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Unveiling the Link Between Leverage and Firm Performance: A Comparative Analysis of Sharia and Non-Sharia Compliant Firms in the Indonesia Stock Exchange

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ABSTRACT

This study investigates the influence of leverage on the performance of non-financial sector companies listed on the Indonesia Stock Exchange between 2012 and 2021. The analysis is segmented into three subsets: all companies, Sharia-compliant firms, and non-Sharia-compliant firms. Leverage is gauged through four metrics: debt to total asset ratio (DAR), debt to total equity ratio (DER), short-term debt to total assets (STD), and long-term debt to total assets (LTD). Firm performance is evaluated using return on assets (ROA), return on equity (ROE), and Tobin's Q. The study employs a quantitative approach, utilizing data from publicly listed companies. Leverage and performance are quantified using the specified metrics. Statistical analyses, including regression models, are conducted to examine the relationship between leverage and performance in each of the three subsets. The primary findings indicate a negative and statistically significant correlation between leverage and firm performance, as measured by ROA and ROE, across all company subsets. However, there is a positive and statistically significant impact of leverage on Tobin's Q. A more detailed analysis within the Sharia-compliant subset reveals a negative impact of leverage on all leverage indicators concerning ROA and ROE. In contrast, within the non-Sharia-compliant subset, leverage has a negative and statistically significant influence on ROA and ROE, but a positive and statistically significant effect on Tobin's Q. These empirical findings suggest that leverage has a detrimental and statistically significant association with a firm's accounting performance, as evidenced by ROA and ROE. However, it exerts a positive and statistically significant effect on the firm's market performance, as indicated by Tobin's Q. This underscores the importance of carefully managing leverage, particularly for firms operating within the Indonesian non-financial sector, to strike a balance between accounting and market performance objectives..

Keywords: Financial Leverage, Financial Performance, Sharia and Non-Sharia Compliant Firms

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INTRODUCTION

The emergence of major theories regarding capital structure, such as trade-off theory (Modigliani & Miller, 1958, 1963), pecking order theory (Myers & Majluf, 1984), and free cash flow theory (Jensen, 1986), which presents various perspectives, makes this topic interesting research to be studied continuously for almost more than six decades (Cerkovskis et al., 2022; Chakrabarti & Chakrabarti, 2019; Mai et al., 2021). The source of funding derived from debt, known as financial leverage, has been a long debate in determining the optimal capital structure for the company. The greater the funding sourced from debt, the greater the level of financial leverage (Kenn-Ndubuisi & Joel, 2019). The focus of researchers in this topic is the study of how and what affects the optimal funding structure and the effect of financial leverage on company performance.

A series of previous studies have provided mixed evidence supporting the positive, negative, or unrelated effects of leverage use in a company's capital structure. Mai et al., (2021), Rahim et al., (2021), Shahar & Shahar, (2015) provide empirical evidence that there is a positive relationship between leverage and financial performance. Several other studies have also shown a negative relationship between leverage and financial performance (Aidoo et al., 2022; Alim et al., 2022; Bui, 2020; Kenn-Ndubuisi & Joel, 2019; Raza, 2013). Even some are unable to prove leverage's effect on company performance (Li et al., 2019; Musa & Ibrahim, 2022).

In the mapping carried out in previous studies, studies have been conducted in various countries and diverse industrial sectors. Another interesting characteristic is the study of companies classified as sharia and non-sharia compliant. Ho & Mohd-Raff, (2019), Mai et al., (2021), Rahim et al., (2021), Shahar & Shahar (2015) researched Sharia-compliant firms and generally found a negative relationship between leverage and corporate financial performance. Meanwhile, non-sharia-compliant firms show a positive relationship (Ho & Mohd-Raff, 2019; Shahar & Shahar, 2015).

Indonesia is known as one of the countries with the largest Muslim population (Rizvi et al., 2020; Suherman et al., 2021) and the world's highest number of Islamic financial institutions (Komite Nasional Ekonomi dan Keuangan Syariah, 2021). As in Malaysia ((Shahar & Shahar, 2015), Indonesia also implements a unique financial system consisting of two entities, namely sharia and non-sharia companies, that run side by side. Companies categorized as sharia must comply with the values, rules, restrictions, and prohibitions prescribed by the Islamic religion, which the state has regulated. One regulation that applies to Islamic firms is limiting the maximum permissible level of financial leverage. Based on Otoritas Jasa Keuangan Regulation no.35 of 2017, companies that can be categorized as sharia stocks are companies whose total interest-based debt level is not more than 45% compared to total assets. Thus, Sharia-compliant firms' financial leverage characteristics will be generally different from non-sharia firms.

The results of previous studies that did not show a consensus and the differences in leverage characteristics in Sharia-compliant and non-Sharia-compliant firms formed this study to provide empirical facts that will complement the gap in previous literature. This research is also the first study conducted on one of the countries with the largest Muslim population and the largest Islamic financial institution in the world, namely Indonesia. This study investigates the relationship between financial leverage and firm performance in Sharia and non-Sharia compliant firms. Financial leverage measured by DAR (debt to total asset ratio), DER (debt to total equity ratio), STD (short-term debt to total assets), and LTD (long-term debt to total assets) are tested for its effect on the firm performance proxied by ROA (return on assets), ROE (return on equity), and Tobin's q. This study also used control variables related to firm-specific factors and corporate governance factors that have been used in previous studies.

The remainder of this paper is structured as follows. The literature review and research hypotheses are discussed in Section 2. Data and variables are described in Section 3. The empirical findings are presented and discussed in Section 4. The research's conclusion is presented in Section 5.

LITERATURE REVIEW

Capital Structure Theories

Financing is one of the most important decisions in managerial finance. The source of funding will determine the company's capital structure. Companies can use various combinations of debt, equity, or other funding sources (Raza, 2013). Several main theories explain how debt is used (leverage) in the company's capital structure. Some of the main theories include the trade-off theory (Modigliani & Miller, 1958, 1963), the pecking order theory (Myers & Majluf, 1984), and the free cash flow theory (Jensen, 1986).

The trade-off theory explains a trade-off between the costs and benefits of using debt as a source of capital. Using debt in capital sources is useful to provide tax benefits (tax shield), but on the other hand, high debt levels can potentially pose a higher risk of bankruptcy (Modigliani & Miller, 1958; Rizkiah, 2017). So that the choice to use debt in the capital structure is carried out up to a certain level if it can still provide marginal benefits that are balanced with the marginal costs it causes (Adusei & Obeng, 2019). Modigliani & Miller, (1958) also argue that under perfect market conditions, the value of a company is not influenced by its capital structure but rather by how it can create income from its assets.

Meanwhile, the pecking order theory states that the selection of funding sources must prioritize internal funding using retained earnings. If funding needs to exceed existing internal funding sources, then the next option is debt, and the last option is to issue new equity (Myers & Majluf, 1984). Thus, it can be concluded that profitable companies will produce a high level of retained earnings, so they will tend to use retained earnings rather than debt, while companies with low retained earnings will turn to debt as a source of funding (Raza, 2013). This implies a negative relationship between debt and company profitability.

Free-cash-flow theory (Jensen, 1986) views the use of debt in the capital structure as an effort to minimize agency costs arising from the use of available free cash flow. A manager with a high company cash flow is believed to be tempted to invest and consume excessively so that it can potentially reduce the value of the company. Debt financing will force the company to pay cash flow in the future, reducing the level of free cash flow. In addition, companies with high levels of debt will have a high risk of bankruptcy, which will encourage managers to limit their personal interests, which can increase organizational efficiency (Grossman & Hart, 1982; Nguyen et al., 2021). So, it can be implied, according to the free-cash-flow theory, that the use of debt can improve company performance.

Sharia and Non-Sharia Compliant Firms

This study will investigate three distinct sample groups: a comprehensive sample, as well as two sub-samples segregated into Shariah-compliant and non-Shariah companies. The classification of public firms into Shariah and non-Shariah categories is determined in accordance with the Bapepam and Financial Institution Regulation Number IX.A.13, titled 'The Issuance of Sharia Securities' from 2006. A company qualifies as a Shariah-compliant entity if it satisfies any of the following criteria:

1. Companies publicly stating in their articles of association that their operations align with Shariah principles.
2. Companies without such a declaration in their articles of association but meeting these conditions:
    a. Business activities are not in conflict with Shariah principles as regulated in regulation IX.A.13, which means they do not engage in the following activities:
        - Gambling and games classified as gambling.
        - Trading without the delivery of goods/services.
        - Trading with false offers/demands.
        - Interest-based banking.
        - Interest-based financing companies.
        - Trading of risks involving uncertainty (*gharar*) and/or gambling (*maisir*), including conventional insurance.
        - Producing, distributing, trading, and/or providing goods or services that are prohibited in their substance (*haram li-dzatihi*), prohibited not because of their substance (*haram li-ghairihi*) as determined by Dewan Syariah Nasional-Majelis Ulama Indonesia (DSN-MUI/ National Shariah Council - Indonesian Ulama Council) , and/or goods or services that are morally corrupt and harmful.
        - Engaging in transactions that involve bribery (*risywah*).

    b. The proportion of debt reliant on interest, in relation to overall equity, does not exceed 82%.

    c. The proportion of total interest income and other income not compliant with Islamic principles, in relation to total business income and other income, does not exceed 10%.

    Public companies failing to satisfy these conditions will be categorized as non-Shariah entities.

Hypothesis Development

A series of studies related to the effect of financial leverage and company performance do not show a consensus. Even the main theories related to this topic provide diverse perspectives. Pecking order theory (Myers & Majluf, 1984) implies a negative relationship between financial leverage and firm performance. Several empirical studies support the theory (e.g., Aidoo et al., 2022; Bui, 2020; Kenn-Ndubuisi & Joel, 2019; Raza, 2013). Long-term debt is considered to be more costly because it contains both direct and indirect costs of bankruptcy costs, so using high levels of debt in a company's capital structure will result in low profitability. In line with this, the theory also strengthens the assumption that companies with high profitability will tend to choose internal funding over external funding in the form of debt.

Free-cash-flow theory (Habibniya et al., 2022; Jensen, 1986) implies a positive relationship between debt levels and company performance. Empirical studies that support this positive relationship include Ho & Mohd-Raff (2019), Rahim et al., (2021), Shahar & Shahar (2015). Funding in the form of debt will force the company to set aside its cash flow in the future to pay interest and principal costs, thereby reducing the level of free cash flow. Decreasing levels of free cash flow and increased potential bankruptcy risk resulting from debt funding will encourage managers to limit their personal interests, which can increase organizational efficiency (Grossman & Hart, 1982; Nguyen et al., 2021). So that the company will avoid the possibility of investment and excess consumption and improve company performance. In addition, the trade-off theory (Modigliani & Miller, 1958, 1963) also states that the use of debt in companies can provide tax benefits that can provide a multiplier effect on ROE. Based on the arguments that have been described, hypothesis 1 of this study is built as follows:

H1: Financial leverage affects the firm's performance positively (negatively).

Sharia compliant firms have clear restrictions on the maximum level of leverage allowed. Based on Bapepam and Financial Institutions Regulation Number IX.A.13 Concerning the Issuance of Sharia Securities (2006), one of the criteria for a company to be categorized as a sharia compliant firms is if the ratio of total interest-based debt to total equity is not more than 82%. This makes a clear difference with the flexibility for non-sharia firms in determining their capital structure. Previous studies have also provided mixed results on the effect of financial leverage and firm performance. (Mai et al., 2021) noted the negative relationship between financial leverage on performance in Sharia compliant firms and vice versa, the positive influence on non-sharia firms. Negative findings in sharia companies were also found in Mai et al., (2021). Another study by Rahim et al., (2021) found a positive relationship between financial leverage and Islamic bank performance, while Ho & Mohd-Raff (2019) actually found this positive relationship in their study of non-sharia companies. Based on the findings that have been described, hypotheses 2 and 3 for this study are as follows:

H2: Financial leverage affects the firm's performance positively (negatively) on Shariah compliant firms' performance.
H3: Financial leverage affects the firm's performance positively (negatively) on non-Sharia compliant firm's performance.

Research Model

Leverage use in a company's capital structure have been shown to have a significant impact on a firm's performance (Alim et al., 2022; Bui, 2020; Kenn-Ndubuisi & Joel, 2019; Mai et al., 2021; Rahim et al., 2021; Raza, 2013; Shahar & Shahar, Bt Shahar, 2015). The specific indicators of the correlation between these two notions, however, are inconsistent, either pointing to a positive or negative association. We purposely provide an empirical test to investigate the relationship between our ideas of interest, as previously described in the study's objective and the literature utilized in the construction of the hypotheses.

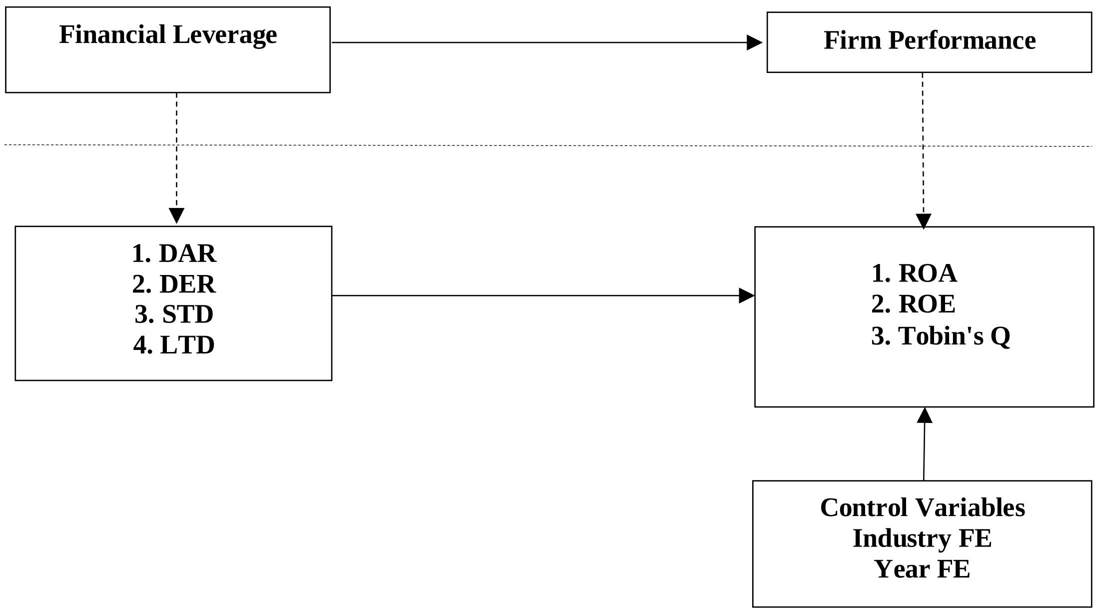

Figure 1. Research Model
Source : Proceed by Authors (2022)

The research model for our study is shown in Figure 1. We study the relationship between financial leverage and firm performance (see the boxes above the dotted line). We operationalize the key ideas into several proxies to illustrate the empirical test (take note of the boxes in the picture beneath the dotted line). DAR, DER, STD, and LTD are used to measure the independent variable of the financial leverage. Three variables, namely ROA, ROE, and Tobin's Q , serve as placeholders for the dependent variable of firm performance.

RESEARCH METHOD

The initial sample comprised all Public Listed Companies (PLCs) listed on the Indonesian Stock Exchange (IDX), and the relevant data were extracted from the annual reports of these PLCs spanning a decade from 2012 to 2021. The annual reports were publicly available on the official website of the IDX (https://idx.co.id). As of the conclusion of the 2021 fiscal year, there were a total of 766 PLCs listed on the IDX. It's worth noting that PLCs in the banking sector were excluded from this analysis. This exclusion was based on the recognition that financial institutions fundamentally differ from their counterparts in non-financial sectors, primarily due to distinct regulatory requirements (Suherman et al., 2021, 2023) and variations in the composition of their balance sheets compared to non-financial firms (Alipour et al., 2015).

Table 1. Sampling Criteria

No.	Sample Determination Criteria	Sum	Percentage
1	Total number of listed companies as of December 31, 2021	766	100,00%
2	(-) Banking and financial sector companies	(105)	(13.70%)
3	(-) Companies that lack the required data completeness and variables for the research	(282)	(36.81%)
4	Total number of eligible companies	379	49,48%

Source : Proceed by Authors (2022)

Due to the use of purposive sampling, we also exclude firms that lacked sufficient financial data to maintain an equal number of observations over the course of the study years. The purposive sample criteria raise the possibility of survivorship bias since they prioritize a set number of companies over time. We chose to preserve an unbalanced panel data structure in our data set since the major goal of our study is to capture the magnitude of coefficient values and the time-varying impacts of the key independent factors on the dependent variables. Therefore, we terminated 387 firms and finally arrived at 379 PLCs from 2012 to 2021 that met the criteria. Table 1 presents a more detailed sampling criterion. The sample distribution of this study is presented in Table 2. Out of the total sample drawn, 8.00% of them belong to the communication sector, representing 6.00% Shariah-compliant companies and 11% non-Shariah-compliant companies. Consumer discretionary companies account for 17% of the total sample, consisting of 17% Shariah-compliant observations and 18% non-Shariah-compliant observations. The consumer staples sector contributes 15% to the sample, with 14% Shariah-compliant observations and 16% non-Shariah-compliant observations. The energy sector contributes 11%, with 10% Shariah-compliant observations and 13% non-Shariah-compliant observations. Approximately 3% of the observations represent healthcare companies, with 4% Shariah-compliant observations and 1% non-Shariah-compliant observations. The industrial sector has the largest contribution to the sample, accounting for 18%, with 19% Shariah-compliant observations and 17% non-Shariah-compliant observations. Information technology companies represent 2% of the total sample, with 2% Shariah-compliant and non-Shariah-compliant observations. The material sector contributes 15% to the total sample, with Shariah-compliant and non-Shariah-compliant observations each accounting for 15%. Real estate companies have a proportion of 11% in the total sample, with 14% Shariah-compliant observations and 7% non-Shariah-compliant observations. The utilities sector has the smallest proportion compared to other sectors, accounting for 1% of the total sample, with 1% Shariah-compliant and 0% non-Shariah-compliant observations. Based on the sample distribution, it can be concluded that the sample represents a wide range of non-financial sectors listed on the Indonesia Stock Exchange, with the highest proportion of companies from the industrial sector and the lowest proportion from the utilities sector.

The independent variable in this study was capital structure, and we considered four different measures of capital structure: DAR, DER, STD, and LTD. These measures were based on the studies conducted by Altaf et al., (2021), Alves et al., (2015), Laili & Dalimunthe, (2022), Suherman, (2017), and Zaid et al., (2020). DAR represents the ratio of debt to total assets, while DER is also a ratio of debt to total assets. STD measures the ratio of short-term debt to total assets, and LTD represents the ratio of long-term debt to total assets. Instead of using a single measure, we utilized these four alternative measures because DAR and DER do not differentiate between short-term and long-term debt, whereas STD and LTD emphasize the importance of short-term and long-term debt in influencing investment decisions (Aivazian et al., 2005).

The way that firm performance was measured in this study adheres to the body of previous research. We employ ROA and ROE as accounting performance metrics (Aidoo et al., 2022; Ho & Mohd-Raff, 2019; Kutan et al., 2018; Suherman et al., 2023) together with Tobin's Q (Ahmad et al., 2022; Bennouri et al., 2018; Peni, 2014) as a market performance measure. By dividing the yearly net income by the total assets at the end of the fiscal year, ROA is computed. An organization's return on equity (ROE) is determined by dividing its yearly net revenue by the total number of shares it has outstanding at the start of its fiscal year. Tobin's Q is determined by dividing the sum of its stock and debt market value by the entire book value of all the company's assets.

We acknowledge that the empirical models presented in our study may suffer from endogeneity issues, where the explanatory variables are correlated with the error term, potentially leading to biased estimations. To address this concern and mitigate correlated variable bias, we incorporated a set of control variables (Buchdadi et al., 2023; Suherman et al., 2021, 2023). The selection of these control variables was based on previous studies on relevant topics (Buchdadi et al., 2023; Kouki & Guizani, 2015; Qadorah & Fadzil, 2018; Suherman et al., 2021). The control variables we utilized included firm size, measured by the natural logarithm of total assets (SIZE); liquidity (LIQ), represented by the current ratio, which is by dividing current assets by current liabilities; net working capital (NWC), indicated by subtracting current asset with current liabilities and dividing by total asset; firm age, calculated by subtracting the firm's inception year from the observed fiscal year (AGE); board of directors' size (BOD), quantified by the number of directors on the board; and dividend payout (DIV) measured by dummy variable 1 if the firm pay the dividends, and 0 others. By incorporating these control variables, we aimed to address the endogeneity issue and improve the robustness of our estimations. A summary of the definition of all variables used in this study is presented in table 3.

In this study, we employed panel data regression analysis, utilizing 4,164 firm-year observations. The purpose was to examine the correlation between financial leverage and the firm's performance. To test our hypotheses, we formulated four separate regression models using distinct statistical notations. The reason for dividing the models was that we had three main hypotheses, each represented by four different surrogate indicators (DAR, DER, STD, LTD). Despite the varied indicators, they all measured the same concept, following the design of our study.

$$PERFORMANCE(ROA, ROE, Tobins'Q)_{it} = \alpha + \beta_1 \mathrm{DAR}_{it} + \sum \mathrm{Controls} + \sum \mathrm{IndustryFE} + \sum \mathrm{YearFE} + \varepsilon_{it}$$

(1)

$$PERFORMANCE(ROA, ROE, Tobins'Q)_{it} = \alpha + \beta_1 \mathrm{DER}_{it} + \sum \mathrm{Controls} + \sum \mathrm{IndustryFE} + \sum \mathrm{YearFE} + \varepsilon_{it}$$

(2)

$$PERFORMANCE(ROA, ROE, Tobins'Q)_{it} = \alpha + \beta_1 \mathrm{STD}_{it} + \sum \mathrm{Controls} + \sum \mathrm{IndustryFE} + \sum \mathrm{YearFE} + \varepsilon_{it}$$

(3)

$$PERFORMANCE(ROA, ROE, Tobins'Q)_{it} = \alpha + \beta_1 \mathrm{LTD}_{it} + \sum \mathrm{Controls} + \sum \mathrm{IndustryFE} + \sum \mathrm{YearFE} + \varepsilon_{it}$$

(4)

Three metrics are employed to assess the dependent variable, or performance: ROA, ROE, and Tobin's Q, which serve as stand-ins for accounting- and market-based firm performance, respectively. Furthermore, this research distinguishes itself by utilizing four unique indicators to evaluate capital structure. It differs from the common practice found in many other studies, which typically rely on only two indicators, specifically Debt to Asset Ratio (DAR) and Debt to Equity Ratio (DER). The variables for DAR, DER, STD, and LTD are used to reflect the financial leverage. The regression model includes business-specific and corporate governance features as control variables (∑Controls) because these factors are also thought to affect a firm's performance. These include factors such as the following: firm size (SIZE), liquidity (LIQ), net working capital (NWC), firm age (AGE), BOD size (BOD) and dividend payment (DIV).

We used industry fixed effects (FE) in our analysis. We understood that each industry had distinctive qualities that can generate heterogeneity in our data. We attempted to reduce this particular variation among industries by including industry FE. Additionally, we included year fixed effects (FE) because our dataset is condensed by annual data. In order to capture the impact of overall time-series trends and changes in our parameters over time, we included year FE. Using this method, we were able to spot any variations in the dependent variables over time that could not be explained by the model's other explanatory factors. Additionally, we were conscious of the possible problem of endogeneity resulting from serial correlation inside and between our unit of analysis (observations) and suggested a connection between them. We used clustered standard errors, which produce more reliable and lower standard errors compared to general ordinary least squares (OLS) regression, to address this issue. The effectiveness and accuracy of our estimations were improved by this strategy.

RESULTS AND DISCUSSION

Descriptive Statistics

A descriptive statistical summary of all variables used in this study is presented in Table 4. For continuous variables such as ROA, ROE, Tobins'q, DAR, DER, STD, LTD, SIZE, LIQ, NWC, AGE, and BOD, a winsorized process was conducted at the 1% and 99% levels to eliminate extreme data (outliers) in the observations. This ensures that the data used in data processing is free from outlier issues. The descriptive statistics provide information about the mean, standard deviation, minimum value, 25th, 50th, and 75th percentiles, and the maximum value of each variable. The number of observations for all variables throughout the study period was 4,164.

This study uses three firm's performance measurements as dependent variables, namely ROA, ROE, and Tobins'q. Interestingly, the three measurements show different average values. ROA has an average value of 2.3%, while ROE has an average value of 7.2%. Market performance, as measured by Tobins'q, shows an average value of 1,838. The independent variable, serving as a proxy for leverage, also exhibits different average values for each proxy used. The first proxy, DAR, has a mean value of 0.297, indicating that the average debt to asset ratio of the observed companies is 29.7%. Meanwhile, DER, as the second leverage proxy, has an average value of 0.723, implying a debt-to-equity ratio of 72.3%. The third leverage proxy, STD, has an average value of 0.077, indicating that the average ratio of short-term debt to total assets is 7.7%. The last proxy of leverage, LTD, has an average value of 0.147, indicating that the average observation has a ratio of long-term debt to total assets of 14.7%.

Correlation Analysis

The results of all the variables tested in this study's correlation analysis are shown in Tables 5a and 5b. Two dependent variables, DAR and LTD have a moderately high positive correlation value of 0.744 that is both significant at the 1% alpha level. This is due to the fact that both variables are constructed using almost identical accounting information. Due to the high correlation between the two dependent variables, both variables will be operationally tested on several models to exclude any possibility of bias. According to the findings of the correlation analysis conducted on the dependent and independent variables tested in this study, there was a negative and significant correlation between ROA and all good leverage proxies measured by DAR, DER, STD, and LTD ($p<0.01$, $p<0.10$, $p<0.01$, and $p<0.01$, respectively). Meanwhile, it was discovered that DER ($p<0.01$), STD ($p<0.10$), and LTD ($p<0.01$) had negative correlations and were significant to ROE. DAR, STD, and LTD were found to be positively and significantly correlated ($p<0.01$) in tests with the firm performance measured by Tobin's q, while DER ($p<0.01$) found to be negatively correlated with Tobin's q. Multicollinearity was not a problem in the data for this research because there were no correlations between other variables whose values exceeded 0.75.

Analysis

The results of hypothesis testing for the entire main sample are presented in Table 6 (dependent variable: ROA), Table 7 (dependent variable: ROE), and Table 8 (dependent variable: Tobin's Q), which form the main analysis of this study. The analysis on Sharia-compliant firms is presented in Table 9 (dependent variable: ROA), Table 10 (dependent variable: ROE), and Table 11 (dependent variable: Tobin's Q). On the other hand, the samples from non-Sharia firms are presented in Table 12 (dependent variable: ROA), Table 13 (dependent variable: ROE), and Table 14 (dependent variable: Tobin's Q).

In the first hypothesis of this study, it is hypothesized that financial leverage has a positive (or negative) influence on firms' performance. Meanwhile, hypothesis two expects that financial leverage has a positive (or negative) influence on the performance of Sharia-compliant firms. The third hypothesis states that financial leverage has a positive (or negative) influence on the performance of non-Sharia firms. The testing of hypotheses 1, 2, and 3 involves the independent variables of financial leverage, measured by DAR, DER, STD, and LTD, tested on financial performance using three indicators: ROA, ROE, and Tobin's Q, across three different sub-samples.

The empirical findings presented in Table 6 (Model 4) provide evidence that LTD has a negative ($\beta = -0.0594$) and significant ($p < 0.01$) influence on ROA in the main sample. When incorporating all independent variables into regression analysis (Model 5), STD ($\beta = -0.1137$) and LTD ($\beta = -0.1313$) also show additional evidence of negative and significant ($p < 0.01$) relationships with ROA. Similarly, tests of firm performance measured by ROE (Table 7) reveal empirical evidence of a negative ($\beta = -0.0923$) and significant ($p < 0.01$) relationship between DER (Model 2) and ROE. The same negative relationship between DER and ROE is confirmed in Model 5 ($\beta = -0.0955$, $p < 0.01$).

The negative relationships of financial leverage with both measures of corporate accounting performance support Hypothesis 1 of this study. However, interesting findings emerge when testing leverage against the firm's market performance measure, Tobin's Q. The empirical results in Table 8 (Model 4) show that LTD has a positive ($\beta = 2.4986$) and significant ($p < 0.05$) relationship with Tobin's Q. This finding is also confirmed in Model 5, which shows that LTD is positively related ($\beta = 4.0557$) and significant ($p < 0.10$) to Tobin's Q. These findings provide support for Hypothesis 1, suggesting that financial leverage has a positive influence on firm performance.

The next analysis examines the effect of financial leverage on company performance in a sub-sample of Sharia-compliant firms, which have special funding characteristics compared to non-Sharia firms. The empirical evidence presented in Table 9 shows that all proxies of financial leverage, namely DAR ($\beta = -0.1174$), DER ($\beta = -0.0265$), STD ($\beta = -0.0871$), and LTD ($\beta = -0.1085$), have a negative and significant ($p < 0.01$) influence on ROA. In the developed model (Model 5), DAR also shows a negative ($\beta = -0.0974$) and significant ($p < 0.10$) effect on ROA. Tests of company performance measured by ROE (Table 10) yield similar results, with negative effects of DAR ($\beta = -0.1928$), DER ($\beta = -0.0914$), STD ($\beta = -0.1767$), and LTD ($\beta = -0.1560$) being negative and significant ($p < 0.01$) to ROE. Analysis in Model 5, incorporating all financial leverage measurements, shows a negative ($\beta = -0.1241$) and significant ($p < 0.01$) relationship between DER and ROE. Thus, the results pertaining to testing firm's performance as measured by book performance support Hypothesis 2, indicating that financial leverage has a negative and significant influence on firm's performance. Meanwhile, tests of market performance (Tobin's Q, Table 11) do not show any effect of financial leverage on firm's performance.

The next sub-sample analysis focuses on testing companies that are not classified as Sharia-compliant firms, also known as non-Sharia firms. These companies are not bound by the provisions of special capital structures that apply to Sharia companies. The results of the sub-sample regression analysis are presented in Table 12 (ROA), Table 13 (ROE), and Table 14 (Tobin's Q).

The results of testing the firm's performance as measured by ROA do not show any significant effect of financial leverage on the firm's performance. However, when testing ROE, a negative and significant effect of leverage, as measured by DER ($\beta = -0.0940$, $p < 0.01$) and LTD ($\beta = -0.0333$, $p < 0.10$), is observed. In Model 5, DER ($\beta = -0.0941$) and LTD ($\beta = -0.1035$) consistently demonstrate a negative and significant relationship with ROE ($p < 0.01$). However, DAR provides empirical evidence of a positive ($\beta = 0.0663$) and significant ($p < 0.01$) relationship with ROE.

Furthermore, testing the company's market performance reveals evidence that supports Hypothesis 3 of this study, indicating a positive and significant influence of DAR ($\beta = 3.0413$, $p < 0.01$) and LTD ($\beta = 3.1321$, $p < 0.05$) on Tobin's Q. Model 5 also confirms the positive ($\beta = 3.5323$) and significant ($p < 0.01$) effect of DAR on Tobin's Q.

Discussions

The findings in the main sample of this study indicate that financial leverage, as measured by STD and LTD, has a negative and significant relationship with company performance as measured by ROA. Additionally, DER was also found to have a negative and significant effect on company performance as measured by ROE. These results align with previous research conducted by Aidoo et al., (2022), Alim et al., (2022), Bui (2020), Kenn-Ndubuisi & Joel (2019), Raza (2013). Long-term debt is considered to be more costly as it includes both direct and indirect bankruptcy costs. Therefore, utilizing high levels of debt in a company's capital structure can lead to lower profitability.

However, when financial leverage is tested on a firm's market performance using the Tobin's Q indicator, empirical evidence shows a positive and significant relationship between LTD and Tobin's Q. This finding is consistent with the research conducted by Ho & Mohd-Raff (2019), Rahim et al., (2021), Shahar & Shahar, (2015). In terms of market performance, debt financing requires the company to allocate its future cash flows to repay interest and principal costs, which reduces the level of free cash flow. The decrease in free cash flow and the increased potential bankruptcy risk associated with debt funding incentivize managers to prioritize organizational efficiency and limit personal interests (Grossman & Hart, 1982; Nguyen et al., 2021). This can serve as a positive signal for the market when valuing the company.

The analysis of the sub-sample consisting of Sharia-compliant firms yielded consistent results, where all financial leverage indicators exhibited a negative and significant effect when tested on both firm’s performance measures, namely ROA and ROE. These findings align with previous research conducted on Sharia companies by Mai et al., (2021), Rizkiah (2017), Shahar & Shahar (2015). The main implication of this study's findings is that more profitable Sharia-compliant firms tend to reduce their financial leverage. It suggests that higher levels of debt and inefficient utilization of leverage have a negative influence on company performance. Thus, these findings also support the Pecking Order Theory (Myers & Majluf, 1984).

The sub-sample analysis of non-Sharia firms generally confirmed the results obtained from the main sample analysis. It revealed a negative and significant impact of DER and LTD on ROE, consistent with the research conducted by Aidoo et al., (2022), Alim et al., (2022), Bui (2020), Kenn-Ndubuisi & Joel (2019), and Raza (2013). However, in the developed model, a positive relationship between DAR and ROE was observed. Additionally, the analysis of market performance using Tobin's Q indicated a positive and significant relationship between financial leverage, as measured by DAR and LTD. These results align with the findings of Ho & Mohd-Raff (2019), highlighting the positive influence of capital structure on the performance of non-Sharia companies.

CONCLUSION

The aim of this study is to investigate the influence of financial leverage on firm performance in Indonesia over the period 2012-2021 (10 years). Financial leverage is measured using four different indicators, namely DAR, DER, STD, and LTD. Meanwhile, ROA, ROE, and TOBINS'Q are used to assess corporate performance. This study's sample is divided into three parts: the main sample is made up of non-financial sector businesses listed on the Indonesia Stock Exchange, while the subsample is made up of Sharia and non-Sharia compliant firms.

The findings of the analysis on the main sample of this study indicate a significant negative influence of financial leverage on the accounting performance of companies, as measured by ROA and ROE. Meanwhile, a positive and significant influence of financial leverage on the market performance indicator of companies (TOBINS'Q) is found. The analysis on the Shariah company subsample shows a negative influence of all financial leverage proxies on the accounting performance of companies (ROA and ROE). On the other hand, the analysis on the non-Shariah company subsample shows consistent results with the main sample analysis, where there is a significant negative influence of financial leverage on the accounting performance of companies, as measured by ROA and ROE, and a positive and significant influence of financial leverage on the market performance indicator of companies (TOBINS'Q). In general, empirical evidence indicates that financial leverage has a significant negative relationship with the accounting performance of companies and a positive and significant influence on the market performance of companies.

Based on the findings of this study, the following recommendations can be made for companies and academics. For companies, the empirical evidence presented in this study sheds light on the influence of financial leverage on company performance, encompassing both Sharia and non-Sharia companies. As a result, these findings can provide valuable insights when making decisions about the optimal capital structure target strategy to attain desired company performance. Incorporating this information into their decision-making processes can be beneficial for companies seeking to enhance their financial performance.

For academics, this study strengthens and expands the existing empirical evidence on the relationship between financial leverage and company performance in the context of Indonesia. The detailed findings of this study can serve as a foundation for further research on financial leverage. For instance, future studies can consider analyzing sub-samples based on different time periods, such as pre-Covid, during Covid, and post-Covid, to capture the impact of external shocks. One limitation of this study is related to the sample size and composition. While the study focused on non-financial sector companies listed on the Indonesia Stock Exchange, the sample size may not capture the full diversity of the Indonesian corporate landscape. Future research could benefit from a larger and more diverse sample, including companies from various sectors and sizes. Overall, the insights gained from this study can inform companies in their capital structure decision-making and provide academics with a basis for future research in the field of financial leverage.

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REFERENCES

Adusei, M., & Obeng, E. Y. T. (2019). Board gender diversity and the capital structure of microfinance institutions: A global analysis. *The Quarterly Review of Economics and Finance*, *71*, 258–269. https://doi.org/10.1016/j.qref.2018.09.006

Ahmad, G. N., Prasetyo, M. R. P., Buchdadi, A. D., Suherman, S., Widyastuti, U., & Kurniawati, H. (2022). The Effect of CEO Characteristics on Firm Performance of Food and Beverage Companies in Indonesia, Malaysia and Singapore. *Quality - Access to Success*, *23*(186). https://doi.org/10.47750/QAS/23.186.15

Aidoo, E., Ahmed, I. A., & Musah, A. (2022). Analysis of the capital structure and profitability of manufacturing companies listed on the Ghana stock exchange. *Asian Journal of Economic Modelling*, *10*(3), 178–191.

Aivazian, V. A., Ge, Y., & Qiu, J. (2005). The impact of leverage on firm investment: Canadian evidence. *Journal of Corporate Finance*, *11*(1), 277–291. https://doi.org/10.1016/S0929-1199(03)00062-2

Alim, W., Ali, A., & Minhas, A. S. (2022). *The Impact of Leverage on the Firm Performance: A Case of Fertilizers Sector of Pakistan* [MPRA Paper]. https://mpra.ub.uni-muenchen.de/114200/

Alipour, M., Mohammadi, M. F. S., & Derakhshan, H. (2015). Determinants of capital structure: An empirical study of firms in Iran. *International Journal of Law and Management*, *57*(1), 53–83. https://doi.org/10.1108/IJLMA-01-2013-0004

Altaf, K., Waseem, Fareeha, & Abbas, Syeda Fiza. (2021). Corporate Governance Practice and Capital Structure Decision: The Moderating Effect of Gender Diversity. *International Journal of Business Reflections*, *2*(2), 181–203.

Alves, P., Couto, E. B., & Francisco, P. M. (2015). Board of directors' composition and capital structure. *Research in International Business and Finance*, *35*, 1–32. https://doi.org/10.1016/j.ribaf.2015.03.005

Regulation Number IX.A.13 Concerning The Issuance Of Sharia Securities, (2006).

Bennouri, M., Chtioui, T., Nagati, H., & Nekhili, M. (2018). Female board directorship and firm performance: What really matters? *Journal of Banking and Finance*, *88*(2018), 267–291. https://doi.org/10.1016/j.jbankfin.2017.12.010

Buchdadi, A. D., Suherman, S., Mahfirah, T. F., Usman, B., & Kurniawati, H. (2023). An assessment of female executives' influence on bank performance in Indonesia based on critical mass theory. *International Journal of Management and Sustainability*, *12*(1), 26–43. https://doi.org/10.18488/11.v12i1.3262

Bui, T. (2020). How do financial leverage and supply chain finance influence firm performance? Evidence from construction sector. *Uncertain Supply Chain Management*, *8*(2), 285–290.

Cerkovskis, E., Gajdosikova, D., & Ciurlau, C. F. (2022). Capital Structure Theories: Review Of Literature. *Economic & Managerial Spectrum/Ekonomicko-Manaz? E\' Rske Spektrum*, *16*(1).

Chakrabarti, A., & Chakrabarti, A. (2019). The capital structure puzzle–evidence from Indian energy sector. *International Journal of Energy Sector Management*.

Grossman, S. J., & Hart, O. D. (1982). Corporate financial structure and managerial incentives. In *The economics of information and uncertainty* (pp. 107–140). University of Chicago Press.

Habibniya, H., Dsouza, S., Rabbani, M. R., Nawaz, N., & Demiraj, R. (2022). Impact of capital structure on profitability: Panel data evidence of the telecom industry in the United States. *Risks*, *10*(8), 157.

Ho, C. S., & Mohd-Raff, N. E. N. (2019). External and internal determinants of performances of Shariah and non-Shariah compliant firms. *International Journal of Islamic and Middle Eastern Finance and Management*.

Jensen, M. C. (1986). Agency costs of free cash flow, corporate finance, and takeovers. *The American Economic Review*, *76*(2), 323–329.

Kenn-Ndubuisi, J. I., & Joel, C. (2019). Financial leverage and firm financial performance in Nigeria: A panel data analysis approach. *Global Journal of Management and Business Research*, *19*(C4), 13–19.

Komite Nasional Ekonomi dan Keuangan Syariah. (2021). *Komite Nasional Ekonomi dan Keuangan Syariah*. https://knks.go.id/beranda

Kouki, M., & Guizani, M. (2015). Outside directors and firm performance: The moderating effects of ownership and board leadership structure. *International Business Research*, *8*(6), 104.

Kutan, A. M., Naz, I., & Shah, S. M. A. (2018). Are top managers important for firm performance and idiosyncratic risk? Evidence from sharia vs non-sharia-compliant firms in the UK and Pakistan. *The World Economy*, *41*(3), 763–780.

Laili, R. N., & Dalimunthe, S. (2022). The impact of liquidity on the capital structure of construction companies. *Global Advances in Business Studies*, *1*(2), 94–103.

Li, K., Niskanen, J., & Niskanen, M. (2019). Capital structure and firm performance in European SMEs: Does credit risk make a difference? *Managerial Finance*, *45*(5), 582–601.

Mai, M. U., Syarief, M. E., & Kristianingsih, K. (2021). Corporate Governance, Financial Leverage, and Performance of Sharia Manufacturing Companies on the Indonesia Stock Exchange. *Amwaluna: Jurnal Ekonomi Dan Keuangan Syariah*, *5*(2), 255–272.

Modigliani, F., & Miller, M. H. (1958). The cost of capital, corporation finance and the theory of investment. *The American Economic Review*, *48*(3), 261–297.

Modigliani, F., & Miller, M. H. (1963). Corporate income taxes and the cost of capital: A correction. *The American Economic Review*, *53*(3), 433–443.

Musa, S. J., & Ibrahim, K. M. (2022). Effect of leverage on profitability of information and communication technology companies listed on the Nigeria stock exchange. *Journal of Positive School Psychology*, 10386–10393.

Myers, S. C., & Majluf, N. S. (1984). Corporate financing and investment decisions when firms have information that investors do not have. *Journal of Financial Economics*, *13*(2), 187–221.

Nguyen, T., Bai, M., Hou, Y., & Vu, M.-C. (2021). Corporate governance and dynamics capital structure: Evidence from Vietnam. *Global Finance Journal*, *48*, 100554.

Otoritas Jasa Keuangan. (2017). *Financial Services Authority. (2017). Pojk Number 35/Pojk.04/2017*.

Peni, E. (2014). CEO and Chairperson characteristics and firm performance. *Journal of Management and Governance*, *18*(1), 185–205. https://doi.org/10.1007/s10997-012-9224-7

Qadorah, A. A. M., & Fadzil, F. H. B. (2018). The relationship between board size and CEO duality and firm performance: Evidence from Jordan. *International Journal of Accounting, Finance and Risk Management*, *3*(3), 16–20.

Rahim, A., Khan, M. M., Iftikhar, W., Ashraf, S., & Mehmood, S. (2021). an Implication of signaling theory to examine impacts of financial leverage on firm performance: A study of Islamic Banks in Asian region. *Psychol. Educ*, *58*(2), 6700–6721.

Raza, M. W. (2013). *Affect of financial leverage on firm performance. Empirical evidence from Karachi Stock Exchange.*

Rizkiah, S. K. (2017). The Effect of Financial Leverage on Performance of Sharia Compliant Companies Listed in Jakarta Stock Exchange. *Aceh Development International Conference*.

Rizvi, S. A. R., Narayan, P. K., Sakti, A., & Syarifuddin, F. (2020). Role of Islamic banks in Indonesian banking industry: An empirical exploration. *Pacific-Basin Finance Journal*, *62*, 101117.

Shahar, W. S., & Shahar, Bt Shahar, W. S. (2015). *Impact of Firm Leverage to Performance: Evidence from Shariah and Non-Shariah Compliant Companies in Malaysia:* International Conference on Economics and Banking (iceb-15), Bandung, Indonesia. https://doi.org/10.2991/iceb-15.2015.21

Suherman, S. (2017). Apakah Diversitas Gender Memengaruhi Struktur Modal? Bukti Empiris Di Indonesia. *Jurnal Keuangan dan Perbankan*, *21*(2), 218–227. https://doi.org/10.26905/jkdp.v21i2.636

Suherman, S., Mahfirah, T. F., Usman, B., Kurniawati, H., & Kurnianti, D. (2023). CEO characteristics and firm performance: Evidence from a Southeast Asian country. *Corporate Governance: The International Journal of Business in Society*, *ahead-of-print*(ahead-of-print). https://doi.org/10.1108/CG-05-2022-0205

Suherman, S., Usman, B., Mahfirah, T. F., & Vesta, R. (2021). Do female executives and CEO tenure matter for corporate cash holdings? Insight from a Southeast Asian country. *Corporate Governance: The International Journal of Business in Society*, *21*(5), 939–960. https://doi.org/10.1108/CG-07-2020-0290

Zaid, M. A. A., Wang, M., T.F. Abuhijleh, S., Issa, A., W.A. Saleh, M., & Ali, F. (2020). Corporate governance practices and capital structure decisions: The moderating effect of gender diversity. *Corporate Governance: The International Journal of Business in Society*, *20*(5), 939–964. https://doi.org/10.1108/CG-11-2019-0343

Table 2. Sample Distribution

No	Industry	Entire Sample				Sharia Observation		Non-Sharia Observations	
		(N)	Firm-Year Obs	N (%)	Firm-Year Obs (%)	Firm-Year Obs	Firm-Year Obs (%)	Firm-Year Obs	Firm-Year Obs (%)
1	Communication Services	29	319	0.08	0.08	173	0.06	146	0.11
2	Consumer Discretionary	65	715	0.17	0.17	482	0.17	233	0.18
3	Consumer Staples	55	605	0.15	0.15	393	0.14	212	0.16
4	Energy	40	440	0.11	0.11	272	0.10	168	0.13
5	Health	12	132	0.03	0.03	114	0.04	18	0.01
6	Industry	70	765	0.18	0.18	536	0.19	229	0.17
7	Information Technology	7	77	0.02	0.02	52	0.02	25	0.02
8	Materials	56	616	0.15	0.15	415	0.15	201	0.15
9	Real Estate	43	473	0.11	0.11	385	0.14	88	0.07
10	Utility	2	22	0.01	0.01	20	0.01	2	0.00
Total		379	4164	1	1	2842	1	1322	1

Source : Proceed by Authors (2022)

Table 3 Variable Definition

No	Variable	Definition	Formula	Data Shapes	Source
Dependent Variables					
1	ROA	*Return On Assets*	*Net Income/Total Assets*	Continuous	Idx
2	ROE	*Return On Equity*	*Net Income/Total Stockholder's Equity*	Continuous	Idx
3	Tobin's Q	*Tobin's-Q Ratio*	*(Market Value of Total Outstanding Shares + Debt)/Total Assets*	Continuous	Idx
Independent Variables					
4	DAR	*Debt To Asset Ratio*	*Total Debt/Total Assets*	Continuous	Idx
5	DER	*Debt To Equity Ratio*	*Total Debt/Total Stockholder's Equity*	Continuous	Idx
6	STD	*Short Term Debt to Total Asset*	*Short Term Debt/Total Assets*	Continuous	Idx
7	LTD	*Long Term Debt to Total Asset*	*Long Term Debt/Total Assets*	Continuous	Idx
Control Variables					
8	SIZE	Company Size	Natural Logarithm of Total Assets	Continuous	Idx
9	LIQ	Company Liquidity	Current Assets/Current Debt	Continuous	Idx
10	NWC	*Net Working Capital*	*(Current Asset-Current Liabilities)/Total Assets*	Continuous	Idx
11	AGE	Firm Age	Age of The Company from The Time The Company was Established to The Observed Period	Continuous	Idx
12	BOD	Board of Directors Size	Number of Boards of Directors	Continuous	Idx
13	DIV	*Dividend Payout*	1 If Paying Dividends, 0 Others	Binary	Idx

Source : Proceed by Authors (2022)

Table 4. Descriptive Statistics

No	Variable	Obs.	Mean	Sd	Min	P.25th	P.50th	P.75th	Max
1	ROA	4,164	0.023	0.128	-0.679	-0.004	0.029	0.073	0.397
2	ROE	4,164	0.072	0.338	-1.534	0.002	0.070	0.163	1.568
3	Tobins'q	4,164	1.838	4.089	-0.331	0.351	0.739	1.648	31.829
4	DAR	4,164	0.297	0.407	0.000	0.074	0.235	0.395	3.425
5	DER	4,164	0.723	1.534	-4.451	0.067	0.418	0.987	10.083
6	STD	4,164	0.077	0.127	0.000	0.000	0.017	0.097	0.675
7	LTD	4,164	0.147	0.210	0.000	0.002	0.077	0.220	1.520
8	SIZE	4,164	28.543	1.727	23.757	27.394	28.569	29.739	32.276
9	LIQ	4,164	2.233	2.903	0.050	0.954	1.410	2.385	21.786
10	DIV	4,164	0.394	0.489	0.000	0.000	0.000	1.000	1.000
11	NWC	4,164	0.086	0.442	-2.902	-0.012	0.112	0.277	0.809
12	AGE	4,164	30.253	13.860	5.000	20.000	30.000	39.000	86.000
13	BOD	4,164	4.738	1.902	2.000	3.000	4.000	6.000	11.000

Note: Statistical significance is denoted as *** for a significance level of 1%, ** for 5%, and * for 10% in a two-tailed test

Source : Proceed by Authors (2022)

Table 5a Correlation Matrix

No.	Variable	1	2	3	4	5	6	7
1	ROA	1.000						
2	ROE	0.319***	1.000					
3	Tobins'q	-0.172***	0.0885***	1.000				
4	DAR	-0.356***	-0.012	0.308***	1.000			
5	DER	-0.027*	-0.413***	-0.064***	0.081***	1.000		
6	STD	-0.166***	-0.028*	0.060***	0.386***	0.154***	1.000	
7	LTD	-0.265***	-0.046***	0.227***	0.744***	0.158***	-0.071***	1.000
8	SIZE	0.191***	0.072***	-0.270***	-0.044***	0.140***	-0.135***	0.131***
9	LIQ	0.112***	-0.008	-0.031**	-0.238***	-0.151***	-0.214***	-0.177***
10	DIV	0.389***	0.236***	-0.054***	-0.189***	-0.082***	-0.088***	-0.152***
11	NWC	0.470***	0.003	-0.406***	-0.681***	-0.005	-0.291***	-0.397***
12	AGE	0.075***	0.064***	-0.082***	-0.031**	-0.041***	0.098***	-0.099***
13	BOD	0.181***	0.093***	-0.057***	0.017	0.023	-0.034**	0.077***

Note: Statistical significance is denoted as *** for a significance level of 1%, ** for 5%, and * for 10% in a two-tailed test

Source : Proceed by Authors (2022)

Table 5b Correlation Matrix

No.	Variable	8	9	10	11	12	13
1	ROA						
2	ROE						
3	Tobins'q						
4	DAR						
5	DER						
6	STD						
7	LTD						
8	SIZE	1.000					
9	LIQ	-0.169***	1.000				
10	DIV	0.308***	0.035**	1.000			
11	NWC	0.089***	0.425***	0.243***	1.000		
12	AGE	0.125***	-0.025	0.170***	0.022	1.000	
13	BOD	0.518***	-0.080***	0.333***	0.086***	0.155***	1.000

Note: Statistical significance is denoted as *** for a significance level of 1%, ** for 5%, and * for 10% in a two-tailed test

Source : Proceed by Authors (2022)

Table 6 Panel Data Regression Analysis of Explanatory Variables on Dependent Variable ROA

Variable	(I)		(II)		(III)		(IV)		(V)	
	Coefficient	T-stat	Coefficient	T-Stat	Coefficient	T-Stat	Coefficient	T-Stat	Coefficient	T-Stat
DAR	-0.0207	-0.99							0.0514	1.41
DER			-0.0022	-1.33					0.0005	0.28
STD					-0.0360	-1.05			-0.1137***	-3.26
LTD							-0.0594***	-2.64	-0.1313***	-2.80
SIZE	0.0060**	2.34	0.0063**	2.42	0.0056**	2.12	0.0072***	2.68	0.0075***	2.74
LIQ	-0.0023	-1.49	-0.0027*	-1.74	-0.0027*	-1.66	-0.0024	-1.58	-0.0033**	-2.41
DIV	0.0650***	11.68	0.0649***	12.10	0.0656***	12.19	0.0629***	11.36	0.0608***	11.40
NWC	0.1060***	4.72	0.1201***	5.03	0.1170***	4.81	0.1083***	4.83	0.1206***	5.46
AGE	0.0003	0.86	0.0003	0.87	0.0004	0.93	0.0003	0.71	0.0003	0.73
BOD	0.0006	0.35	0.0001	0.05	0.0002	0.14	0.0007	0.40	0.0005	0.26
Constant	-0.1437**	-2.00	-0.1549**	-2.19	-0.1379*	-1.88	-0.1705**	-2.35	-0.1754**	-2.34
Industry-FE	✓		✓		✓		✓		✓	
Year-FE	✓		✓		✓		✓		✓	
Clustered SE	✓		✓		✓		✓		✓	
Observation	4,164		4,164		4,164		4,164		4,164	
R2	0.3387		0.3371		0.3375		0.3439		0.3506	

Note: Statistical significance is denoted as *** for a significance level of 1%, ** for 5%, and * for 10% in a two-tailed test

Source : Proceed by Authors (2022)

Table 7 Panel Data Regression Analysis of Explanatory Variables on Dependent Variable ROE

Variable	(I)		(II)		(III)		(IV)		(V)	
	Coefficient	T-Stat	Coefficient	T-Stat	Coefficient	T-Stat	Coefficient	T-Stat	Coefficient	T-Stat
DAR	-0.0073	-0.28							0.0006	0.01
DER			-0.0923***	-9.12					-0.0955***	-8.93
STD					-0.0673	-0.96			0.1658	1.48
LTD							-0.0608	-1.43	0.0614	0.55
SIZE	0.0019	0.40	0.0171***	3.31	0.0013	0.27	0.0032	0.68	0.0178***	3.17
LIQ	0.0025	1.12	-0.0046**	-2.14	0.0020	0.90	0.0025	1.12	-0.0042**	-2.08
DIV	0.1605***	12.98	0.1202***	8.37	0.1603***	12.81	0.1578***	13.14	0.1231***	8.78
NWC	-0.0618**	-2.26	-0.0304	-1.38	-0.0615***	-3.20	-0.0684***	-2.87	-0.0061	-0.19
AGE	0.0013	1.12	0.0010	0.88	0.0014	1.13	0.0013	1.06	0.0010	0.87
BOD	0.0014	0.28	-0.0020	-0.40	0.0014	0.28	0.0017	0.35	-0.0030	-0.58
Constant	-0.0064	-0.05	-0.3092**	-2.24	0.0107	0.08	-0.0311	-0.24	-0.3422**	-2.27
Industry-FE	✓		✓		✓		✓		✓	
Year-FE	✓		✓		✓		✓		✓	
Clustered SE	✓		✓		✓		✓		✓	

Observation	4,164	4,164	4,164	4,164	4,164
R2	0.0775	0.2409	0.078	0.0786	0.2442

Note: Statistical significance is denoted as *** for a significance level of 1%, ** for 5%, and * for 10% in a two-tailed test

Source : Proceed by Authors (2022)

Table 8 Panel Data Regression Analysis of Explanatory Variables on Dependent Variable Tobins'Q

Variable	(I)		(II)		(III)		(IV)		(V)	
	Coefficient	T-Stat	Coefficient	T-Stat	Coefficient	T-Stat	Coefficient	T-Stat	Coefficient	T-Stat
DAR	0.5185	0.61							-1.3248	-0.79
DER			-0.0163	-0.33					-0.0574	-0.95
STD					-2.2379	-1.21			0.0815	0.03
LTD							2.4986**	2.40	4.0557*	1.95
SIZE	-0.7248	-4.79	-0.7201***	-4.70	-0.7421***	-5.04	-0.7768***	-5.08	-0.7951***	-5.10
LIQ	0.1709***	2.58	0.1756**	2.60	0.1656**	2.49	0.1710***	2.66	0.1786***	2.83
DIV	0.9329**	4.94	0.9033***	4.85	0.8936***	4.75	1.035***	5.53	1.0306***	5.34
NWC	-4.1502***	-4.15	-4.4872***	-5.25	-4.6450***	-5.59	-4.0198***	-4.92	-4.5764***	-4.33
AGE	-0.0047	-0.40	-0.0053	-0.45	-0.0042	-0.36	-0.0019	-0.16	-0.0014	-0.12
BOD	0.2081**	2.42	0.2185**	2.60	0.2239***	2.68	0.1979**	2.27	0.2105**	2.39
Constant	23.5953***	5.31	23.6448***	5.38	24.3139***	5.74	24.6513***	5.65	25.2980***	5.69
Industry-FE	✓		✓		✓		✓		✓	

Year-FE	✓	✓	✓	✓	✓
Clustered SE	✓	✓	✓	✓	✓
Observation	4,164	4,164	4,164	4,164	4,164
R2	0.3043	0.303	0.3069	0.3158	0.3203

Note: Statistical significance is denoted as *** for a significance level of 1%, ** for 5%, and * for 10% in a two-tailed test

Source : Proceed by Authors (2022)

Table 9 Panel Data Regression Analysis of Explanatory Variables on Dependent Variable ROA in Sharia-Compliant Firms

Variable	(I)		(II)		(III)		(IV)		(V)	
	Coefficient	T-Stat	Coefficient	T-Stat	Coefficient	T-Stat	Coefficient	T-Stat	Coefficient	T-Stat
DAR	-0.1174***	-6.58							-0.0974*	-1.74
DER			-0.0265***	-5.54					-0.0075	-1.14
STD					-0.0871***	-3.46			0.0025	0.04
LTD							-0.1085***	-4.7	0.0017	0.03
SIZE	0.0102***	4.72	0.0101***	4.53	0.0073***	3.16	0.0107***	4.74	0.0104***	4.62
LIQ	-0.0027**	-2.4	-0.0023**	-2	-0.0023*	-1.96	-0.0021*	-1.81	-0.0026**	-2.36
DIV	0.0569***	12.38	0.0581***	12.48	0.0610***	12.76	0.0580***	12.3	0.0568***	12.29
NWC	0.1030***	4.28	0.1068***	4.32	0.1212***	5.15	0.1159***	4.99	0.1018***	4.26
AGE	0.0002	0.41	0.0002	0.57	0.0003	0.68	0.0002	0.43	0.0002	0.44
BOD	-0.0003	-0.19	-0.0005	-0.3	0.0001	0.04	-0.0002	-0.11	-0.0004	-0.25

Constant	-0.2258***	-3.82	-0.2341***	-3.88	-0.1721***	-2.78	-0.2528***	-4.11	-0.2317***	-3.76
Industry-FE	✓		✓		✓		✓		✓	
Year-FE	✓		✓		✓		✓		✓	
Clustered SE	✓		✓		✓		✓		✓	
Observation	2,842		2,842		2,842		2,842		2,842	
R2	0.3703		0.3632		0.3497		0.356		0.3709	

Note: Statistical significance is denoted as *** for a significance level of 1%, ** for 5%, and * for 10% in a two-tailed test

Source : Proceed by Authors (2022)

Table 10 Panel Data Regression Analysis of Explanatory Variables on Dependent Variable ROE in Sharia-Compliant Firms

Variable	(I)		(II)		(III)		(IV)		(V)	
	Coefficient	T-Stat	Coefficient	T-Stat	Coefficient	T-Stat	Coefficient	T-Stat	Coefficient	T-Stat
DAR	-0.1928***	-4.51							0.1854	1.09
DER			-0.0914***	-5.66					-0.1241***	-4.19
STD					-0.1767***	-2.66			-0.0273	-0.17
LTD							-0.1560***	-2.94	-0.0211	-0.12
SIZE	0.0103**	2.42	0.0141***	3.32	0.0053	1.18	0.0105**	2.34	0.0135***	3.1
LIQ	-0.0048***	-2.73	-0.0047***	-2.7	-0.0043**	-2.35	-0.0038**	-2.11	-0.0042**	-2.34
DIV	0.1236***	13.2	0.1197***	12.56	0.1301***	13.25	0.1260***	12.99	0.1219***	12.85
NWC	0.0964*	1.86	0.0702	1.44	0.1249**	2.47	0.1195**	2.28	0.0795	1.63

AGE	0.0006	0.61	0.0006	0.66	0.0007	0.79	0.0006	0.64	0.0007	0.78
BOD	0.0017	0.43	0.0001	0.03	0.0023	0.59	0.0019	0.5	0.0000	-0.01
Constant	-0.2093	-1.87	-0.3035***	-2.73	-0.1144	-0.99	-0.2408**	-2.02	-0.3082**	-2.59
Industry-FE	✓		✓		✓		✓		✓	
Year-FE	✓		✓		✓		✓		✓	
Clustered SE	✓		✓		✓		✓		✓	
Observation	2,842		2,842		2,842		2,842		2,842	
R2	0.2251		0.2599		0.2154		0.2153		0.2648	

Note: Statistical significance is denoted as *** for a significance level of 1%, ** for 5%, and * for 10% in a two-tailed test

Source : Proceed by Authors (2022)

Table 11 Panel Data Regression Analysis of Explanatory Variables on Dependent Variable Tobins'Q in Sharia-Compliant Firms

Variable	(I)		(II)		(III)		(IV)		(V)	
	Coefficient	T-Stat	Coefficient	T-Stat	Coefficient	T-Stat	Coefficient	T-Stat	Coefficient	T-Stat
DAR	0.1299	0.11							2.1703	0.78
DER			-0.2961	-1.31					-0.7247	-1.34
STD					-1.2019	-0.49			-0.9792	-0.44
LTD							1.0571	0.86	0.7109	0.29
SIZE	-0.4812**	-2.48	-0.4532**	-2.53	-0.4856***	-2.76	-0.5070***	-2.71	-0.4859***	-2.81
LIQ	0.1253**	2.42	0.1208**	2.37	0.1198**	2.31	0.1258**	2.47	0.1258**	2.37

DIV	0.5896***	2.79	0.5502***	2.85	0.5825***	2.83	0.6155***	3.04	0.5961***	3.02
NWC	-3.6586***	-2.99	-3.8827***	-2.93	-3.7309***	-3.03	-3.5975***	-2.82	-3.7538***	-2.97
AGE	0.0036	0.26	0.0031	0.23	0.0036	0.27	0.0043	0.32	0.0051	0.38
BOD	0.1282	1.59	0.1204	1.47	0.127	1.59	0.1308	1.62	0.1195	1.43
Constant	16.7851***	3.08	16.2480***	3.12	16.9871***	3.35	17.3605***	3.23	16.8071***	3.43
Industry-FE	✓		✓		✓		✓		✓	
Year-FE	✓		✓		✓		✓		✓	
Clustered SE	✓		✓		✓		✓		✓	
Observation	2,842		2,842		2,842		2,842		2,842	
R2	0.1529		0.1552		0.1541		0.154		0.1608	

Note: Statistical significance is denoted as *** for a significance level of 1%, ** for 5%, and * for 10% in a two-tailed test

Source : Proceed by Authors (2022)

Table 12 Panel Data Regression Analysis of Explanatory Variables on Dependent Variable ROA in Non-Sharia Firms

Variable	(I)		(II)		(III)		(IV)		(V)	
	Coefficient	T-Stat	Coefficient	T-Stat	Coefficient	T-Stat	Coefficient	T-Stat	Coefficient	T-Stat
DAR	-0.0177	-0.82							0.0065	0.17
DER			-0.0003	-0.25					-0.0002	-0.22
STD					0.0461	0.77			0.0194	0.26
LTD							-0.0350	-1.59	-0.0367	-0.77

SIZE	0.0041	0.51	0.0048	0.59	0.0045	0.6	0.0037	0.48	0.0038	0.49
LIQ	-0.0025	-0.68	-0.0037	-1.35	-0.0042	-1.6	-0.0026	-0.86	-0.0033	-0.9
DIV	0.0731***	5.37	0.0715***	5.25	0.0716***	5.27	0.0722***	5.46	0.0716***	5.01
NWC	0.1158**	2.34	0.1420***	5.73	0.1552***	6.23	0.1209***	3.88	0.1352**	2.43
AGE	0.0005	0.68	0.0007	0.82	0.0007	0.81	0.0004	0.55	0.0005	0.61
BOD	-0.0009	-0.23	-0.0025	-0.65	-0.0029	-0.75	-0.0001	-0.04	-0.0008	-0.18
Constant	-0.1025	-0.47	-0.1256	-0.56	-0.1142	-0.56	-0.0900	-0.44	-0.0927	-0.44
Industry-FE	✓		✓		✓		✓		✓	
Year-FE	✓		✓		✓		✓		✓	
Clustered SE	✓		✓		✓		✓		✓	
Observation	1,322		1,322		1,322		1,322		1,322	
R2	0.4277		0.4243		0.429		0.4328		0.4339	

Note: Statistical significance is denoted as *** for a significance level of 1%, ** for 5%, and * for 10% in a two-tailed test

Source : Proceed by Authors (2022)

Table 13 Panel Data Regression Analysis of Explanatory Variables on Dependent Variable ROE in Non-Sharia Firms

Variable	(I)		(II)		(III)		(IV)		(V)	
	Coefficient	T-Stat	Coefficient	T-Stat	Coefficient	T-Stat	Coefficient	T-Stat	Coefficient	T-Stat
DAR	-0.0066	-0.42							0.0663***	3.00
DER			-0.0940***	-8.81					-0.0941***	-8.79

STD					0.0111	0.34			-0.0455	-0.86
LTD							-0.0333*	-1.70	-0.1035***	-2.89
SIZE	-0.0128	-0.79	0.0003	0.02	-0.0125	-0.78	-0.0135	-0.84	-0.0001	0.00
LIQ	-0.0068	-0.78	-0.0165*	-1.94	-0.0074	-0.85	-0.0062	-0.71	-0.0176**	-2.09
DIV	0.1801***	4.42	0.1487***	3.66	0.1795***	4.40	0.1801***	4.41	0.1447***	3.52
NWC	-0.0363	-1.30	0.0059	0.40	-0.0234	-1.40	-0.0465**	-2.32	0.0286	1.03
AGE	0.0016	0.73	0.0011	0.63	0.0016	0.75	0.0014	0.64	0.0009	0.53
BOD	-0.0089	-0.67	-0.0007	-0.06	-0.0096	-0.74	-0.0072	-0.55	0.0006	0.06
Constant	0.5056	1.11	0.2532	0.60	0.4998	1.11	0.5304	1.16	0.2616	0.62
Industry-FE	✓		✓		✓		✓		✓	
Year-FE	✓		✓		✓		✓		✓	
Clustered SE	✓		✓		✓		✓		✓	
Observation	1322		1322		1322		1322		1322	
R2	0.0326		0.3246		0.0325		0.0336		0.3275	

Note: Statistical significance is denoted as *** for a significance level of 1%, ** for 5%, and * for 10% in a two-tailed test

Source : Proceed by Authors (2022)

Table 14 Panel Data Regression Analysis of Explanatory Variables on Dependent Variable Tobin's Q in Non-Sharia Firms

Variable	(I)		(II)		(III)		(IV)		(V)	
	Coefficient	T-Stat	Coefficient	T-Stat	Coefficient	T-Stat	Coefficient	T-Stat	Coefficient	T-Stat

DAR	3.0413***	3.64							3.5323**	2.45
DER			0.0192	0.69					0.0047	0.23
STD					-2.5612	-1.12			-2.4035	-1.13
LTD							3.1321**	2.44	-0.9784	-0.62
SIZE	-.9962***	-3.82	-1.1235***	-3.95	-1.1059***	-4.38	-1.0209***	-3.87	-0.9940***	-4.06
LIQ	-0.0211	-0.24	.1953*	1.92	.2190**	2.19	0.0985	0.99	-0.0017	-0.02
DIV	1.2443***	3.23	1.5097***	3.49	1.5046***	3.57	1.453***	3.61	1.2209***	3.18
NWC	-0.5391	-0.46	-5.0303***	-4.99	-5.7623***	-5.00	-3.1489***	-2.72	-1.0956	-1.00
AGE	-0.0055	-0.29	-0.0293	-1.38	-0.0293	-1.37	-0.0085	-0.46	-0.0081	-0.41
BOD	0.1391	0.83	.4179***	2.84	.4395***	2.87	0.2064	1.15	0.1786	1.10
Constant	30.4889***	4.15	34.3906***	4.29	33.7485***	4.77	3.1222***	4.25	30.2976***	4.38
Industry-FE	✓		✓		✓		✓		✓	
Year-FE	✓		✓		✓		✓		✓	
Clustered SE	✓		✓		✓		✓		✓	
Observation	1,322		1,322		1,322		1,322		1,322	
R2	0.6234		0.5272		0.5409		0.5918		0.6317	

Note: Statistical significance is denoted as *** for a significance level of 1%, ** for 5%, and * for 10% in a two-tailed test

Source : Proceed by Authors (2022)