA. Nevertheless, the result is inconsistent with [Amidu et al. \(2016\)](#). According to [Amidu et al. \(2016\)](#), entities that engage in CSR avoid tax less. The inconsistency may be a result of the fact that [Amidu et al. \(2016\)](#) used data covering 2010 year–2013 years. During this period, some Ghanaian firms were engaging in CSR but were not disclosing their CSR activities. It may be possible that some of these firms were engaging in CSR to reduce their tax but were not disclosing their CSR activities for the researcher to access the data. However, this study employed data covering 2011 up to 2020,

when the disclosure of CSR activities among firms increased as a results of regulatory pressure, public expectations and improvement in corporate transparency (Aronmwan and Igbino, 2021).

Model 1 results in Table 6 reveal that AQ has a significant negative relationship with CTA at a 1% significant level ($p = 0.000$, $co.eff = -13.22$), validating H2. The results suggest that a unit improvement in the AQ carried out on the financial affairs of the corporate entities will culminate in about a 13.22 units reduction in the level of CTA. This denotes that AQ effectively deters management from engaging in CTA. That is, in well-audited entities, the opportunistic behaviour of managers may be reduced, thus demotivating these managers from engaging in CTA. Firms audited by reputable auditors, particularly the Big 4 audit firms, are less likely to engage in CTA, as these firms maintain stringent audit standards and prioritize reputational risk management (Kyriakou and Dimitras, 2018). This finding lends support to the finding of Gaaya et al. (2017), who reports a negative relationship between AQ and CTA, suggesting that firms subjected to a higher quality audit are less likely to engage in tax-aggressive behaviours. From a theoretical perspective, these findings document strong empirical support for the economic deterrence theory (Allingham and Sandmo, 1972), which suggests that firms are less likely to engage in CTA when the chance of detection and penalties increases. High audit quality act as a deterrence mechanism, increasing the likelihood that tax non-compliance will be exposed, thereby demotivating firms from employing aggressive tax strategy to reduce their tax liability (Francis et al., 2014). Furthermore, the negative relationship between AQ and CTA suggested that firms audited by a Big 4 audit firm show lower levels of tax aggressiveness compared to firms audited by non-Big 4 audit firms. This is in line with the findings from Kanagaretnam et al. (2016), who argue that Big 4 audit firms have enough resources, and superior expertise making them more effective at detecting and reporting tax aggressive behaviours. These findings are very important for Ghana Revenue Authority as Ghana has experienced challenges in corporate tax compliance, with several cases of tax evasion and tax aggressiveness by firms operating in the country (Akorsu and Adniran, 2020). While the tax laws of Ghana have been strengthened to prevent tax aggressiveness, the enforcement remains a significant concern (Agyemang and Yeboah, 2021). The finding of this study indicates that strengthening audit quality can serve as an effective tool for improving tax compliance. The regulatory bodies, such as Ghana Revenue Authority, the Chartered Institute of Taxation, Ghana etc., should focus on ensuring that high risk firms undergo audits by reputable audit firms with credibility.

The results of Model 2 in Table 3 show that the interaction term of CSR and AQ has a significant negative relationship with CTA ($p = 0.000$, $co.eff = -0.579$). This implies that the relationship between CSR and CTA changes when the term CSR and AQ interaction is introduced. That is, the presence of audit quality alters the positive relationship between CSR and CTA to a significant negative relationship. Therefore, the results reveal that audit quality curbs managers' motivations to use CSR activities to engage in CTA. The study's results validate H3, supporting the moderating effect of AQ on the relationship between CSR and CTA. s. Theoretically, when audit quality is high firms are more likely to exhibit caution, as aggressive tax strategies stand a higher risk of exposure and subsequent reputational or financial repercussions. This deterrence effect aligns with the observation that high audit quality imposes a moderating influence, shifting CSR's potential use as a tax aggressiveness tool towards more transparent and compliant tax practices. These findings are consistent with previous empirical studies in the literature. Klassen et al. (2016) and Gaaya et al. (2017) suggest that firms with inadequate audit oversight may engage in tax reduction strategies without much scrutiny, facilitating tax aggressiveness. However, when audit quality improves, these tax reduction strategies become more likely to be uncovered, reducing the firm's level of CTA. This study highlights that managers might pursue aggressive tax strategies under conditions of low audit quality to increase compensation but are less likely to do so when high-quality audits are in place. The negative moderating effect of AQ on the CSR and CTA relationship highlights the dual role of audit quality in shaping corporate tax behaviour. Not

only does high audit quality deter firms from directly engaging in CTA, but it also reduces the indirect use of CSR as a deceptive strategy to justify reduced tax payments.

Regarding the control variables, the results from the two modelers posit that leverage (LEV) has a significant positive relationship with CTA, suggesting that entities that finance their business with huge debt are more likely to engage in CTA. This result is consistent with [Prastiwi and Ratnasari \(2019\)](#), who stipulated that the higher the debt in corporate entities, the higher the interest they pay, reducing the taxable profit to be reported and the tax liability payable to the tax authorities. Furthermore, firm size (SIZE) has a positive but insignificant association with CTA, revealing that larger firms are more likely to engage in CTA than smaller firms. This result is in line with [Mao \(2019\)](#). Moreover, the study found a positive and significant association between firm performance (ROA) and CTA, implying that high-profit firms engage in CTA more than low-profit earning firms. This result is consistent with [Gaaya et al. \(2017\)](#), positing that high-profit earners use tax avoidance strategies to reduce the tax payable to the tax authorities more than low-profit earners. However, board independence (BIND) has an insignificant negative association with CTA. The results explain that the more non-executive directors there are on the board, the less likely management is to engage in CTA. The results confirm the negative relationship between BIND and CTA, as [Lanis and Richardson \(2011\)](#) revealed.

7. Robustness analysis

This section presents robustness analysis to strengthen the credibility of the results and address potential methodological concern. These analyses include: (1) the use of random effects (RE) as an alternative estimator; (2) different corporate tax aggressiveness (CTA) measurements; (3) alternative corporate social responsibility (CSR) measurement; and (4) diagnosis checks of the research models covering heteroskedasticity, multicollinearity and serial correlation. The findings of these analyses (i – 3) are presented in Models 3 to 8 of [Table 7](#) with the findings contained in Model 1 and 2 repeating our previous main findings to facilitate easy comparative analysis.

One of the concerns in panel data regression is selecting the most appropriate estimator. The main analysis used the Fixed Effect (FE) model, which was confirmed by Hausman Test ($\chi^2 = 30.429$, p -value = 0.000). However, to determine the sensitivity of the main results to model selection, Models 3 and 4 were estimated using the Random Effects (RE) model, providing a comparative evaluation against Fixed Effects. The results estimated from these estimation models assess whether the relationship between CSR, AQ and CTA remains consistent across different estimators. The results show that CSR remains significantly and positively associated with CTA across both FE and RE models (CSR: FE = 0.113, $p = 0.000$; RE = 0.17, $p = 0.000$), confirming that firms that engage in more in CSR activities are more likely to engage in corporate tax aggressiveness, regardless of the estimator used. Additionally, the interaction term CSR x AQ remains negative and statistically significant at a 1% significant level across both models (FE = -0.579, $p = 0.000$; RE = -0.538, $p = 0.000$), reinforcing that AQ moderates the relationship between CSR and CTA by reducing tax aggressiveness in the firm with higher audit quality.

Furthermore, the main model measures CTA as STR – ETR, where ETR is defined as total tax expense minus deferred tax, divided by pre-tax profit, following [Yorke et al. \(2016\)](#) To assess whether the results are sensitive to an alternative CTA measurement, different Models 5 and 6 were estimated using ETR as a direct proxy for CTA in line with prior studies (e.g. [Noor et al., 2010](#)). Under this alternative measurement, ETR was defined as total tax expense divided by pre-tax profit ([Noor et al., 2010](#)). The findings in Models 5 and 6 indicate that CSR remains positively associated with CTA under alternative CTA measure (CSR 0.243, $p = 0.000$; 0.675, $p = 0.000$) respectively, while AQ remains negatively related to CTA (AQ -0.8141, $p = 0.000$, -8.034, $p = 0.000$). The significance and direction of the observed associations remain unchanged, indicating that the findings are not sensitive to how CTA is

Table 7. Robustness tests of the effects of corporate social responsibility and audit quality on corporate tax aggressiveness

Dependent variable	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8
Independent variables	CTA	CTA	CTA	CTA	CTA	CTA	CTA	CTA
	Coef (t-stats)	Coef (t-stats)	Coef (t-stats)	Coef (t-stats)	Coef (t-stats)	Coef (t-stats)	Coef (t-stats)	Coef (t-stats)
Intercept	21.489*** (5.31)	7.469** (2.54)	16.151*** (4.24)	4.831* (1.68)	13.309** (2.34)	4.293* 1.66	12.934** (2.28)	
CSR	0.113*** (3.27)	0.559*** (6.94)	0.17*** (4.65)	0.599*** (8.02)	0.243*** (5.57)	0.675*** (8.10)	0.248*** (5.68)	0.726*** (8.61)
AQ	−13.226*** (−9.03)	5.938** (2.03)	−11.619*** (−7.84)	4.563* (1.78)	−8.141*** (−3.38)	5.243* (1.65)	−8.034 (−3.34)***	6.78** (2.13)
LEV	0.074*** (3.80)	0.042** (2.36)	0.08*** (4.33)	0.059*** (3.38)	0.039* (1.76)	0.026 (1.21)	0.037* (1.75)	0.025 (1.19)
SIZE	0.523 (1.28)	0.524 (1.39)	0.721* (1.77)	0.495 (1.30)	0.096 (0.18)	0.111 (0.22)	0.075 (0.14)	0.056 (0.11)
ROA	0.16*** (3.56)	0.095** (2.26)	0.178*** (4.11)	0.113*** (2.73)	0.172 (3.66)***	0.118*** (2.67)	0.175*** (3.74)	0.122 (2.81)***
BIND	−0.054 (−0.63)	−0.008 (−0.25)	−0.053 (−1.44)	−0.051 (−1.50)	−0.057 (−1.25)	−0.047 (−1.12)	−0.056 (−1.44)	−0.044 (−1.05)
LagCTA	−0.104*** (−3.04)	0.256*** (4.76)			0.14** (2.28)	0.134** (2.37)	0.142** (2.33)	0.142** (2.54)
CSR*AQ		−0.579*** (−6.46)		−0.538*** (−6.57)		−0.56*** (−5.92)		−0.613*** (6.43)
R-squared	0.812	0.857	0.763	0.794	0.866	0.886	0.867	0.890
p-value of F-statistics	0.000	0.000	0.00	0.00	0.00	0.00	0.00	0.00
Observation	243	243	270	270	243	243	243	243
Time effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry effect	Yes	Yes			Yes	Yes	Yes	Yes

Note(s): CTA: Corporate Tax Aggressiveness; CSR: Corporate Social Responsibility; AQ: Audit Quality; LEV: Leverage; ROA: Firm Performance and BIND: Board Independence. The stars ***, ** and * indicate significant at 1, 5 and 10% significant level, respectively

Source(s): Field Work (2024)

measured. Furthermore, the interaction term $CSR \times AQ$ remains negative and highly significant in Model 6 ($CSR \times AQ: -0.613, p = 0.000$), confirming that audit quality continues to moderate the CSR-CTA relationship, irrespective of the CTA measurement approach.

To further ensure the robustness of the findings, we tested whether the CSR-CTA relationship is sensitive to alternative measures of CSR. The main model employed ISO 26000 CSR Disclosure Index, but in Models 7 and 8, CSR was measured using the Global Reporting Initiative (GRI) framework (e.g. [Davis et al., 2016](#)). The results remain highly consistent with the main findings, with CSR remaining positively and significantly associated with CTA ($CSR: 0.248, p = 0.000$ using GRI), while AQ remains negatively associated with CTA ($AQ: -8.034, p = 0.000$). The interaction effect $CSR \times AQ$ remains negative and significant ($-0.579, p = 0.000$). The consistency of results across different CSR measures indicates that the relationship between CSR and tax aggressiveness is not measurement-dependent, strengthening the validity of the findings.

Three diagnostics checks were performed in confirming that the regression models meet the necessary assumptions for reliability and validity. First, we conducted the Modified Wald test for groupwise heteroskedasticity to examine whether the error term exhibits constant variance across observations. The results of the Modified Wald test show a p -value of 0.0712 (7%), which is more than 5% significant. This denotes that the regression model does not suffer heteroscedasticity. A multicollinearity test was performed prior to testing the hypotheses by estimating the variance inflation factor (VIF) for each of the constructs. According to [Hair et al. \(1995\)](#), a multicollinearity problem is absent when the mean of VIF is less than 10. The results from a multicollinearity test showed a mean VIF of 1.71, which denotes that there is an absence of a multicollinearity problem in the model. Lastly, the Wooldridge test for serial correlation was employed to check for autocorrelation. The Wooldridge test produced a p -value of 0.002 at a 5% significance level, which suggests that there is a serial correlation. One of the ways to correct the serial correlation problem is by taking the lagged of a dependent variable and including it as one of the independent variables in the model ([Piper, 2022](#)). This study thus corrects serial correlation by taking a lag of the dependent variable (L.CTA). Overall, these diagnostic tests confirm that estimated models are free from heteroskedasticity and multicollinearity, and is robust to serial correlation, ensuring the reliability and validity of the study's empirical findings.

The Fixed Effects model (FE) was estimated with 243 observations, as firm-specific effects (i.code) and the lagged dependent variable (L.CTPA) led to some data loss. The Random Effects model (RE), which does not impose these restrictions, retained 270 observations. However, results remain consistent across both models, confirming the robustness of our findings.

8. Summary and conclusion

The global increase in reported CTA prompted the researchers to explore its related issues. Some studies suggest CSR is used as a strategy for engaging in tax aggressiveness, yet findings are inconclusive and mixed, partly attributed to variations in tax laws across countries. Ghanaian tax laws are noted for their loopholes, prompting inquiry into whether Ghanaian entities exploit CSR to reduce tax liabilities. Additionally, the study investigates whether audit quality mitigates incentives for using CSR as a tax aggressiveness strategy. To achieve these objectives, the study used 27 firms listed on the Ghana Stock Exchange covering 2011–2020, and two regression models. The first model investigated the effect of CSR and AQ on CTA. The second model investigated the impact of AQ on the relationship between CSR and CTA.

The study's results were mostly consistent with the existing literature, except for a few instances. The study found a positive and significant relationship between CSR and CTA. Thus, the study provides evidence that entities perform CSR activities as strategies to engage in CTA, supporting the argument that CSR and tax payment act as substitutes rather than

complements. CSR is seen as a positive force for societal well-being. However, this study uncovers the potential misuse of it by some companies to lower their tax burdens. This duality underscores the need for vigilant tax policies to prevent misuse while promoting genuine CSR activities. Also, the study revealed a positive and significant relationship between AQ and CTA, while AQ significantly reduces tax aggressiveness. High-quality audits, particularly by the Big 4 firms, act as a deterrent against tax avoidance.

Our results have a number of important implications for policy-makers and regulatory authorities. First, policymakers could consider mandating more stringent audits for firms that engage in CSR activities, as these companies might use socially responsible initiatives to bolster their public image while engaging in aggressive tax strategies. Furthermore, regulatory authorities could incentivize or mandate the use of top-tier audit firms, such as the Big 4, for firms with substantial CSR activities. Such firms demonstrate higher audit quality and thoroughness, which are essential in detecting and preventing tax non-compliance. Strengthening the standards and credibility of smaller audit firms could also broaden the impact, ensuring that high-quality audits are accessible and consistently implemented across firms of all sizes. Additionally, the findings support the idea that CSR should not only be voluntary but could be linked to reporting and compliance standards that discourage its use as a veil for tax avoidance. Policymakers could consider developing guidelines that require firms engaged in CSR to provide transparent reporting on tax practices. Integrating these guidelines into the CSR reporting framework would allow regulators to monitor potential discrepancies between CSR efforts and tax strategies, reinforcing accountability. Finally, the results suggest that regulatory bodies should focus on educating firms about the importance of ethical tax behaviour alongside socially responsible practices. By promoting awareness and understanding the repercussions associated with using CSR to justify aggressive tax strategies, regulators can cultivate a business environment where firms are incentivized to align CSR genuinely with broader social and economic goals, rather than as a means of reducing tax obligations.

Although our findings are fairly robust and important, the weaknesses need to be clearly articulated. First, the results of the study cannot be generalized to more developed countries considering the institutional setting of Ghana being the focus of this study. In determining the CSR disclosure index for this study, publicly available CSR reports and annual reports of listed entities on the Ghana Stock exchange were consulted. However, some existing studies reported this approach to be a poor proxy for CSR activity; and there are some weaknesses inherent in ISO 26000 sustainability reporting framework developed in June 2012 by the European Commission. Having outlined the limitations of this current study, future research in this area should explore case studies and conduct a qualitative study to gain a deeper understanding of the motivations and mechanisms behind the relationships between CSR, audit quality, and tax aggressiveness. This will contribute to a more comprehensive body of knowledge in the field of corporate tax behaviour. Since this study may be limited by weaknesses inherent in the sustainability reporting framework provided by ISO 26000, future research should consider adopting alternative reporting frameworks as a benchmark for scoring CSR indicators.

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Table A1. ISO 26000 core subjects of social responsibility

1	Organizational governance
2	Human Right
3	Labour Practice
4	The Environment
5	Fair Operating practice
6	Customer Issue
7	Community involvement and development

Source(s): Field Work (2024)**Table A2.** Variable definitions

Name	Definition
CTA	CTA: measured as $STR - ETR$; where $ETR = (Tax\ charged - deferred\ tax) / Accounting\ Profit\ before\ tax$
CSR	CSR “disclosure index per ISO 26000: Number of CSR activities based on ISO 26000 7 core subjects of social responsibility present in the firm’s annual financial statement divided by 7”
AQ	Audit Quality: “using a dummy where a value of 1 is given if the corporate entity is audited by Big 4 and 0 otherwise”
LEV	Leverage: “Ratio of Long term debts to equity”
SIZE	Firm Size: “log of total assets of the firm”
ROA	Firm Performance: Firm’s pretax on total assets (ROA)
BIND	Board Independence: “Ratio of non-executive directors to total board members”
E	Error term

Source(s): Field Work (2024)**Corresponding author**Oliver Nyamekye can be contacted at: olivernyamekye3@gmail.com