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TAX RISK DYNAMICS AND TAX PLANNING ACTIVITY NEXUS: EVIDENCE FROM BANKS IN GHANA

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ABSTRACT

Purpose: This study investigates the tax risk tax planning nexus of banks in Ghana. The paper explores the multidimensionality of tax risk and its consequences for tax planning activity.

Design/Methodology/Approach: Due to data availability and completeness, the study used a purposive sampling technique to sample 20 banks. The study focused on the universal banks in Ghana, with data from 2008 to 2022 generated from the audited financial statements, interpolated into monthly frequencies, and analysed using the Generalised Method of Moment to test the nexus.

Research Limitation: Although the findings presented in this study are grounded in the Ghanaian context, their implications extend beyond the Ghanaian setting. Also, while there are other equally important branches of the financial sector, the study only concentrated on the banking sector.

Findings: The findings show that differential/avoidance tax risk and rolling tax risk significantly positively affect the cash-effective tax rate. Therefore, it is concluded that a high tax risk reduces banks' aggressive tax planning activities in Ghana.

Practical Implication: A perceived high tax risk could lead to a high tax-paying culture. The tax authority should enforce regulatory sanctions to elicit high corporate tax compliance and improve this culture.

Social Implication: A high tax risk could result in increased tax revenue obligations, improving tax revenues for providing essential services like employment, education, healthcare, and infrastructure.

Originality/ Value: The study is one of the foundational studies in the Ghanaian setting to explore tax risk dynamics as antecedents of tax planning activity. By extending the empirical analyses to the banking sector, the study has not only recognised the heterogeneous characteristics of tax but also provides a unique understanding of the relationship from the banking sector where empirical evidence is virtually absent.

Keywords: *Bank. rolling tax risk. tax planning. tax rate. tax risk*

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INTRODUCTION

Tax revenues finance essential public goods such as infrastructure, education, and health services, enhancing productivity and stimulating economic growth (Queku et al., 2023; Boateng et al., 2022; Barro & Sala-i-Martin, 1992). Higher tax revenues enable governments to invest in projects that foster long-term economic development and poverty alleviation (World Bank, 2022).

High tax rates can deter investment, distort labour supply decisions, and discourage research and development (Engen & Skinner, 1996). This can lead to sub-optimal economic outcomes (Queku & Carsamer, 2016) and negatively affect the overall macroeconomic dynamics (Queku, Gyedu & Carsamer, 2020). According to Queku et al. (2020), the poor economic structure arising from weak financing could have a spillover effect on the private sector, including market development. Thus, inefficient tax systems may impose high compliance costs on businesses, reducing their ability to invest and grow and negatively impacting government activities and policies.

Studies show mixed results regarding the impact of taxation on growth. For instance, while some research indicates a strong correlation between high taxes and reduced growth rates in countries like Côte d'Ivoire and Nigeria (Keho, 2010; Saibu, 2015), others suggest that effective tax systems can promote growth by providing necessary public goods (Ho et al., 2023). The evolution of tax structures in developing countries often correlates with trade liberalisation. As countries open to trade, they may need to adapt their tax systems to enhance revenue while promoting growth (Gnangnon & Brun, 2019).

Tax revenues vary significantly across countries, with ratios ranging from just above 10% to over 46% of GDP. 2020 Denmark recorded the highest tax-to-GDP ratio at 46.5%, followed by France at 45.4%. Conversely, Mexico had one of the lowest ratios at 17.9% (Boateng et al., 2022; OECD, 2020). The average tax-to-GDP ratio among OECD countries reached approximately 33.5% in 2020, a slight increase from previous years. This reflects a plateau following a period of steady growth since the global financial crisis in 2008 (OECD, 2023).

The COVID-19 pandemic influenced tax revenues, with many countries experiencing fluctuations due to changes in economic activity and tax compliance behaviour. For instance, some countries saw increased personal income taxes and social security contributions as a share of GDP (OECD, 2023). Despite improvements in tax revenue performance, many economies still struggle with compliance issues, which can hinder effective revenue mobilisation (Queku et al., 2024). This challenge affects both developed and developing nations (OECD, 2020). Despite the challenges, developed countries still find ways to improve their tax revenue mobilisation.

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Tax revenue mobilisation among African countries continues to dwindle with a few exceptions. In 2021, the average tax-to-GDP ratio for 33 African countries was approximately 15.5%, slightly declining from pre-pandemic levels. This ratio varies widely, from as low as 5.9% in Equatorial Guinea to 32.5% in Tunisia, highlighting disparities in tax revenue generation across nations (OECD/AUC/ATAF, 2023). Taxes on goods and services constitute Africa's largest share of tax revenues, accounting for about 51.9%.

Value-added tax (VAT) alone represents approximately 27.8%. In contrast, income and profit taxes comprise around 37.9% of total tax revenues (OECD/AUC/ATAF, 2023). The COVID-19 pandemic adversely affected tax revenues, particularly from goods and services, which saw a decrease in 2020 but began to recover in 2021. Effective tax administration and broadening the tax base are emphasised to ensure stable revenue streams for development projects (OECD/AUC/ATAF, 2023). Many African countries face challenges in raising sufficient budget revenues due to compliance issues and reliance on foreign trade taxes, which can erode revenue as trade liberalisation progresses (Ho et al., 2023).

Corporate tax revenue plays a significant role in Africa’s overall taxation framework. In 2021, corporate tax revenues accounted for an average of 18.7% of total tax revenues across 32 African jurisdictions, notably higher than the OECD average of 10.2%. This indicates a greater reliance on corporate taxes in African economies than in developed countries (OECD, 2024; Fleckenstein et al., 2020). The average corporate tax revenue as a percentage of GDP in Africa was approximately 2.7% in 2021, lower than the OECD and Latin America averages of 3.3% (OECD, 2023, 2024; World Bank, 2022). Some countries, such as Nigeria and Equatorial Guinea, have seen corporate tax revenues contribute over 25% of total tax revenues, reflecting the importance of the corporate sector in these economies (Fleckenstein et al., 2020; OECD, 2023). Corporate tax revenues peaked at about 3.6% of GDP in 2008 but have since experienced fluctuations due to economic conditions and changes in commodity prices, particularly affecting resource-rich countries. While corporate taxes are a vital revenue source for the government, challenges such as tax risk and aggressive tax planning strategies remain critical for enhancing bank revenue collection. Figure 1 shows that corporate tax revenue significantly affects African countries' overall tax revenue structure. The figure reveals the average corporate tax revenue percentage of 19.2%, the third highest behind VAT and consumption taxes other than VAT.

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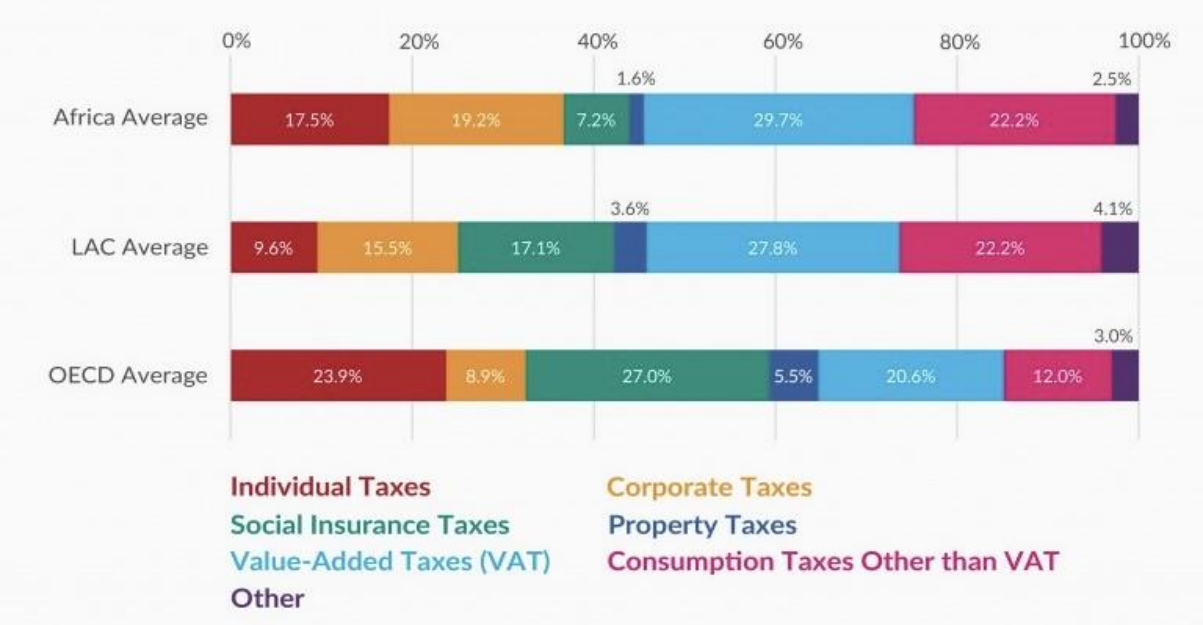

Figure 1: Corporate Tax is on Average the Third Most Important Tax Revenue Source for African Countries
Source: OECD/AUC/ATAF, Revenue Statistics in Africa (2020)

According to the International Monetary Fund metrics, countries must have a tax-to-GDP ratio of at least 12% to experience accelerated economic growth. Per the IMF threshold, most African countries come short of the mark, reflecting their economic growth. Several arguments for the disparities in tax revenue performance between developed and African countries are the successful implementation of tax regulations and the tax compliance behaviour of individuals and firms (Carsamer & Abbam, 2021). Tax policies and implementations have not been successful in developing economies due to a lack of literature (Keen, 2013; Ogbonnna & Appah, 2016; Seidu et al., 2021). Africa has encountered fragmented empirical evidence and limited studies on tax laws, regulations, enforcement, and policies (World Bank, 2015).

Regrettably, Ghana faces a worse situation than other African countries regarding tax revenue mobilisation (Seidu et al., 2021). A brief investigation of Ghana's tax revenue statistics in Figure 2 reveals that Ghana's tax revenue to GDP was 10.8% in 2010 to 14.1% in 2018. Over the same period, the average for the 33 African countries has increased from 14.1% in 2010 to 16.5% in 2018. The highest tax-to-GDP ratio recorded by Ghana since 2000 was 14.1% in 2018 and 2021, with the lowest being 7.8% in 2000 (OECD/AUC/ATAF, 2023; Saibu, 2015).

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Any significant reduction in corporate tax revenue could alter the base fabric of the government's tax revenue. Factors that could negatively affect corporate tax revenue are not clear, but tax risk and tax planning antecedents have been identified as critical in corporate tax payment decisions. The dynamics of both tax risk and tax planning activity of firms could have dire impacts on their tax revenue obligations.

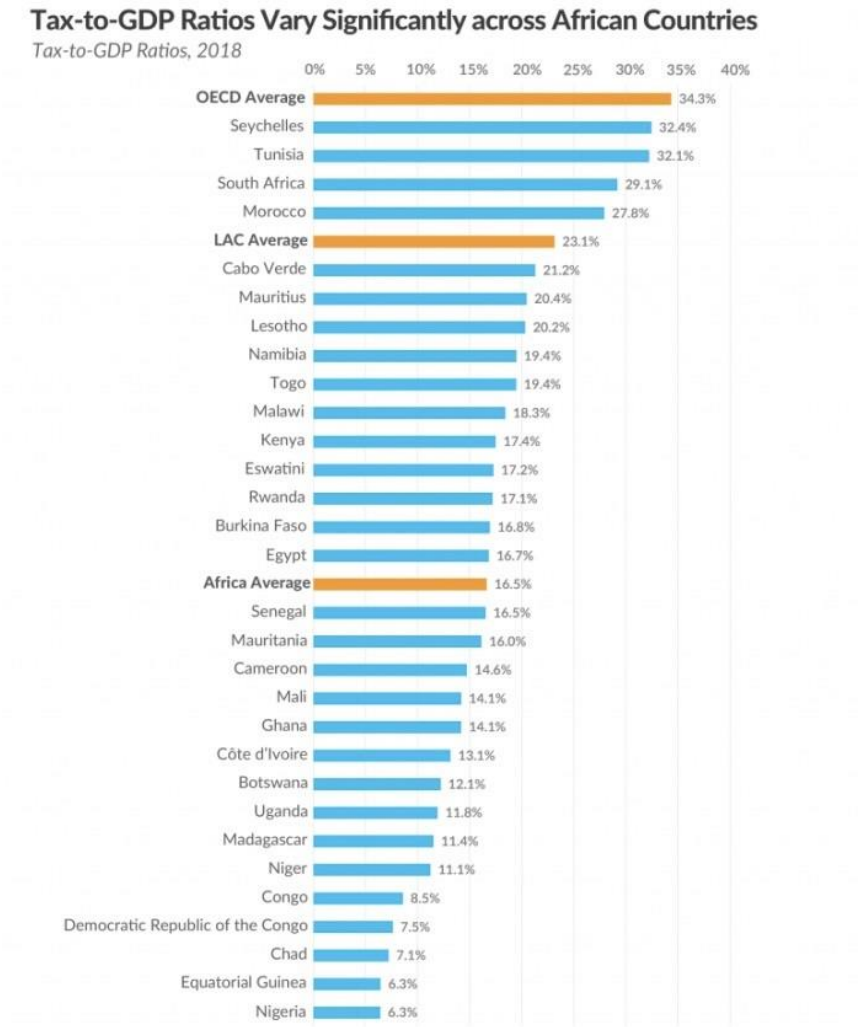

Figure 2: Tax-to-GDP Ratio Vary Significantly across African Countries
Source: OECD/AUC/ATAF, REVENUE STATISTICS IN AFRICA (2020)

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For more than a decade, tax authorities, managers and practitioners' interest in identifying tax risk has been increasing because tax risk can significantly affect the outcomes of firm-level tax activities (Ernst & Young, 2012; PwC, 2014). Firms respond to this threat by developing tax risk management plans to help manage this risk and achieve firm goals (Ernst & Young, 2014; Neubig & Sangha, 2004; Packard, 2017). Tax risk occurs when there is variability in taxation law, inconsistencies in the implementation of taxation, poor authorities' enforcement, possible audits in the future, and frequent changes in tax rates and provisions that form uncertainties or tax risk in the future (Chen, 2021; Mangoting et al., 2021). According to Drake et al. (2019), tax risk is all tax-related uncertainties inherent in a firm's transactions, whether related to operational, financial reporting decisions, or reputation. Tax risk differs from tax aggressiveness, which only has short-term objectives, such as reducing tax payments (Knaisch, 2024). Kovermann (2018) posits that high tax risks can be imposed because of aggressive tax planning and that there is a positive association between tax risk and tax avoidance.

Tax planning activities of banks are crucial for optimising their tax liabilities and ensuring compliance with regulations to increase corporate tax revenue mobilisations. Tax planning involves strategically managing finances to minimise tax liabilities while ensuring compliance with tax laws (Agyei et al., 2020; Mangoting et al., 2021). Any bank motivation to engage in tax planning could hamper the government's overall tax revenue mobilisations. Tax planning has become an indispensable component of corporate financial management (Ogundajo & Onakoya, 2016). It manifests in various forms, such as "transfers of revenues by geographical area, redevelopment of the company, and exploiting loopholes and haven provisions in tax legislation" (Ftouhi & Ghardallou, 2020).

Ayers et al. (2018) characterised tax planning as a strategy to minimise taxable income with activities intended to yield tax benefits (Wahab & Holland, 2012). Consequently, it is anticipated that as firms engage in tax planning, they can avoid unnecessary tax liabilities, thereby enhancing their after-tax earnings. This has led to increased research exploring the impact of tax planning on other firm variables, such as profitability, performance, and firm value. While the literature has extensively examined the impact of tax planning on the profitability of non-financial firms, with a few studies focusing on banks, empirical evidence is scarce in the banking industry. This industry, which has recently faced concerns about its substantial tax liabilities, low penetration rate, and the need to retain profits to bolster its economic standing and contribute to gross domestic product (GDP) (Queku, 2020), has been the subject of this study. Therefore, this research investigates the relationship between tax planning and the tax risk of the banking sector in Ghana.

Many strands of studies have reported on the antecedents of tax planning, such as internal governance (Beasley et al., 2023; Chen et al., 2021), managerial ability (Saragih & Ali, 2023), in-

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house tax department (Chen et al., 2021), and auditors providing tax services (Cabello et al., 2019; Ghazouani, 2013; Kinda et al., 2018). Also, tax planning is determined by the institutional environment and tax supervision (Chen et al., 2021), tax rules and regulations (Towery, 2017), and audit report delay (Queku et al., 2023; Seidu et al., 2021; Suwardi & Saragih, 2023). However, there are relatively limited studies on the tax risk and planning nexus. The few studies that have explored tax risk and related metrics often have their study settings outside Ghana (Abernathy et al., 2023; Drake et al., 2019; Elmirzaev, 2015; Mangoting et al., 2021; Kovermann, 2018). According to Seidu et al. (2021), tax is heterogeneous, making the implications of findings from one jurisdiction often different in another. This shows the novelty of exploring this dimension of tax dynamics, especially in the banking sector. Tax risks can have overarching implications for firms (Saragih & Ali, 2021; Suwardi & Saragih, 2023). Tax risk is a relevant determinant in firms' tax planning activities; if tax risk is low, the market reaction to tax planning will be positive (Drake et al., 2017; Brühne & Schanz, 2022). The rationale for this strand of empirical studies is that tax risk and tax planning activity are intertwined (Boldycheva & Klonitskaya, 2022; Mangoting et al., 2021a; Suwardi & Saragih, 2023).

Of closer significance to this study is Guedrib and Marouani (2023) on the impact of tax risk on the firm value in the Tunisian context. The conspicuous absence of literature might have accounted for the low tax revenue collection by Ghana Revenue Authorities (GRA), which made banks' tax planning activities questionable. For example, the Mongolian Tax Authority (MTA) Mongolian Tax Authority (MTA) has implemented a new functionality in its electronic tax system which allows, starting June of 2023, taxpayers to view their tax risk assessment and their tax scoring to promote transparency in the MTA and the taxpayers (Neubig & Sangha, 2004; Packard, 2017). This is believed to enable taxpayers to manage their own tax risk by allowing them to identify and reduce factors that affect their tax planning. Due to the increasingly global view that tax risk management should be a part of good corporate governance, countries and tax revenue authorities have developed tax governance and tax control frameworks to deal with the menace (Ernst & Young, 2014; Neubig & Sangha, 2004; Packard, 2017). Most advanced countries have tax risk control frameworks and policies in place to minimise the impact of tax risk on firms' tax performance. African countries, however, are playing a catchup role in ameliorating the tax risk challenges.

This paper thus examines the tax risk-tax planning activity nexus using Ghanaian banks as the study setting. The analysis is expected to provide holistic evidence to comprehend the banking sector's tax risk-tax planning activity dynamics. The banking sector is chosen for this study because it is one of the dominant sectors contributing immensely to Ghana's GDP. The banking sector also has large capital requirements, consisting of large companies (Carsamer, Abbam & Queku, 2021). The corporate tax rate paid by banks in Ghana is 25% and is computed on income before tax.

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Corporate tax amounted to 17.65 billion Ghana cedis in 2022, representing a nominal increase of 21.9% from the 14.48 billion Ghana cedis figure in 2021. Corporate income tax is the most significant contributor to Ghana's tax revenue year-on-year (OECD/AUC/ATAF, 2023). The financial and mining sectors combined contributed 70-80% of corporate income tax in Ghana.

THEORETICAL CONSIDERATION

The Extended Parallel Process Model (EPPM) provides a framework for understanding the relationship between tax risk and bank tax compliance by focusing on how perceived threats influence behaviour. The Extended Parallel Process Model (EPPM), developed by Witte in 1994, posits that high perceived threat and efficacy lead to protective behaviours, while high threat and low efficacy result in defensive responses, such as message rejection. Following EPPM, when banks perceive high levels of tax risk characterised by a significant likelihood of severe penalties or sanctions - they experience fear, which can drive them to enhance their compliance efforts.

The theory predicts how individuals and firms react when confronted with fear-inducing stimuli. According to Murray-Johnson et al. (2004), when people are given risk messages, they undertake two appraisal activities. First, they observe whether or not they stand susceptible to a recognised threat and whether that threat is severe. This is to say that the first process involves perceived susceptibility (the level to which an individual feels they stand at risk for some particular threat) and perceived severity (the level to which an individual sees a threat as being serious). Generally, if it is perceived that the threat is irrelevant or trivial, they overlook the message of risk and the advice to perform the needed action.

Secondly, suppose individuals think they stand susceptible to severe threat and their fear level is stimulated. In that case, they become motivated to consider whether the required action could minimise that threat (the response efficacy) and whether they could carry out the required action (self-efficacy). Once they feel they are in charge, they will suitably keep the risk under control. By following this analogy, when banks assess their risk severity profile and realise that the risk is high, the probability of occurrence also generates fear among management. In response, management will likely decide out-of-danger control in line with the high severity. When banks are confronted with high tax risks (high tax uncertainties, etc.), they could be forced to curtail possible aggressive tax planning activities. Conversely, a perceived low tax risk may also lead to aggressive tax planning. Nevertheless, continuous tax risk will likely erode the firm's profit, rendering it stagnant in growth and without cash for lending (Boldycheva & Klonitskaya, 2022; Brühne & Schanz, 2022).

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This implies that if bank's view tax compliance as necessary to mitigate high risks, they are more likely to implement strategies that ensure adherence to tax laws. In summary, the EPPM explains that the interplay between perceived tax risks and compliance behaviours in banks is influenced by management's assessment of threats and their belief in their ability to respond effectively. High perceived risks combined with a strong sense of efficacy lead to increased compliance, while low efficacy or trivialisation of risk can result in tax planning schemes (Popova, 2020). In summary, the EPPM provides a valuable lens through which to understand how banks in Ghana navigate the complexities of tax risk and tax planning. By evaluating perceived threats and their potential consequences, banks can make informed decisions about compliance and avoidance strategies that align with their risk tolerance and financial conditions.

Conceptually, tax risk occurs when there is variability in taxation law, inconsistencies in the implementation of taxation, poor authorities' enforcement, possible audits in the future, and frequent changes in tax rates and provisions that form uncertainties or tax risk in the future (Sreesing, 2018; Chen, 2020). Drake et al. (2019) defined tax risk as all tax-related uncertainties inherent in a firm's transactions, whether related to the operational, financial reporting decisions, and reputation. According to Li et al. (2024), tax risk differs from tax aggressiveness, which only has short-term objectives to reduce tax payments. Aggressive tax planning can impose high tax risks (Kovermann, 2018). Empirically, a thread of literature concentrated on the nexus between tax planning and firms' performance (Lee & Yoon, 2020; Razali et al., 2018; Santa & Rezende, 2016), corporate governance (Armstrong et al., 2015; Bolton et al., 2014; Khan et al., 2017; Rego et al., 2017; Platikanova, 2017), transfer pricing (Hopland et al., 2018; Jansky, 2013; Muhammadi et al., 2016; Taylor & Richardson, 2014).

The few studies exploring tax risk and tax planning or avoidance have generated mixed results with some fundamental theoretical assumptions. For instance, Kovermann (2018) concluded that there is a negative association between the cost of debt and tax avoidance and a positive association between tax risk and tax avoidance. This study is in line with the study conducted by Masri et al. (2019), which explained that tax risk is positively associated with tax avoidance levels. These empirical findings contradict the theoretical assumptions of EPPM, which suggests a negative relationship between tax risk and tax planning or avoidance. Although this paper makes a case that tax risk or uncertainty will likely drive tax planning activity, it does not form a directional apriori due to the mixed results between empirical findings and theoretical assumptions.

Lessons Learnt and Hypothesis Development

The theoretical lessons from the assumptions of EPPM suggest that tax risk could have significant implications on tax planning activities. Specifically, a high perceived tax risk and probability of occurrence could induce or deter tax planning activities. However, the empirical studies to test

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these assumptions are mainly emerging. Thus, the relationship between tax risk and planning is still developing, suggesting a growing area of academic inquiry that seeks to understand how banks can effectively manage these risks while optimising their tax positions (Boateng et al., 2022). Overall, the interplay between perceived tax risks and tax planning decisions remains a critical focus for banks aiming to enhance their financial performance while ensuring compliance.

A rigorous scrutiny of the empirical evidence reveals that researchers are taking an interest in investigating tax risk as a motivation for tax planning activities. Nonetheless, all of these studies have been conducted in developed countries. The results and suggestions from these studies may however not be useful to the context of Ghana because of variations in development and heterogeneity of taxation. Queku (2020) intimates that a country's stage of development dictates the (Hannah et al., 2023; Suwardi & Saragih, 2023) direction of its fiscal policies and strategies including tax policies and laws. Therefore, different features in tax laws are likely to affect tax planning opportunities and the related incentives. Thus data from different economies and even within industries are more likely to differ than to be the same. The scarce empirical evidence on tax risk as a motivation for tax planning in Ghana is thus both harmful to the development of literature on the area and a stumbling block to achieving tax revenue targets. It is, therefore, prudent to investigate the nexus between tax risk and tax planning activity using banking sector-specific evidence in Ghana.

In line with the theoretical arguments from EPPM and the literature, this study hypothesises that tax risk could significantly influence tax planning activities. However, the nature of the direction remains an empirical issue. Therefore, the study formulates a non-directional hypothesis for this investigation. Given these backgrounds, the paper hypothesises its central hypothesis as follows:
H_w. *Tax risk has a significant influence on tax planning activities of banks in Ghana.*

The central hypothesis H_m is operationalised by defining the variables of interest: tax risk and tax planning activities. Prior studies have used different constructs for tax risks, but there is no consensus regarding the appropriate proxies for tax risks. While some studies employ the use of specific tax risk and generic tax risk (Elmirzaev, 2015; Mangoting et al., 2021) as proxies to measure tax risk, others resort to the use of differential tax risk and rolling tax risk (Boldycheva & Klonitskaya, 2022; Chen, 2021; Mangoting et al., 2021b; Suwardi & Saragih, 2023) to measure tax risk with varying arguments. This paper uses the differential and rolling tax risks as constructs to define tax risk in the banking sector. This multidimensional consideration captures the depth and complexities in tax risk. In terms of tax planning, this study mimics prior studies to define it to tax avoidance proxied as cash effective tax rate (CETR).

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H_w1. *Differential tax risk has a significant influence on the tax planning activities of banks in Ghana.*

H_w2. *Rolling tax risk has a significant influence on the tax planning activities of banks in Ghana.*

METHODOLOGY

The study uses audited annual reports from the banks' websites, including the Bank of Ghana and the Ghana Stock Exchange websites. Data was collected from 2008 to 2022. The primary variables of interest in the study are tax planning activity and tax risk. The data collection criteria are those banks licensed to provide universal banking services, and the banks have operated from 2008 to 2022. Following these criteria, three universal banks, namely First National Bank Ghana Ltd (commenced 2015); Consolidated Bank of Ghana (commenced 2018); and OmniBSIC (commenced 2019), were excluded due to the absence of specific data elements. For uniformity and robustness, 2008 was selected as the starting point for data collection, as it was the year all universal banks were mandated by law to prepare their financial statements using the newly adopted international financial reporting standards (IFRS) (Queku, 2017; 2016). The choice of 2022 was based on the availability of data. Consequently, based on the aforementioned sampling method, twenty universal banks with data from 2008 to 2022 generated observations for 300 firm years.

Model specification

The study employs a general panel estimation model specification to test the hypothesis. Using a panel model enables the study to account for individual heterogeneity, which could lead to biases in the results when not considered in cross-sectional and time series studies. The models are estimated using Eviews 12.0 package. Before estimating the models, the paper conducts fundamental diagnostics, including multicollinearity and unit root tests. Following Edward et al. (2016), the model is constructed as the relationship between tax risk, tax planning activity, and controls. Consequently, the study specifies the general model as:

$$Y_{it}=\partial_0+\sum_{j=n}^{k}\mu_j X_{it}+\sum_{p=i}^{kr}\kappa_j Z_{it}+\varepsilon_{it} \quad (1)$$

Where,

Y represents tax planning activity of banks and denotes the criterion or dependent variable.

X represents a vector of explanatory variables and denotes tax risk variables (differential/avoidance tax risk and rolling tax risk)

Z is the vector of the control variables

"i" represents individual bank observations

"t" represents time

μ_j is the vector of coefficient of tax risk

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κ_j is the coefficients of the control variables
∂ is the intercept of the model or the constant
ε is the error term

The study applies the generalized method of moments (GMM) estimation approach to estimate panel models and conduct a robustness check. The GMM system equation is utilized for the following reasons: The instrumental variables in GMM control for unobserved heterogeneity and account for endogeneity; it reduces over-identification and accounts for cross-sectional dependence (Doyle, 2017; Queku, 2017; Roodman, 2009). The study adheres to the GMM specification to formulate the empirical models. Subsequently, the Hausman test is conducted to determine the most appropriate model. Subsequently, the fixed effect model is employed as a benchmark model for robustness testing.

The specifications of interest are contemporaneous models with 1-year lag. The contemporaneous models are developed on the basis that since banks are legally mandated to monitor their tax risk indicators continuously, they may be able to identify any impending tax uncertainties and implement strategies to augment and reduce tax risk. Thus, it is relevant to conduct the estimation at levels. Eqn (1) is operationalised into an empirical model specified in Eqn (2) relevant to testing the hypotheses (H1 and H2). These two hypotheses require the investigation of tax risk as motivation for TPA. This model is specified by substituting the proxies into Eqn (1) and modelled as follows:

$$CETR_{it} = \partial_0 + \beta 0 CETR_{it-1} + \beta 1 DTR\_ATR_{it} + \beta 2 RTR_{it} + \beta 3 BS_{it} + \beta 4 BL_{it} + \mu_t + \varepsilon_{it} (2)$$

Where CETR stands for cash effective tax rate representing tax planning activity in the estimation.
DTR_ATR and RTR are proxies for tax risk.
BS, BL are the control variables
∂_0 is the intercept of the model or the constant
$\beta 1, \beta 2 \ldots$.and $\beta 3$ *to* $\beta 4$ are the coefficients of the independent and control variables, respectively.
ε is the error term μ is the sector-specific effect, and i and t represent bank and year, respectively.

Measurement of Variables

Tax risk is proxied as differential/avoidance tax risk (DTR_ATR) and rolling tax risk (RTR). DTR_ATR is measured using the Schaffer et al. (2019), and RTR follows the measurement of Li et al. (2023). This study uses differential/avoidance tax risk (DTR_ATR) and the rolling tax risk (RTR). DTR_ATR is the difference between the effective tax rate (ETR) and the standard tax rate (STR). The effective tax rate (ETR) is the current income tax charge ratio to the profit before tax. It includes the standard tax rate plus specific taxes paid in a particular period. The standard tax rate

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(STR) is the compulsory/statutory rate established by law that banks are expected to pay to GRA on the profit before tax. Currently, the STR is 25% for all universal banks in the country. The variance between ETR and STR indicates whether or not a bank is practising tax planning activity. Since the tax risk is historically measured, the inducement in action to either engage or not engage in aggressive tax planning is forward-looking. Therefore, the differential or avoidance tax risk is measured in one year lag rather than contemporaneous.

Following the studies by Guenther et al. (2017), and Hutchens and Rego (2015), rolling tax risk (RTR) is measured using the standard deviation of annual cash ETRs over 3 years. It is calculated as the sum of cash taxes paid over the period t-3 to t scaled by the sum of pretax book income less special items over the same period. To help interpret results, we multiply the bank's 3-year cash effective tax rate by negative one (-1) to arrive at our measure RTR, as higher cash ETRs suggest that the bank engages in relatively lower tax planning activity.

Following Seidu et al. (2022), tax planning activity is proxied as cash effective tax rate (CETR) and mimics the measurement structure enshrined in Carolina et al. (2021). The CETR is the ratio of actual cash tax paid to the pretax income (PTY) adjusted for special items (SPI). Thus, high tax risk means high cash tax payment and vice versa.

Table 1. Measurement of variables

Variable	Description	Measurement	Source	Expected sign
Tax planning activity	Cash effective tax rate (CETR)	$\frac{CTP}{PTY - SPI}$	Agyei et al. (2020)	
Tax risk	Differential/Avoidance Tax Risk (DTR_ATR)	(ETR– STR)-1 year lag	Schaffer et al. (2019)	+
	Rolling Tax Risk (RTR)	3year SD of ETR	Guenther et al. (2017), Hutchens and Rego (2015), and Li et al. (2023)	+
	Bank Size (BS)		c (2019)	±

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Control variables		Log of total assets	
	Bank Leverage (BL)	Long term liability to assets	DeAngelo & Stulz (2015)

Source: Authors' construct developed from varying literature

Control variables

Following Seidu et al. (2021), two additional variables are controlled for: bank size (BS) and bank leverage (BL). The natural logarithm of total assets measures BS. Large banks may be able to structure complex and sophisticated tax planning strategies to achieve tax reduction (Hanlon et al., 2007; Mills et al., 1998). Therefore, controlling for BS reasonably determines the actual influence of financial constraints. Additionally, the existing leverage of the banks is also controlled, as debt provides a tax shield (Mills & Newberry, 2004). Consequently, by controlling for leverage, the results from the financial constraint variables can reveal incremental tax avoidance triggers. Leverage would be measured by the ratio of long-term debts to total assets.

FINDINGS AND DISCUSSION

The results below show the descriptive statistics of tax risk and tax planning activity proxies and the control variables employed in the study. Affirming Agyei et al. (2019) and contrary to Seidu et al. (2021), the CETR of banks is 31.20%, which is more than the standard tax rate of banks (25%). The results indicate that banks are not taking advantage of the tax planning concessions available to the sector. The difference between the findings of this study and the evidence in Seidu et al. (2021) may be explained by the data employed and the changes in tax laws. While Seidu et al. (2021) used data from 2010 to 2018, this study uses data from 2008 to 2022. On tax risk, DTR_ATR and RTR, all show positive means. The standard deviations for all the variables are relatively high, signifying a considerable variation in differential tax risk (DTR) and rolling tax risk (RTR).

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Table 2: Descriptive statistics

	CETR	DTR_ATR	RTR	LBS	BL
Mean	0.3120	0.0274	0.0826	21.4534	0.0909
Median	0.2624	0.0311	0.0524	21.5296	0.0581
Maximum	10.8065	1.3103	1.6487	23.9726	0.6289
Minimum	-1.9508	-0.6900	0.0000	18.4679	0.0003
Std. Dev.	0.7885	0.1469	0.1291	1.1084	0.0879
Observations	298	298	298	298	298

Source: Generated from Eviews version 12.0

Before conducting the panel regression analysis, a multi-collinearity pre-test analysis was conducted to identify the presence of collinearity among the regressors. Collinearity can diminish the reliability of regression coefficients. The study used the pairwise correlation matrix to achieve this objective. Table 3 demonstrates the absence of multi-collinearity, as none of the correlation coefficients of any paired independent variables exceeded 0.5. Consequently, both the dependent and controlled variables are suitable for inclusion in the regression analysis.

Table 3: Correlation matrix

Correlation t-Statistic	DTR_ATR	RTR	LBS	BL
DTR_ATR	1.0000			
	6.4121			

RTR	0.1307	1.0000		
	0.7366	4.9535		
	2.2682	-----		
LBS	0.2443	-0.0799	1.0000	
	11.8207	-3.3997	364.9371	
	4.3356	-1.3801	-----	
BL	-0.0903	0.0236	0.0899	1.0000
	-0.3466	0.0797	2.6042	2.2963
	-1.5604	0.4071	1.5540	-----

Source: Generated from Eviews version 12.0

Table 4 displays the GMM output. The second and third rows display the effect of tax risk on a bank's tax planning activities based on a linear relationship between CETR (a proxy for tax planning) and DTR_ATR and RTR (proxies for performance) with a lag of 1 year. The results of

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the post-diagnostic tests, such as correlation t-statistic and instrument validity test with the number of observations and cross-sections, indicate that the instruments employed in the study were not endogenous and all the models did not have instrument proliferation problems. Consequently, it can be concluded that all models were appropriately specified.

It can be seen from the linear model that tax risk proxied by DTR_ATTR and RTR is significantly related to tax planning activity proxied by CETR. Specifically, the linear model reported a positive relationship between DTR_ATTR or RTR and CETR. The avoidance tax risk (DTR_ATTR) exhibits a coefficient of 0.6016, which suggests a positive effect of avoidance tax risk on tax payment (i.e., negative tax aggressiveness). The p-value of the coefficient is 0.0007, suggesting that the coefficient is significant at 1%. The study, therefore, rejects the null hypothesis that avoidance tax risk has no significant effect on tax planning activity. This implies that a percent increase in the avoidance tax risk could lead to a 0.6016 decrease in tax aggressiveness/planning activity (i.e., an increase in tax payment) and vice-versa.

Table 4: Empirical Estimation

	Coefficient	Std. Error	t-Statistic	Prob.
CETR (-1)	-0.1135	0.0081	-13.9446	0.0000
DTR_ATR	0.6016	0.1483	4.0566	0.0007
RTR	1.0581	0.1256	8.4239	0.0000
BS	-0.0106	0.0100	-1.0598	0.3025
BL	-0.9455	0.1528	-6.1877	0.0000
Root MSE	1.0888	Mean dependent var		-0.007069
S.D. dependent var	1.1518	S.E. of regression		1.099437
Sum squared residual	307.0257	J-statistic		16.03922
Instrument rank	20	Prob(J-statistic)		0.379450

Source: Generated from Eviews version 12.0

Regarding the rolling-based tax risk measure, the coefficient is 1.0581, which is similar to the differential/avoidance tax risk measure. The coefficient has a p-value of 0.0000, which indicates that it is significant at 1%. This means that the study rejects the null hypothesis that rolling tax risk has no significant influence on tax planning activity. The implication is that a percent increase in

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the rolling tax risk could lead to 1.0581 decrease in tax aggressiveness/planning activity (i.e., an increase in tax payment) and vice versa.

Regarding the control variables, the study also found that bank size (BS) has a significant negative relationship with CETR. This means that bigger banks engage in aggressive tax planning. One possible reason for this finding is that bigger banks can amass the needed resources to implement a complex tax planning scheme to reduce tax liability. Moreover, this category of banks is better placed to understand the tax laws and further identify weaknesses in the tax laws for tax planning opportunities. Thus, these banks may exhibit relatively low tax risk and will likely engage in aggressive tax planning. This is evident in the empirical evidence in this study.

The study also established that bank leverage (BL) negatively correlates with CETR. Leverage increases the base of interest expenses. Since interest is tax deductible, increasing interest expense through high leverage would reduce taxable profits and, ultimately, taxes. This finding supports the findings of DeAngelo and Stulz (2015) and Zhang et al. (2024), who concluded that high leverage results in low tax planning. For brevity, the control variables are not discussed further.

Overall, regarding the variables of interest, the empirical results of the tax risk-tax planning nexus reflect the study apriori. The banking sector is highly regulated, so a high inherent risk exists. Therefore, further risk exposure through high tax risk may cause the banks to be extra cautious to avoid exposure and receive regulatory sanctions. These banks are, thus, more likely to reduce tax aggressiveness and increase tax payment during high tax risk. This expectation has been affirmed by the significant negative relationship between tax risk and aggressive tax (i.e. tax planning activity). These findings lay credence to support empirical evidence on the assumption that the tax risk of banks could be a determinant in the banks' decision to engage in tax planning activities as an alternative source of generating cash (Elmirzaev, 2015; Mangoting et al., 2021b). The evidence in this study is also in tune with the results of some prior research efforts (Blouin, 2014; Cao et al., 2021; Guedrib & Hamdi, 2024; Akitoby et al., 2019; Lee, 2017; Tosun & Yildiz, 2020).

The findings imply that a high standard deviation risk represents a high tax uncertainly resulting in high cash tax payment, which has a negative relationship with firms' tax planning behaviour, a position echoed in studies such as Blouin (2014); Cao et al. (2021); and Guedrib & Hamdi (2024). Moreover, a positive lag differential makes what could ordinarily remain undetectable tax aggressiveness detectable, increasing the risk exposure. Thus, the positive mean lag differential by the Ghanaian banks, as captured in Table 2, makes them susceptible to regulatory watch. This might have caused them to curtail tax planning activities and increase the tax payment behaviour.

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A high tax risk could lead to a high tax cash payment (i.e. reducing tax planning activity or aggressiveness). This shows that a high tax risk will amount to a lower tax planning activity. This means that Ghanaian banks exhibit high tax risk, leading to low tax planning activities. This is not surprising, considering the average tax payment of 31.20% is significantly higher than the statutory tax rate (25%) by 6.20%. Similarly, a lower tax risk has a positive impact on the tax planning activity of banks. This explains why banks engage in aggressive tax planning when their tax risk is low: they realize they may not be caught, or it could take significant time for tax audits to be conducted. The finding is in agreement with Guedrib and Hamdi (2024), Cao et al. (2021), Blouin (2014), and Yimbila (2017), which concluded that a higher tax risk has a negative significant relationship with tax planning. The practical implication is that when banks perceive or find exposure to high tax risk, the motivation to engage in aggressive tax planning could reduce due to their susceptibility to being caught by the tax authority.

The findings also contribute to the extended parallel process model (EPPM). Consistent with EPPM, the empirical evidence in this study implies that Ghanaian banks appraise their tax risk and conclude that they stand susceptible to the recognised threat from a high tax risk and consider such a threat as severe. This might have caused them to reduce aggressive tax planning activity and instead pursue a positive trajectory of high tax-paying culture, evidence that supports the assumption of EPPM (Murray-Johnson et al., 2004). Another theoretical implication of the findings is that the banks consider reducing tax planning aggressively as a required action to minimise that threat (the response efficacy).

A fundamental policy implication of the findings is that tax authorities could elicit high corporate tax compliance and improve a high-tax-paying culture through enforcement of regulatory sanctions. This could induce a perceived high tax risk through high tax uncertainties. As evident in this study, taxpayers could be forced to curtail possible aggressive tax planning activities in response to the perceived high tax risk. Conversely, a perceived low tax risk may also lead to aggressive tax planning.

Nevertheless, continuous tax risk will likely erode the firm's profit, rendering it stagnant in growth and without cash for lending (Boldycheva & Klonitskaya, 2022; Brühne & Schanz, 2022). With the substantial resources of Ghanaian banks, management can engage in aggressive tax planning activity and stay within the rubrics of Ghanaian tax laws. The contrary evidence from the findings in this study implies that Ghanaian banks are regulatory risk averse as they seem to focus more on assessing threats with little or no consideration of self-efficacy to surmount the risk. High perceived risks and a strong sense of low efficacy in managing the risk might have led to the decreasing aggressive tax planning (Popova, 2020).

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CONCLUSION AND RECOMMENDATIONS

This paper investigated the tax risk and tax planning activity nexus of banks in Ghana, considering the controlling for firm size and bank leverage. The motivation for this paper is that even though tax risk could drive tax planning activity, most studies have not given it the desired attention, especially within the Ghanaian context. Thus, the paper contributes to the body of knowledge on banks' tax risk and tax planning activities. The study is premised on the extended parallel process model to develop the theoretical bases for the relationship. The study uses data from 20 universal banks over 15 years with 300 bank years.

A dynamic GMM framework examined the nexus between tax risk and bank tax planning activity. The findings show that differential/avoidance tax risk and rolling tax risk significantly positively affect cash effective tax rate. It is therefore concluded that a high tax risk reduces aggressive tax planning activities of banks in Ghana. The findings imply that a high standard deviation risk represents a high tax uncertainty resulting in high cash tax payment, which negatively relates to firms' tax planning behaviour. Moreover, a positive lag differential makes what could ordinarily remain undetectable tax aggressiveness detectable, increasing the risk exposure. Thus, a positive mean lag differential by the Ghanaian banks could cause the banks to curtail tax planning activities and increase the tax payment behaviour.

The evidence and conclusion from the findings imply that a perceived high tax risk could improve a high tax-paying culture. Therefore, tax authorities should elicit high corporate tax compliance and improve a high tax-paying culture by enforcing regulatory sanctions. This study shows that taxpayers could be forced to curtail aggressive tax planning activities in response to perceived high tax risk. Conversely, a perceived low tax risk may also lead to aggressive tax planning. Additionally, since continuous fear of a high tax risk exposure is likely to erode the firm's profit, rendering it stagnant in growth and weak even in its lending ability in the long run, Ghanaian banks, especially the large banks with resource capacity, should develop and implement tax planning schemes and strategies to take advantage of several tax planning opportunities in the tax laws. A well-developed tax planning scheme and strategy could reduce tax risk and improve tax planning outcomes.

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