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Nexus between Tax Avoidance and Corporate Profitability in Bangladesh Banking Sector: Insights from Static and Dynamic Models

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Abstract: This paper aims to explore whether company tax avoidance enhances bank profitability in the context of Bangladesh. The study is based on a sample of 34 banks listed on the Dhaka Stock Exchange (DSE), covering the period from 2014 to 2023. The research employs panel data estimators, including Feasible Generalized Least Squares (FGLS), Prais-Winsten Panel Corrected Standard Errors (PCSE), and the Generalized Method of Moments (GMM), to examine the relationship between the variables. Confirming the political power theory, the findings demonstrate a significant positive correlation between tax avoidance and bank profitability, indicating that a higher degree of tax avoidance is associated with increased profitability. Both static and dynamic estimation approaches consistently support these results. These findings are relevant to various stakeholders. First, from a managerial perspective, executives can make more informed decisions regarding their tax strategies. Second, the results may stimulate discussions about the need for more effective tax laws and enforcement to ensure that businesses contribute their fair share of taxes to the government, which can be achieved through improved corporate governance and regulatory oversight. Third, when making investment decisions, investors can utilize this information to assess the ethical considerations and sustainability of banks' earnings streams.

Keywords: Bangladesh, banking sector, firm profitability, tax avoidance.

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INTRODUCTION

Corporate taxation constitutes a critical component of governments' budgetary policies to raise funds for providing basic public services (De Mooij et al., 2023). Legislators enact rules and suggest statutory tax rates that require companies to provide a share of the profits from their operations to fund government operations (Nebie & Cheng, 2023). Although these tax collections are crucial for delivering the products and services to the public and for the growth of the economy, they also impose a significant financial burden on businesses. From a corporate perspective, taxes represent a significant component of operational expenses, which is why many companies implement techniques to reduce their tax obligations, and one such technique

is tax avoidance. As tax avoidance impacts society and the focused corporation, in-depth research into this topic is crucial to ensure financial sustainability in both the corporations and the country.

In Bangladesh, as per the 2023 State of Tax Justice report, Bangladesh suffers an annual loss of around $387 million due to tax avoidance by individuals and transnational corporations. It lost about 1.5% of overall tax revenue, which is more than the regional average (Star, 2023). According to a report by the Tribune (2022), the tax-to-GDP ratio of Bangladesh is 7.7%, the lowest among all South Asian nations; this is despite a large number of registered taxpayers. Thus, it is indispensable to look into how and why enterprises practice tax avoidance and whether it improves or hampers business profitability, which is the objective of this study.

As far as the banking industry is concerned, a nation's economic progress is challenging without improving the banking sector's performance. In addition to providing the public and private sectors with investible capital, they also support international commerce and service payments, create jobs, receive overseas remittances, support the development of the housing sector, and strengthen the rural economy (Rashid, Begum, Hossain, & Said, 2024). So, tax avoidance by banks in Bangladesh is a substantial but largely underestimated threat to the country's long-term sustainability goals. The state's ability to accomplish the Sustainable Development Goals (SDGs) and address growing poverty, inequality, and environmental vulnerabilities is hampered by this erosion of the tax base. Furthermore, tax avoidance may undermine public confidence in financial organizations and runs counter to the ideals of responsible corporate governance. Hence, investigating the tax avoidance effects in this industry is crucial for both scholarly research and real-world applications.

Unfortunately, there is limited research on the actual connections between tax avoidance and company performance, and most studies focus on developed nations that provide conflicting empirical evidence about the relationship. Nevertheless, due to the lack of moral anxiety, tax-related issues are more acute in emerging or developing nations like Bangladesh. In this study, we examine how tax avoidance affects bank profitability in Bangladesh, an emerging economy, where no empirical research on this relationship has been conducted in the financial industry so far. Therefore, there is a broad scope of work to fill this contextual research gap in Bangladesh. To study this relationship, we concurrently employed both static and dynamic estimation methods.

The findings of the study can be helpful for many groups. First, from the executive standpoint, managers may make well-informed judgments about their tax strategies by understanding how tax avoidance may influence the financial health of a firm. Second, the results may help guide debates about the need for more applicable tax laws and enforcement to ensure that businesses pay their fair share of taxes to the government from a regulatory and policy perspective, such as improving corporate governance or enhancing regulatory oversight. Additionally, bank profitability is now a significant area of inquiry globally. Since Bangladesh is mainly a bank-based economy, there should be a tendency to examine the factors that help generate more profit. Given the extended level of competition in the banking industry, this thriving sector requires scholarly research to determine banks' tax avoidance tactics and how they relate to their financial performance (Rumaly, 2023).

THEORETICAL FRAMEWORK

To analyze the impact of tax avoidance on bank profitability, two theories are employed: "Agency Theory" (Jensen & Meckling, 1976; Ross, 1973) and "Political Power Theory" (Siegfried, 1972). Each offers a distinct perspective on the motivations, limitations, and consequences of tax avoidance in banks. Agency theory addresses the principal-agent dilemma from a financial standpoint. The principal hires agents and assigns tasks and authority to perform those tasks. An agent may not always act in the best interest of the principals due to the separation of ownership and control. The agency theory explains how conflicts between agents and principals influence tax decisions and a firm's valuation. These conflicts are particularly evident in the context of Bangladeshi banks, where corporate governance procedures are often inadequate and regulatory enforcement is inconsistent. Although tax avoidance techniques carry long-term risks, managers may employ

them to maximize short-term financial gains. Such activities can evade detection due to insufficient oversight, supporting the agency theory's assertion that tax avoidance can increase reported profitability.

Political power theory claims that large enterprises have a lower effective tax rate (ETR) than smaller firms. The following three reasons support this principle. First, large companies possess a more significant asset base, which enables them to influence the political process to their advantage, for example, through lobbying activities. Second, bigger firms have more resources to recruit and hire tax planning professionals. Third, large corporations with greater resources can better regulate their actions to maximize tax savings. The above three assumptions require more resources, and in the context of Bangladesh, banks with superior firm performance typically have more resources than those with weaker performance. Consequently, they might have a structural advantage in managing tax obligations and maintaining higher profitability through increased administrative bargaining power, improved internal networks, and access to qualified tax advisors.

EMPIRICAL LITERATURE REVIEW AND HYPOTHESES DEVELOPMENT

Profit maximization represents the primary objective of firms; therefore, organizations are likely to adopt different strategies to make a profit. *Tax avoidance* is a legal strategy that includes all transactions and arrangements that reduce a company's tax liabilities. So, rational managers engage in tax-reducing activities, leading to significant economic savings, benefiting both shareholders and managers directly or indirectly (Hasan, Lobo, & Qiu, 2021). Conversely, tax-cutting methods reduce the government's financial receipts, limiting its ability to provide social services and welfare, and disrupting social and economic stability (Graham, Hanlon, Shevlin, & Shroff, 2014). Moreover, according to International Monetary Fund (IMF) research, developing countries are three times more exposed to the detrimental consequences of tax regulations and practices than industrialized and wealthy countries (Nafti, Kateb, & Masghouni, 2020). Although tax avoidance is a legitimate strategy that benefits firms, unpaid taxes can cause the whole community to pay a high price, especially in a developing country like Bangladesh. Therefore, corporate tax dodging has recently become a topic of enormous interest because of its potential impact on a firm's profitability and on the economy.

Prior research shows that corporate tax avoidance may have both positive and negative effects on a firm's current and future profitability (Cumming & Nguyen, 2025; Wang, Xu, Sun, & Cullinan, 2020). This means empirical results on the consequences of tax avoidance on firm profitability are inconclusive (Nafti et al., 2020). For instance, Mosota (2014) examined the effects of tax avoidance on the financial performance of 61 companies listed on the Nairobi Securities Exchange (NSE) over the period of 2008 to 2013. The regression results revealed that tax avoidance, which was measured by ETR, positively influences the financial performance, measured by ROA, of the firm. That means the study used only one proxy for both tax avoidance and profitability, which may be a methodological shortcoming.

Malik and Munir (2024) studied 91 banking companies in Bangladesh, India, Pakistan, and Sri Lanka from 2010 to 2021 to ascertain if there is any link between tax dodging and corporate profitability (ROA, ROE, and EPS). The regression results suggest that tax avoidance can improve corporate performance. However, for a competitive edge, firms should improve their internal controls and management competencies. They also used only ETR to measure tax avoidance. Shubita, Alrawashedh, Shubita, and Salahaldin (2024) aimed to examine the effects of tax avoidance on the performance of Jordanian banks over 10 years. They found that tax avoidance positively correlates with ROA and ROE and suggested that tax avoidance might increase profitability, which is consistent with other research that views it as a value-maximizing tactic. However, the benefits might vary depending on the legislative and governance aspects unique to a given setting. Hence, we may conclude that tax avoidance impacts banks' financial performance, and banks that have already applied these tactics tend to have higher returns on equity and assets. The limitation of the study is that it does not include a discussion of any theories related to the variables involved, which can be considered a theoretical gap.

On the contrary, many empirical studies suggest that corporate tax avoidance has damaging effects on firm performance (Khuong, Liem, Thu, & Khanh, 2020). Chen, Cheok, and Rasiah (2016) conducted research

on 7,651 non-financial Chinese listed companies from 2004 to 2012 to examine the impact of tax avoidance on company profitability. Using structural equation modeling (SEM), they identified a significant negative relationship between tax diversion (ETR) and firm profitability (ROA) within the Chinese context. They argued that the opacity of the Chinese stock market provides management with opportunities to use tax avoidance as a tool for rent-seeking activities, which is detrimental to shareholders' interests. This study leaves a contextual gap for further research, as these findings are specific to China, a developing country, and focus on non-financial companies.

Another study on the Ghana Stock Exchange (GSE), which involved non-financial firms and was conducted by Zhu et al. (2019), revealed an adverse relationship between the tax avoidance metric (ETR) and the profitability metric (ROA). They conclude that, given the professionalism and experience exhibited, tax avoidance may result in increased profitability. To achieve the desired results of such strategies, they recommended that, since the board is better positioned to influence management's decisions and actions, a corporation should have a strong corporate governance framework.

Using a sample of 1180 Vietnamese listed firms from 2018 to 2022, Binh and Hui (2023) found that two proxies of tax avoidance, ETR (Effective Tax Rate) and CETR (Cash Effective Tax Rate), have negatively influenced firm profitability in terms of ROE. The results showed that firms with low operating efficiency frequently avoid taxes. A study on all insurance companies in Ghana, both life and non-life (35 in total), from 2012 to 2017, was conducted by Tackie, Agyei, Bawuah, Adela, and Bossman (2022). The study aimed to examine how tax avoidance affected the performance of Ghanaian insurance companies using the system generalized method of moments (GMM) framework. The study found a significant negative association between insurance companies' profitability, as measured by return on equity (ROE) and return on assets (ROA), and tax planning as evaluated by the effective tax rate (ETR). Thus, prior studies predominantly utilize either static or dynamic estimators to test the hypotheses.

In a study conducted by Khuong et al. (2020), a sample of Vietnamese-listed firms from 2010 to 2016 was analyzed. The study employed a broad range of tax-sheltering and performance indicators, revealing mixed results regarding the relationship between tax strategies and firm performance. For instance, effective tax rate (ETR) and book-tax difference (BTD) were found to be negatively correlated with return on assets (ROA) and return on equity (ROE). Conversely, the cash effective tax rate (CETR) was positively associated with these profitability measures. The authors argued that tax avoidance does not have a uniformly advantageous or detrimental effect; rather, its impact depends significantly on the specific measure used, the underlying motivations, and the transparency of the firm's tax practices. Additionally, the Vietnamese regulatory environment, characterized by evolving policies and market structures, may influence these relationships, raising questions about the applicability of the findings to other emerging or developed economies. Beyond existing theoretical, methodological, and contextual gaps, prior research has documented elevated levels of tax avoidance, which can have both positive and negative effects on firm profitability. The influence of tax avoidance strategies on corporate profitability varies across countries, likely due to differences in tax laws, enforcement practices, and institutional frameworks that shape the risks and rewards associated with such strategies. Most studies, however, indicate a generally positive impact of tax avoidance on firm profitability. Based on these insights and the theoretical frameworks discussed, the study hypothesizes the effects of tax avoidance on bank profitability, measured through ROA and ROE, as follows:

H1: Tax avoidance has a significant positive association with ROA.

H2: Tax avoidance has a significant positive association with ROE.

METHODOLOGY

Sample

The study utilized panel data from 34 banks listed on the DSE in Bangladesh, covering the period from 2014 to 2023. The dataset comprises 340 firm-year observations (34 banks * 10 years), collected from the audited annual reports of the sample banks. Currently, there are 36 DSE-listed banks in Bangladesh. However, the study excludes NRB Bank from the sample because it was enlisted in 2024. Additionally, another bank, ICB

Islami Bank Ltd., was excluded due to negative equity values over the study period. The study's sample period begins in 2014 because some of the listed banks commenced operations in 2013.

Independent Variable (Tax Avoidance)

Since corporate tax returns are very private and unlikely to be made public, we can only estimate the company's tax returns using a variety of empirical proxies based on information readily available to the public (Yee, Sapiei, & Abdullah, 2018). To measure tax avoidance, this study considers three metrics: book-tax difference (BTD), current effective tax rate (ETR), and cash effective tax rate (CETR). The formula for BTD used in this study was adopted from (Harun et al., 2023) and is calculated as follows.

$$\text{BTD}_{\text{it}} = \frac{(\text{NIBT} - \text{taxable income})_{\text{it}}}{\text{Lagged total assets}} \quad (1)$$

Here,

NIBT = Net income before tax or pre-tax income of bank i in time period t.

Taxable income = Current tax expense/tax rate of bank i in time period t.

Lagged total assets = One-year lagged assets calculated as Assets_{t-1}.

Banks with a greater degree of tax avoidance have a larger BTD.

The formula for ETR in this study was adopted from (Nafti et al., 2020) and is calculated as follows.

$$\text{ETR}_{\text{it}} = \frac{\text{Tax Expense}_{\text{it}}}{\text{NIBT}_{\text{it}}} \quad (2)$$

And cash ETR (CETR) will be calculated by the formula given below following (Lanis & Richardson, 2015).

$$\text{CETR}_{\text{it}} = \frac{\text{Total Cash Tax Paid}_{\text{it}}}{\text{NIBT}_{\text{it}}} \quad (3)$$

As the higher ETR and CETR show less tax aggressiveness, they are multiplied by -1 to generate an increasing metric of tax avoidance (Lanis & Richardson, 2018).

Dependent Variable (Firm Profitability)

We use return on assets (ROA) and return on equity (ROE) as proxies for bank profitability. ROA is calculated as the ratio of net profit to total assets (Malik & Munir, 2024) and provides information on management effectiveness and the efficient use of assets. ROE is the net profit to shareholders' equity (Binh & Hui, 2023) and is a commonly used metric in research. In the eyes of shareholders, ROE is a better indicator of a company's operational performance.

Control Variables

This study uses five (5) control variables: firm size, leverage, board size, capital intensity, and revenue growth (Jarboui, Kachouri Ben Saad, & Riguen, 2020; Taylor & Richardson, 2012; Wahab & Holland, 2015).

Bigger banks could take advantage of tax loopholes or engage in tax planning since their portfolios are more diverse (Malik & Munir, 2024). That's why firm size (FSize) is used as a control variable, which is calculated by taking the natural logarithm of the book value of total assets (Rashid & Hossain, 2022). Another control variable in this study is leverage (LEV), which has a significant positive link with tax avoidance according to previous empirical research because interest payments lessen the tax burden of the banks. The ratio of total liabilities to total assets is known as leverage (Mao & Wu, 2018). Board size (BSize) may have an impact on how well the board of directors (BOD) monitors management, which in turn may have an impact on the profitability of the company and other firm policy choices, such as the tax planning strategy. The number of members on the BOD is known as the board size, which is another control variable.

High capital intensity (CINT) banks might create more options for tax avoidance through accelerated depreciation and asset placement. Capital intensity is measured with the formula of net property, plant, and equipment (PPE) divided by lagged total assets (Taylor & Richardson, 2012). A high growth rate in the past may indicate better growth possibilities down the road, which could help improve the banks' financial worth. Annual revenue growth (referred to as GROWTH) is used as a proxy for growth opportunities. GROWTH calculates the percentage change in overall revenues from the prior year to the current one with the formula:

[(current year operating revenues – previous year operating revenues) / previous year operating revenues] (Oanh, 2021).

Estimation Strategy

This study employs three models with three different proxies of the independent variable tax avoidance to achieve research objectives, following Dyreng, Hanlon, and Maydew (2008); Hanlon and Heitzman (2010); Rashid et al. (2024), and Khuong et al. (2020). Model 1 examines the effects of ETR on firm profitability. Model 2 reflects the impact of CETR, while Model 3 measures the influence of BTD on profitability. Therefore, we have six (6) models in total: three models for ROA and three models for ROE.

Panel data regression encompasses three primary methodologies: pooled OLS, fixed effects model (FEM), and random effects model (REM). For each of our six models, we estimated these panel regression methods along with the necessary pre- and post-estimation diagnostic tests. These included tests for potential multicollinearity bias, autocorrelation, heteroscedasticity, and cross-sectional dependence. While the regression results are omitted for brevity, all relevant diagnostic tests were implemented: Pesaran's CD test for cross-sectional dependence, Wooldridge test for autocorrelation, the modified Wald test (FEM), and the panel group-wise test (xtreghet model) for heteroscedasticity. The results, as displayed in Tables 1 and 2, indicate that the data exhibit significant autocorrelation, heteroscedasticity, and cross-sectional dependence, which may impact the robustness of standard error estimates and inference. However, the VIF statistic and the correlation matrix in Tables 3 and 4 have shown overall correlations among the variables, ruling out multicollinearity problems by Gujarati and Porter (2009). Although the correlation matrix indicates that ETR and BTD are correlated above .80, this does not raise multicollinearity concerns since these variables are not included together in the same model.

Considering the issues identified in the basic panel regression models through the suitable post-estimation diagnostic tests, we used robust regression models. Here, we employed panel FGLS (Feasible Generalized Least Squares) regression and regression using Prais-Winsten PCSE (Panel Corrected Standard Errors) estimators. Since we discovered evidence of cross-sectional dependence along with heteroscedasticity and serial correlation in basic panel regression models, we used FGLS and PCSE, which can account for all three issues, instead of robust FE and robust RE, since robust FE and RE are unable to account for cross-sectional dependence (Beck & Katz, 1995).

Additionally, the robustness of two static models, FGLS and PCSE, has been evaluated using a dynamic model known as a two-step system GMM (Generalized Method of Moments), proposed by Arellano and Bover (1995). The two-step system GMM method yields a more accurate estimate in comparison to static panel data models, this is because, in contrast to the static model, GMM successfully manages simultaneity, time-invariant unobserved heterogeneity, omitted variable bias and potential dynamic endogeneity by using lagged dependent variables (in this case, ROE and ROA) as independent variables (Hossain & Golder, 2022). We preferred system-GMM over first-difference GMM since the first-difference method is ineffective with small sample sizes, and system-GMM yields more accurate estimation results because it employs more instruments and combines regressions in levels and first differences (Levin, Lin, & Chu, 2002).

Specification of the FGLS and PCSE regression models to determine whether corporate tax avoidance and bank profitability are related is as follows.

$$Y_{it} = \alpha_0 + \beta_1 TA_{it} + \beta_2 FSize_{it} + \beta_3 LEV_{it} + \beta_4 BSize + \beta_5 CINT + \beta_6 GROWTH + \beta_7 FFE\ DUMMY_{it} + \beta_8 YEAR\ DUMMY_{it} + \mathcal{E}_{it} \quad (4)$$

Where, Y denotes the dependent variables of the ith bank at time period t, such as ROA and ROE for profitability, and TA is a proxy for ETR, CETR, and BTD; = constant; to are the coefficients of the variables; = error term. FFE the firm fixed effect dummy, and the YEAR dummy is the time fixed effect dummy. The time (Year) fixed effects capture the time trend effects throughout the period considered, and the firm fixed effects account for the heterogeneous unobserved components across the firms. The model's output can be skewed if these dummy variables are removed (Desai & Dharmapala, 2009).

Specification of the System GMM model is as follows.

$$Y_{it} = \alpha_0 + \beta_1 Y_{it-1} + \beta_2 TA_{it} + \beta_3 FSize_{it} + \beta_4 LEV_{it} + \beta_5 BSize + \beta_6 CINT + \beta_7 GROWTH + \beta_8 FFE\ DUMMY_{it} + \beta_9 YEAR\ DUMMY_{it} + \varepsilon_{it} \quad (5)$$

Where, Y_{it-1} represents the lagged performance variables (e.g., ROA_{it-1}, ROE_{it-1}).

Table 1: Diagnostic Tests of autocorrelation and cross-sectional dependence for 6 models

Tests and reported statistics	Wooldridge autocorrelation test (F Stat)	Pesaran, Schuermann, and Weiner (2004) CD test for cross-sectional dependence (CD Stat)
Model 1(ETR on ROA)	73.273*** (0.000)	-1.747 (0.081)
Model 2(CETR on ROA)	98.198*** (0.000)	-1.543 (0.123)
Model 3(BTD on ROA)	65.875*** (0.000)	-1.829 (0.067)
Model 1(ETR on ROE)	58.391*** (0.000)	-1.916 (0.055)
Model 2(CETR on ROE)	60.038*** (0.000)	-2.018** (0.044)
Model 3(BTD on ROE)	52.428*** (0.000)	-1.868 (0.062)

Note: Significance level: ***1%, **5%, (P- values are in brackets)
Source: Compiled by the researcher from STATA output

Table 2: Panel GroupWise Heteroscedasticity Tests Results [REM]

Dependent Variable	Test Type	Statistic	P-value
Return on Assets (ROA)			
Model 1 (with ETR)	Lagrange Multiplier (LM) Test	2.78×10^4	0.0000
	Likelihood Ratio (LR) Test	132.3466	0.0000
	Wald Test	1.40×10^5	0.0000
Model 2 (with CETR)	Lagrange Multiplier (LM) Test	3.30×10^4	0.0000
	Likelihood Ratio (LR) Test	162.8254	0.0000
	Wald Test	4.00×10^5	0.0000
Model 3 (with BTD)	Modified Wald Test [FEM]	1613.85	0.0000
Return on Equity (ROE)			
Model 1 (with ETR)	Lagrange Multiplier (LM) Test	2.98×10^4	0.0000
	Likelihood Ratio (LR) Test	120.8181	0.0000
	Wald Test	2.28×10^5	0.0000
Model 2 (with CETR)	Lagrange Multiplier (LM) Test	2.93×10^4	0.0000
	Likelihood Ratio (LR) Test	121.8578	0.0000
	Wald Test	2.34×10^5	0.0000
Model 3 (with BTD)	Lagrange Multiplier (LM) Test	2.49×10^4	0.0000
	Likelihood Ratio (LR) Test	103.2149	0.0000
	Wald Test	1.00×10^5	

Source: Compiled by the researcher from STATA output

Table 3: Variance inflation factor (VIF)

Variables	VIF	1/VIF
ETR	4.20	0.238
BTD	3.99	0.251
FSize	1.75	0.572
LEV	1.53	0.652
CETR	1.31	0.763
GROWTH	1.35	0.741
Bsize	1.14	0.877
CINT	1.12	0.892
Mean VIF	1.95	

Source: Compiled by the researcher from STATA output.

Table 4: Pearson Correlation Matrix

Variables	ROA	ROE	ETR	CETR	BTD	GROWTH	FirmSize	Bsize	CINT	LEV
ROA	1									
ROE	0.788***	1								
ETR	0.338***	0.211***	1							
CETR	0.251***	0.205***	0.375***	1						
BTD	0.396***	0.247***	0.852***	0.266***	1					
GROWTH	0.222***	0.196***	-0.032	0.254***	-0.010	1				
FSize	-0.389***	-0.122**	-0.125**	-0.112**	-0.178***	-0.347***	1			
Bsize	0.069	-0.029	-0.086	0.015	-0.009	0.141***	-0.291***	1		
CINT	-0.045	-0.169***	0.009	-0.003	0.079	0.094*	-0.005	0.091*	1	
LEV	-0.592***	-0.126**	-0.166**	-0.112**	-0.201***	-0.068	0.539***	-0.216***	-0.144***	1

Note: Significance level: ***1%, **5% and *10%.
Source: Compiled by the researcher from STATA output.

RESULTS AND DISCUSSION

Descriptive Statistics

In this study, two dependent variables are used as proxies for a firm's profitability, and there are eight independent variables, including five control variables.

Figure 1 shows the mean values of the DSE-listed banks' profitability proxies (ROA and ROE) from 2014 to 2023. From 2014 to 2016, both variables showed an upward trend, and they took a downward trend in the next four years, which may be due to several factors, including a rise in non-performing loans, a slowdown in the economy, changes in regulations, and the COVID-19 pandemic, which further decreased banks' returns on equity and assets. However, these measures showed an increasing trend again from 2021 to 2023.

Figure 2 shows the mean values of banks' tax avoidance proxies (Current ETR, Cash ETR, and BTD) from 2014 to 2023. It is clear that all three variables exhibit comparable patterns. The first one-third of this period saw rising tendencies, followed by a sharp decline in the subsequent years, and in the following years, these values were quite volatile. These trends in tax avoidance have been attributed to a combination of factors encompassing regulatory changes, economic pressures, weak enforcement, and post-pandemic recovery.

Table 5 reveals summary statistics that include the mean, standard deviation, minimum, and maximum of all the variables considered in this study from 2014 to 2023, with 340 observations in total, representing 34 banks. The average return on assets over the period is 0.827, which ranges between 0.01 and 1.93. A high standard deviation, which is 0.435, suggests that ROA is quite volatile.

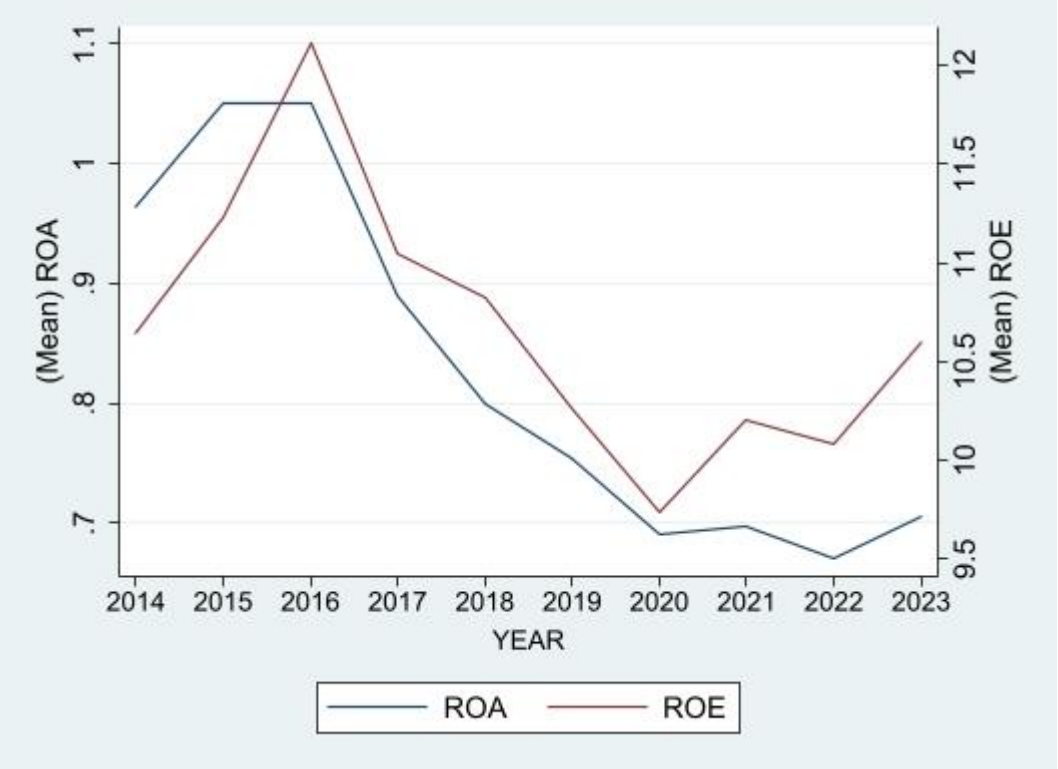

Figure 1: Mean value of banks' profitability from 2014 to 2023

Source: Compiled by the researcher from STATA output.

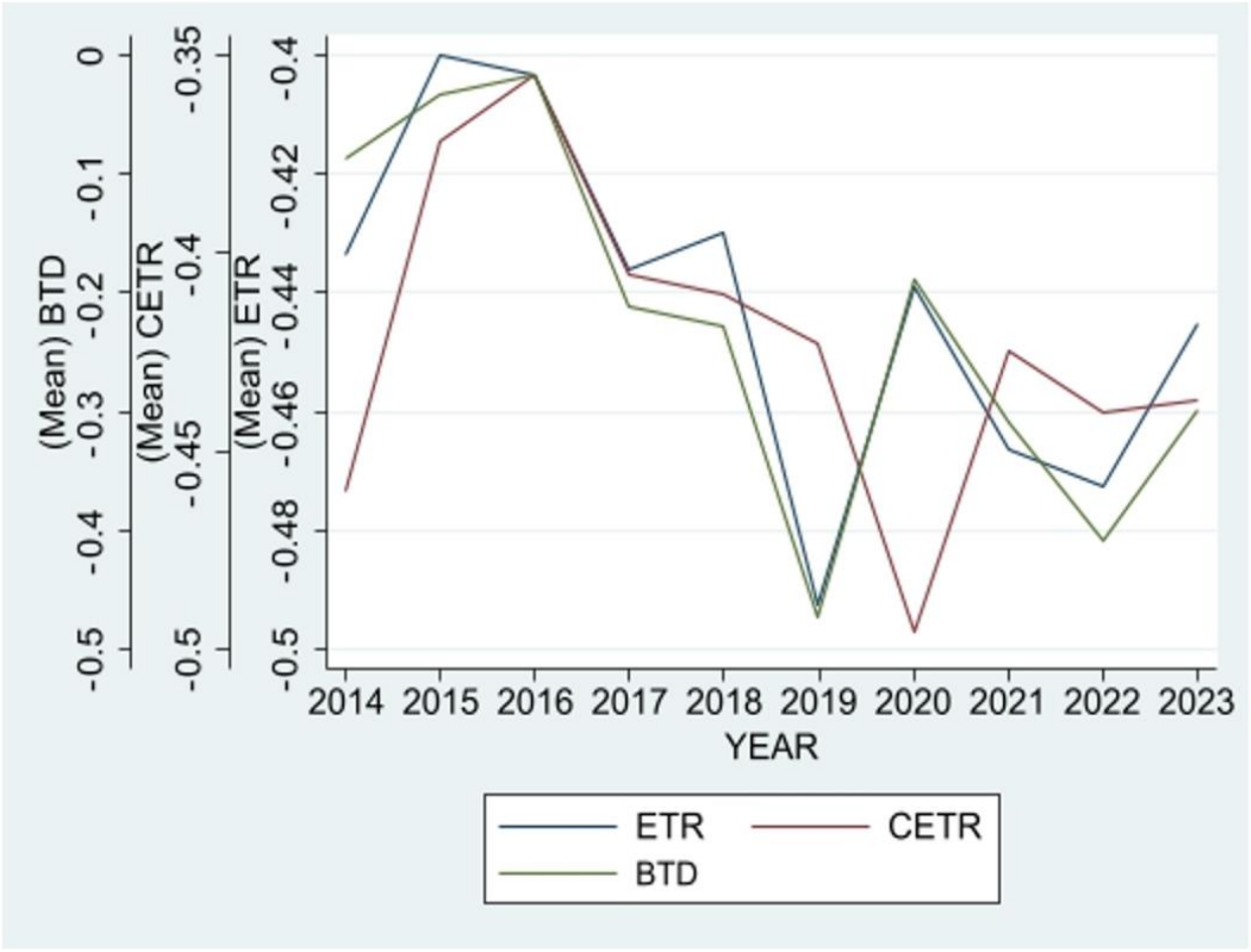

Figure 2: Mean value of banks' tax avoidance from 2014 to 2023.
Source: Compiled by the researcher from STATA output.

The mean ROE is 10.674, indicating that the banks achieved more than 10 percent profit. The standard deviation is 4.301, which indicates that the ROE also experienced a high volume of fluctuations.

Table 5: Descriptive Statistics

Variable	N	Mean	Std. Dev.	Minimum	Maximum
ROA	340	0.827	0.435	0.01	1.93
ROE	340	10.674	4.301	0.38	19.00
ETR	340	-0.442	0.112	-0.627	-0.209
CETR	340	-0.422	0.168	-0.747	0.000
BTD	340	-0.225	0.426	-0.935	0.726
GROWTH	340	0.113	0.118	-0.085	0.369
FirmSize	340	12.47	0.591	11.113	13.35
Bsize	340	2.627	0.313	1.946	3.045
CINT	340	-4.119	0.458	-5.265	-2.938
LEV	340	0.926	0.021	0.882	0.961

Source: Compiled by the researcher from STATA output.

Among the independent variables, including five control variables, the table shows the mean value of current ETR (multiplied by -1) is -0.442, with a minimum value of -0.627 and a maximum value of -0.209. It indicates that DSE-listed banks in Bangladesh are paying an average tax rate of 44 percent on their current

income. Similarly, the mean value of cash ETR (multiplied by -1) is -0.422, with a minimum value of -0.747 and a maximum of 0.0000. This suggests that banks pay approximately 42 percent in cash taxes on their yearly income. BTD has an average value of -0.225, with a minimum of -0.935 and a maximum of 0.726. The standard deviations of ETR, CETR, and BTD are 0.112, 0.168, and 0.426, respectively, indicating significant variation in tax avoidance amounts among banks.

The average revenue growth of the sampled banks was above 11 percent during the study period. However, some banks experienced negative growth during this period. The mean value of firm size indicates that most banks are of a large size. The logarithm of board size is used to minimize variability and improve interpretability and comparability. For capital intensity (CINT), the log form has been used for better control of skewed data and to make the analysis more manageable. The negative mean of CINT suggests that the total value of property, plant, and equipment (PPE) is a small proportion of the total assets of a bank, indicating that banks are likely to rely less on physical assets. The mean value of leverage indicates that the banks are heavily reliant on debt to finance their operations, as debt funded 92.6 percent of their assets.

Regression Outcome

Tables 6 and 7 present the data-based findings of the FGLS, PCSE, as well as system GMM regression models that demonstrate the effects of tax avoidance on banks' profitability. Time and firm fixed effects are included in all results, but parameter values are not shown. Our results support the idea that, to avoid holding too many instruments that degrade the estimates, the number of groups in the GMM estimation should be greater than the number of instruments.

Table 6: Estimations on ROA

IV & CV	Model 1 (ETR)			Model 2 (CETR)			Model 3 (BTD)		
	FGLS	PCSE	GMM	FGLS	PCSE	GMM	FGLS	PCSE	GMM
L1ROA			0.617***			.584***			.531***
			-0.088			-0.118			-0.113
ETR	0.724***	0.756***	.496***						
	-0.132	-0.175	-0.166						
CETR				0.369***	0.384***	0.226*			
				-0.071	-0.091	-0.136			
BTD							0.233***	0.277***	0.169***
							-0.037	-0.056	-0.049
GROWTH	0.406***	0.570***	0.986***	0.292***	0.416**	0.942***	0.438***	0.618***	0.988***
	-0.106	-0.166	-0.186	-0.106	-0.164	-0.238	-0.101	-0.163	-0.219
FSize	0.071	-0.042	0.02	0.095	-0.049	0.006	0.063	-0.086	0.006
	-0.109	-0.159	-0.029	-0.109	-0.17	-0.036	-0.117	-0.164	-0.038
Bsize	0.109	0.169	0.003	0.126	0.175	-0.019	0.064	0.124	-0.007
	-0.103	-0.115	-0.053	-0.1	-0.129	-0.062	-0.097	-0.119	-0.084
CINT	-0.193***	-0.282***	-0.04	-0.217***	-0.300***	-0.055	-0.196***	-0.256**	-0.059
	-0.063	-0.103	-0.042	-0.063	-0.101	-0.051	-0.061	-0.099	-0.045
LEV	-9.232***	-7.764***	5.719***	-9.845***	-8.298***	-6.199***	-8.558***	-6.581***	-6.411***
	-1.431	-2.042	-1.314	-1.408	-2.153	-1.769	-1.439	-1.954	-1.606
IV & CV	**Model 1 (ETR)**			**Model 2 (CETR)**			**Model 3 (BTD)**		
	FGLS	**PCSE**	**GMM**	**FGLS**	**PCSE**	**GMM**	**FGLS**	**PCSE**	**GMM**
Constant	7.344***	6.841***	5.349***	7.337***	7.201***	5.885***	6.649***	6.250***	5.984***
	-1.897	-2.289	-1.172	-1.889	-2.551	-1.48	-1.939	-2.29	-1.404
Firms	34	34	34	34	34	34	34	34	34
Observations	340	340	340	340	340	340	340	340	340
Firm & Year effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
R^2	-	0.6091	-	-	0.5908	-	-	0.6237	-
Prob > χ^2	-	0	0	-	0	0	-	0	0
Instruments	-	-	24	-	-	24	-	-	24
AR (1)	-	-	-3.91***	-	-	-3.42***	-	-	-3.28***
AR (2)	-	-	-0.87	-	-	-1.06	-	-	-1.27
Sargan test	-	-	7.32	-	-	5.23	-	-	8.12
Hansen test	-	-	10.33	-	-	9.64	-	-	10.42

Note: Significance level: ***1%, **5% and *10%. Figures in parentheses indicate robust standard errors.

Table 7: Estimations on ROE

IV & CV	Model 1 (ETR)			Model 2 (CETR)			Model 3 (BTD)		
	FGLS	PCSE	GMM	FGLS	PCSE	GMM	FGLS	PCSE	GMM
L1ROE			0.476***			0.463***			0.468***
			-0.062			-0.065			-0.06
ETR	8.102***	7.519***	5.421**						
	-1.603	-2.169	-2.226						
CETR				5.327***	5.116***	3.865*			
				-0.924	-1.164	-2.14			
BTD							2.399***	2.543***	1.847***
							-0.433	-0.615	-0.457
GROWTH	4.426***	5.737***	11.965***	2.539**	3.853**	10.529***	4.514***	6.213***	11.809***
	-1.295	-1.879	-1.921	-1.286	-1.858	-2.373	-1.248	-1.965	-1.638
FSize	1.563	1.55	0.265	2.373**	1.721	0.218	1.468	1.079	0.159
	-1.239	-1.899	-0.401	-1.175	-1.945	-0.432	-1.342	-0.164	-0.421
Bsize	1.983	0.702	-0.044	2.375**	0.829	-0.436	1.911	0.274	-0.082
	-1.272	-1.355	-0.919	-1.204	-1.491	-0.875	-1.242	-1.411	-0.999
CINT	-2.953***	-3.458***	-0.976	-3.076***	-3.691***	-1.118	-2.854***	-3.215***	-1.029
	-0.787	-1.167	-0.849	-0.786	-1.134	-0.789	-0.774	-1.149	-0.826
LEV	-26.423	-21.611	-19.737	-37.287**	-27.851	-19.672	-21.037***	-12.988	-18.622
	-16.928	-22.838	-13.158	-16.391	-23.392	-12.595	-17.258	-23.456	-12.449
IV & CV	**Model 1 (ETR)**			**Model 2 (CETR)**			**Model 3 (BTD)**		
	FGLS	**PCSE**	**GMM**	**FGLS**	**PCSE**	**GMM**	**FGLS**	**PCSE**	**GMM**
Constant	-3.739	-8.094	18.141	-5.839	-6.109	18.993*	-9.8	-10.923	16.551
	-22.183	-25.334	-11.236	-21.694	-25.753	-10.386	-22.958	-26.596	-11.887
Firms	34	34	34	34	34	34	34	34	34
Observations	340	340	340	340	340	340	340	340	340
Firm & Year effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
R^2	-	0.4767	-	-	0.4786	-	-	0.4818	-
Prob > χ^2	-	0	0	-	0	0	-	0	0
Instruments	-	-	24	-	-	24	-	-	24
AR (1)	-	-	-4.00***	-	-	-3.86***	-	-	-3.92***
AR (2)	-	-	-0.11	-	-	-0.2	-	-	-0.35
Sargan test	-	-	3.63	-	-	3.51	-	-	3.34
Hansen test	-	-	5.82	-	-	6.6	-	-	4.85

Note: Significance level: ***1%, **5% and *10%. Figures in parentheses indicate robust standard errors.

Two different tables presented the estimations of the profitability measure, ROA, and the estimations of the other measure, ROE, to examine hypotheses 1 and 2, respectively. Results of control variables and various test statistics confirmed the model's fitness and robustness of outcomes.

Table 6 exhibits the impact of tax avoidance proxies on bank profitability through the ROA, and the results are related to hypothesis one: tax avoidance has a significant positive association with ROA. In GMM estimations, with coefficient values of 0.617, 0.584, and 0.531, respectively, in models 1, 2, and 3, demonstrating that the lag-dependent variable is positive and strongly significant at the 1% level. It reveals a positive correlation between the present value of ROA and its previous value and indicates the existence of dynamic endogeneity by demonstrating that the historical performance metrics of banks under examination significantly explain ($p < 0.01$) their current performance.

Based on the results in Table 6, in Model 1, the coefficients of ETR are positive for ROA, and the associations are statistically significant under all three estimators FGLS, PCSE, and system GMM. Then, in Model 2, CETR's coefficients are also positively related to ROA and are statistically significant as per all the estimators. Following the same pattern, the coefficients of BTD, presented in Model 3, showed a positive relationship with ROA, and this result is also statistically significant under all the static and dynamic models. Therefore, results using three proxies of tax avoidance confirm that a rise in tax avoidance has increased the profitability of Bangladeshi sampled banks in terms of ROA during the study period, and are confirmed by both static and dynamic estimations, which show that the impacts are significant. Because tax avoidance reduces a bank's tax burden, and the unpaid tax contributes to the company's profit. This result supports our hypothesis one (H1).

Table 6 also presents the results relating to the coefficients of the control variables used in this study. The coefficients of the GROWTH variable indicate that the revenue growth of the sampled banks has a positive and statistically significant effect on ROA. FSize and Bsize have no significant impact on ROA over the period, and both static and dynamic estimators have confirmed this outcome. CINT has a negative and statistically significant association with ROA using FGLS and PCSE estimations. Leverage also shares a negative but strongly significant relationship with ROA, as confirmed by all the estimators.

As Table 6 shows, the R^2 value for PCSE estimation in our study indicating the percentage of the dependent variable's variance attributable to the independent variables is between 0.5908 and 0.6237. This suggests that the proposed model has reasonable explanatory power. It indicates that approximately 60 to 62% of the variation in profitability, as measured by ROA, can be explained by factors such as tax avoidance, revenue growth, bank size, board size, capital intensity, and leverage. Furthermore, as Table 6 illustrates, the Hansen J and Sargan test estimates are insignificant across all models. These test results imply that the instruments are appropriately specified and that the model employed is valid. According to Table 6, the Arellano–Bond AR(1) and AR(2) estimations are significant and insignificant, respectively, indicating no correlation between the lagged performance variables and the error terms in the model of tax-avoidance banks' performance. Consequently, the two-step GMM approach is valid and has yielded consistent results regarding tax avoidance and banks' profitability.

The empirical results of regression analysis for checking the impact of three proxies of tax avoidance on profitability, evaluated by return on equity (ROE), are displayed in Table 7, and these results are associated with the 2nd hypothesis - tax avoidance has a significant positive relationship with ROE (H2).

Table 7 indicates that the one-period lag has a considerable impact on return on equity (ROE). As per GMM estimation, the coefficients of the lagged variable are statistically significant. That means a bank's profitability, indicated by the ROE for the current year, is influenced by the ROE for the previous year. A bank can demonstrate a track record of profitability and efficient use of equity when it consistently generates high ROE over several years.

The outcomes of this estimation also show that ETR has an optimistic and statistically significant relationship with ROE according to both static and dynamic methods. The table presents that CETR is positively and significantly related to ROE. The third proxy of tax avoidance, BTD, has also established a positive and significant association with ROE under all three estimation techniques. This positive association between tax avoidance and the ROE of banks in Bangladesh implies that by minimizing tax liabilities, banks

can boost profitability, thereby enhancing shareholder returns. Banks may have more money to reinvest in their business operations due to tax savings, which could improve their overall financial performance. Higher returns for shareholders could result from this, reflected in ROE. This result provides support for our second hypothesis (H2). The effects of control variables show a similar type of result here as is evident in the models of ROA.

Table 7 also demonstrates that the R^2 value of PCSE estimation ranges from 0.4767 to 0.4818, which indicates that the explanatory power of the proposed model is adequate. In terms of GMM estimation, the estimates from the Hansen J and Sargan tests, Arellano–Bond AR(1) and AR(2) estimates, suggest that the model used is valid and the instruments are properly defined. Hence, it can be confidently stated that the two-step GMM technique is appropriately deployed here.

To summarize, the study discovered a significant positive relationship between tax avoidance and firm profitability, suggesting that the higher the tax avoidance amount of a bank, the greater its profitability. The findings are consistent with Shubita et al. (2024), who stated that the positive effect of tax avoidance might be attributed to effective tax liability management, enabling banks to retain more of their profits and improve their financial metrics. These findings are also supported by political power theory, which posits that firms generating higher profits have the resources to recruit and hire tax planning experts to exploit tax loopholes for tax savings and to influence the political process in their favor, such as through favorable policies and lobbying.

The results are also consistent with the findings of several previous studies (Malik & Munir, 2024; Mosota, 2014), which indicate that unrelenting taxes can increase a company's earnings as tax avoidance strategies may reduce its tax liabilities. These findings, however, contrast with some earlier studies that identified a negative relationship between these variables (Chen et al., 2016; Hossain, Ali, Islam, Ling, & Fung, 2024). Based on the findings of our study, it can be inferred that tax avoidance tactics may significantly influence the profitability of DSE-listed banks in Bangladesh, and these tactics appear to have a positive impact on bank profitability.

CONCLUSION AND IMPLICATIONS

One of the most crucial decisions a firm makes is tax planning. According to Desai and Dharmapala (2009), studies on emerging economies are necessary for better insights into the effects of corporate tax avoidance. To address this call, the present study aims to empirically examine how tax avoidance affects the profitability of Bangladeshi banks and enriches the body of knowledge relating to emerging economies. This study reveals that tax avoidance helps boost bank profitability, cash flows, and facilitates investment opportunities as well as return on assets and equity.

Tax avoidance is legal, though unethical; this study, consistent with prior literature, finds that tax planning strategies significantly improve bank profitability. Nevertheless, bank executives and regulators must rigorously evaluate the implications of tax avoidance practices and look at other ways to increase bank economic performance because the country loses a large amount of revenue due to the use of tax avoidance tactics by the DSE-listed banks in Bangladesh, reducing government funds available for sustainable development initiatives like education, healthcare, and infrastructure. Furthermore, these unethical practices (aggressive tax avoidance) may entail reputational risk, regulatory penalties, and eroded investors' trust, potentially impairing the long-term firm value and sustainability of the banks. Connecting sustainability and taxation promotes a more comprehensive understanding of ESG (Environmental, Social, and Governance) accountability, where paying one's fair share of taxes is viewed as a social duty that is necessary for equitable and resilient national development.

Therefore, the study has policy ramifications for government officials, academics, and bank managers regarding corporate governance, the reconciliation of effective tax rates, and the disclosure of tax expenses. A sound corporate governance system is crucial for preventing undue tax avoidance. Policymakers, such as the National Board of Revenue (NBR) and Bangladesh Bank (BB), should also outline a policy framework for

proper tax planning. On the other hand, bank managers need to stop misusing rising cash flows and complexity.

However, it is imperative to recognize that this research has certain limitations. This research focuses only on the Bangladeshi banking industry. Therefore, it is essential to acknowledge that our findings might not apply to other countries or non-financial sectors, as their operational practices may differ. In light of the constraints of this study, future researchers may consider a cross-country inquiry with diverse organizations to obtain a robust conclusion. We expect that in future studies, ethical issues should receive special consideration.

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