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The Role of Sharia Compliance, Governance, and Firm Size in Determining Free Cash Flow: Evidence from Energy Sector

Muhammad Irvan Paleva[1*], Ryan Yusuf Hardiono[2]
[1,2] Ministry of Finance

Corresponding author:
Muhammad Irvan Paleva
palevairvan@gmail.com

ABSTRACT

Cash flow efficiency is essential for corporate sustainability, especially in capital-intensive industries like the energy sector. This study aims to examine the effect of sharia compliance, audit quality, government effectiveness, and firm size on free cash flow. The research employs a panel data regression approach with a random effect model, analyzing 61 energy companies listed on the Indonesia Stock Exchange from 2020 to 2023, resulting in 243 firm-year observations. The findings reveal that Sharia compliance, audit quality, and firm size have a significant positive effect on free cash flow, while government effectiveness has a significant negative effect. The study is grounded in agency theory and stakeholder theory, contributing to the Islamic corporate finance literature and financial sustainability. One limitation of this study is its sectoral focus and the exclusion of macroeconomic variables. The findings offer practical support for regulators, investors, and policymakers to enhance ethical governance and financial outcomes.

Keywords: *Sharia Compliance; Audit Quality; Government Effectiveness; Firm Size; Free Cash Flow*

ABSTRAK

Efisiensi arus kas merupakan faktor kunci bagi keberlanjutan perusahaan, terutama di industri dengan intensitas modal tinggi seperti sektor energi. Penelitian ini bertujuan untuk menguji pengaruh kepatuhan syariah kualitas audit, efektivitas pemerintahan, dan ukuran perusahaan terhadap arus kas bebas. Penelitian ini menggunakan regresi data panel dengan model *random effect*, menganalisis 61 perusahaan energi yang terdaftar di Bursa Efek Indonesia selama periode 2020 – 2023, dengan total 243 observasi. Hasil penelitian menunjukkan bahwa kepatuhan syariah, kualitas audit, dan ukuran perusahaan berpengaruh positif signifikan terhadap arus kas bebas, sementara efektivitas pemerintahan berpengaruh negatif signifikan. Studi ini didasarkan pada teori keagenan dan teori pemangku kepentingan, serta memberikan kontribusi pada literatur keuangan korporat Islam dan keberlanjutan keuangan. Keterbatasan penelitian ini mencakup cakupan sektoral dan variabel makroekonomi. Temuan ini memberikan implikasi praktis bagi regulator, investor, dan pembuat kebijakan dalam memperkuat tata kelola etis dan kinerja keuangan.

Kata kunci: Kepatuhan Syariah; Kualitas Audit; Efektivitas Pemerintahan; Ukuran Perusahaan; Arus Kas Bebas

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INTRODUCTION

Financial management has an essential role in ensuring the companies' sustainability across various sectors (Manaf *et al.*, 2024). One key aspect of financial management is the efficient allocation and utilization of Free Cash Flow (FCF), which represents the available cash that a company can reinvest, distribute as dividends, or use to pay off obligations. In the energy sector, where firms often operate in capital intensive environments and face volatile commodity prices, managing FCF efficiently is critical to maintaining financial flexibility and long-term sustainability The ability of firms to generate and manage FCF effectively is influenced by various factors, including governance quality, effectiveness of government, and firm characteristics. Previous studies have explored factors in such a topic, but their connection to FCF remains unclear. For example, Guizani and Ajmi, (2021) found that Sharia-compliant firms tend to hold more cash, yet no study directly links Sharia principles to FCF. Similarly, while audit quality can reduce earnings management, its impact on FCF has not been clearly established. Government effectiveness effect in shaping FCF decisions is still under-researched. Firm size also relates to earnings management (Ali *et al.*, 2015), though its specific effect on FCF remains inconclusive. Thus, these gaps indicate the need for further study, particularly in the context of energy firms.

In this regard, comprehending the determinants of FCF is crucial for both academics and practitioners, particularly in the context of the energy sector, which operates under significant regulatory scrutiny and capital intensity.

Sharia compliance has become an increasingly important factor in corporate finance, especially in emerging markets with a substantial Muslim population. While prior studies suggest that Sharia-compliant firms tend to hold higher levels of cash due to ethical and prudent financial practices Guizani and Ajmi, (2021), there is limited empirical evidence on how Sharia principles directly influence Free Cash Flow (FCF), especially within the capital-intensive and highly regulated energy sector. Sharia-compliant firms adhere to Islamic financial principles, which prohibit interest-based transaction (riba), excessive uncertainty (gharar), and speculative activities (maysir). These firms must structure their financing based on ethical and asset-backed principles, promoting investment in real economic activities while minimizing exposure to speculative and high-risk financial instruments. (Touti and Taïb, 2024). This may impact their financial decision-making, including cash flow management. The fundamental question arises: do Sharia-compliant firms manage their free cash flows differently from conventional firms? Aljughaiman et al. (2024) have suggested that corporate governance in companies which comply to Islamic financial principles affects financial flexibility. It could influence cash flow efficiency. However, empirical evidence on this issue remains limited, particularly in the energy sector, which requires substantial financial resources and long-term capital commitments.

In addition to Sharia compliance, corporate governance mechanisms play a crucial role in determining financial outcomes. Audit quality, as an integral component of corporate governance, ensures transparency and reliability in financial reporting. Zhong, (2024) found that audit quality enhances the reliability of financial reporting. Furthermore, firms operating in highly competitive environments tend to optimize profits and demonstrate stronger financial performance. Shahzad et al., (2019) found that high-quality audits have a positive impact on investment

opportunities, which then decreases information asymmetry. Big 4 audit firms possess greater financial resources, skilled professionals, advanced technology, and extensive experience, allowing them to deliver superior audit quality (Rusmin, 2010). Nevertheless, the impact of audit quality on FCF remains a subject of debate, especially in industries with significant regulatory oversight and external financing needs.

Another critical determinant of corporate financial behavior is effectiveness of government, which represents public administration quality, regulatory enforcement, and institutional strength. The Worldwide Governance Indicators (WGI) provides a comprehensive measure of government effectiveness across different countries. Effective governments establish a stable business environment, enforce contracts, and reduce bureaucratic inefficiencies. While government effectiveness is generally perceived as a positive force for economic development, its impact on corporate cash flow management is not straightforward. On one hand, strong governance may enhance business operations by reducing regulatory uncertainty and fostering investor confidence. On the other hand, stringent regulatory requirements and tax compliance may constrain firms' financial flexibility, potentially reducing available free cash flow. Given these opposing perspectives, the relationship between government effectiveness and FCF requires further empirical investigation.

Firm size is another fundamental factor influencing financial management practices. Larger companies often take advantage of economies of scale, which are more accessible to financial markets. Beck and Demirguc-Kunt (2006) found that small and medium-sized enterprises have less access to financing compared to larger firms. These advantages enable large firms to maintain stable cash flow and better withstand financial shocks. However, large firms may also face higher agency costs (Canarella and Miller, 2022). This leads to potential inefficiencies in cash management. The trade-off between financial flexibility and agency costs makes firm size an important variable in understanding FCF dynamics. Karim et al. (2024) has produced findings on the role of firm size in financial performance. However, it necessitates further analysis in industry-specific contexts such as the energy sector.

Control variables such as firm age, liquidity, and leverage also play a crucial role in shaping corporate financial decisions. Older firms tend to have more sales and are more stable than the younger firms (Gross and Verani, 2012). That may influence their cash flow management practices. Liquidity, measured as the ratio of current assets to current liabilities, indicates a company's ability to meet short-term obligations. Firms with higher liquidity levels may experience greater financial flexibility, affecting their FCF levels. Meanwhile, leverage, represented by the debt ratio, reflects a firm's reliance on external financing. Highly leveraged firms may have lower FCF due to debt repayment obligations, while firms with lower leverage may retain more cash for investment opportunities. These control variables provide additional insights into the financial dynamics of energy firms.

The energy sector is characterized by capital-intensive operations, long investment cycles, and exposure to regulatory and environmental policies. Companies in this sector must navigate volatile market conditions, fluctuating commodity prices, and evolving sustainability regulations. As such, understanding the financial determinants of FCF in energy firms is particularly relevant for policymakers,

investors, and corporate decision-makers. Existing literature on corporate finance has largely focused on manufacturing and service industries, with limited attention given to the energy sector's unique financial challenges. This study empirically investigates the effects of Sharia compliance, audit quality, government effectiveness, and firm size on free cash flow among Indonesian energy companies.

LITERATURE REVIEW

Agency Theory

Agency Theory, pioneered by Jensen & Meckling (1979), expounds the conflict of interest between shareholders (principals) and managers (agents). Directors as agents may involve in opportunistic behaviours, such as overinvestment or inefficient capital allocation, leading to suboptimal free cash flow utilization. In the energy sector, agency problems may arise when the interests of the principal and the agent are not fully aligned. When principals face information asymmetry and are unable to monitor agents effectively, agents may act in their own self-interest, potentially making decisions that harm the principal. This misalignment can lead to agency problems, particularly in situations involving the allocation and management of substantial financial resources such as Free Cash Flow (FCF)(Xiangyu, 2021). High audit quality (Big 4 auditors) can mitigate agency problems by ensuring transparency and reducing information asymmetry. Additionally, government effectiveness may play a crucial role in shaping regulatory environments that control managerial opportunism, thereby affecting FCF efficiency.

Stakeholder Theory

Freeman (1984) introduced Stakeholder Theory, which expands the focus from shareholders to a broader group of stakeholders, including regulators, employees, and communities. Sharia-compliant companies, due to their ethical foundations, tend to engage in sound management practices that align with the interests of stakeholders (Lee and Isa, 2020). Stakeholder theory in Sharia-compliant companies emphasizes the importance of all stakeholders—including shareholders, employees, customers, and the wider community—in the governance and operations of Islamic financial institutions (Islam and Bhuiyan, 2019). In energy sector, Stakeholder Theory highlights the importance of recognizing and addressing the diverse needs of various stakeholders, including customers, employees, suppliers, local communities, and regulatory bodies (Godam et al., 2019). Sharia compliance aligns with this theory, as Islamic financial principles emphasize ethical and socially responsible business practices.

Free Cash Flow

Free cash flow (FCF) represents the cash available for distribution to creditors who have provided financing and to equity investors who have contributed capital to the project (Titman et al., 2020). FCF particularly important for energy companies, especially in emerging market, as it measures the generated cash capital expenditures (Ogundipe et al., 2024). In other literature, Free Cash Flow (FCF) in the energy sector is considered a key determinant of firm performance and stock price movements (Alalawi et al., 2016) It is a critical indicator of a company's financial flexibility and

ability to fund growth, distribute dividends, or reduce debt without relying on external financing. A higher level of FCF suggests that the firm is making optimal use of its financial resources, whereas inefficient FCF management may indicate excessive cash retention, poor investment decisions, or agency conflicts. In this study, FCF efficiency is assessed across both sharia-compliant and conventional firms in the energy sector, offering insights into how different governance and regulatory structures impact financial decision-making.

Sharia Compliance

This variable is indicator that distinguishes between sharia-compliant and non-sharia-compliant firms. Sharia-compliant firms must adhere to Islamic financial principles, which restrict excessive debt, speculative transactions, and interest-based financing. In Indonesia, the criteria for companies classified as Sharia-compliant issuers are regulated by the Financial Services Authority (OJK) under Regulation No. 35/POJK.04/2017. On that regulation, firms can be included into sharia-compliant firms if firms refrain from engaging in business activities that contradict Sharia principles in the capital market. These include gambling and other games of chance, interest-based financial services, and risk trading involving uncertainty (*gharar*) or gambling (*maisir*). Additionally, entities must not produce, distribute, or trade goods and services classified as inherently unlawful (*haram li-dzatihi*) or prohibited due to external factors (*haram li-ghairihi*), as determined by the National Sharia Board of the Indonesian Ulema Council (DSN-MUI). Firms must also avoid offering products or services that harm morality or public welfare, and any other activities deemed non-compliant with Sharia principles based on DSN-MUI regulations.

Audit Quality

Audit quality differentiates between firms audited by Big 4 accounting firms and those audited by non-Big 4 firms. Glaum et al., (2013) found that audit quality has a positive effect on the quality of financial disclosure in companies. However, in contrast, Krismiaji and Grediani, (2019) found that auditor quality has a negative effect on financial disclosure quality. Big 4 auditors have some characteristic that can make them performing high-quality audit, for example audit on Big 4 firms formed by associated with higher credibility, rigorous financial scrutiny, and lower earnings manipulation. A higher level of audit quality enhances financial transparency and accountability, reducing information asymmetry between managers and investors. By strengthening corporate governance mechanisms, high audit quality is expected to contribute positively to FCF efficiency.

Government Effectiveness

Government effectiveness is measured using the Worldwide Governance Indicators (WGI) index, which assesses public services quality, policy implementation, regulatory enforcement, and government credibility. While effective governance is generally expected to create a stable business environment, its impact on FCF efficiency may vary. If strong governance leads to increased regulatory compliance costs, bureaucratic inefficiencies, or restrictive policies, it may hinder cash flow flexibility. Conversely, if it fosters a more predictable and investor-friendly

environment, it may enhance cash flow management. Han et al., (2014) finds that countries with a surplus in government effectiveness tend to experience higher economic growth. In another study, the World Governance Indicators (WGI) show that government effectiveness plays a crucial role in improving financial outcomes within a region (Feyisa et al., 2022). This study investigates whether government effectiveness has a negative or neutral effect on FCF efficiency.

Firm Size

The larger firms, the better access to financial markets due to advantage from economies of scale, and more advanced financial management strategies, which can contribute to improved FCF efficiency. Higher free cash flow allows management to invest in assets, expansion, or innovation (Jaya, 2020). However, large firms may also face bureaucratic inefficiencies and agency problems that lead to suboptimal cash flow allocation. The study hypothesizes a positive relationship between firm size and FCF efficiency, as larger firms are generally expected to have more structured financial policies and governance mechanisms that enhance cash flow utilization.

Hypothesizes Development

Sharia Compliance and Free Cash Flow

Sharia-compliant firms are subject to strict financial and ethical guidelines. Based on Agency Theory, sharia compliance can provide a mechanism to minimalize agency conflicts between managers and shareholders by enforcing ethical financial management principles. Sharia-compliant firms have Board of Islamic Sharia Supervisory which plays role to monitor and evaluate the operation and provide recommendation for a firm to ensure that it complies with the Sharia principles (Al-Nasser and Muhammed, 2017). In Tunisia, Abdelsalam et al., (2021) found that more religious country in the corporate headquarter have negative correlation on earnings management. Islamic financial guidelines restrict speculative transactions, excessive debt, and interest-based financing, ensuring that managerial discretion over financial resources remains limited. This disciplined approach reduces the likelihood of opportunistic behaviours, such as inefficient investments or expropriation of free cash flow. With restrict capital structure decision, sharia-compliant firms also have lower levels of leverage than non-Sharia firms (Alnori and Alqahtani, 2019)

Based on the perspective of Stakeholder Theory, sharia compliance ensures that firms act in the best interests of multiple stakeholders, including customers, investors, and regulators. Compliance with Sharia principles can strengthen a company's credibility and reputation, maintaining trust for customers, investors, and regulators as its stakeholders (Asiyah et al., 2014). Guizani and Ajmi, (2021) find that sharia compliance firms tend to have higher cash. As firms prioritize responsible cash management and avoid excessive dividend payouts, therefore, it is hypothesized that:

H1: Sharia compliance has a positive effect on free cash flow.

Audit Quality and Free Cash Flow

Audit quality is one of determinants the degree of confidence of financial reporting and mitigating agency conflicts. Agency Theory posits that high-quality audits minimalize information asymmetry between managers and stockholders,

ensuring that financial reports accurately reflect a firm's financial position. Firms audited by reputable auditors, particularly Big 4 firms, are subject to rigorous scrutiny, reducing the risk of earnings management and financial misreporting. As a result, these firms are more likely to manage free cash flow efficiently, avoiding unnecessary expenditures or managerial opportunism (DeFond and Zhang, 2014).

Big 4 auditors can uphold a high standard of audit quality due to their extensive client base, which ensures that their revenue is not reliant on a single client, thereby enhancing their independence (Yasser and Soliman, 2018).

Audit quality serves as a crucial corporate governance mechanism, requiring auditors to maintain high standards to reduce the likelihood of managerial manipulation (Rahman et al., 2021). This leads to lower risk of earnings management. Some prior research finds that audit quality reduces the earnings management (Rusmin et al., 2014; Alqudah, 2024)

From the lens of Stakeholder Theory, high audit quality enhances stakeholder confidence, particularly among investors, creditors, and regulators, by ensuring the reliability of financial statements. Enhanced financial transparency improves decision-making, facilitates access to external financing, and strengthens overall corporate governance, ultimately leading to improved free cash flow management. Based on this argument, the hypothesis is formulated as follows:

H2: Audit quality has a positive effect on free cash flow.

Government Effectiveness and Free Cash Flow

Government effectiveness, as measured by the The Worldwide Governance Indicators (WGI) (2024), reflects the public services quality, regulatory frameworks, and the independence from political pressure. Strong governance institutions often enforce strict compliance requirements, taxation policies, and corporate governance standards, which may reduce firms' ability to accumulate and retain free cash flow. While these regulations improve financial oversight, they may also restrict managerial flexibility in resource allocation.

Chen and Yu, (2023) found that value of cash is higher if national governance is stronger. From a Stakeholder Theory perspective, effective government institutions shift corporate priorities toward broader social and economic objectives, such as corporate social responsibility (CSR) and environmental sustainability. These regulatory pressures encourage firms to allocate financial resources toward sustainable investments rather than accumulating excessive free cash flow. From an agency theory perspective, excessive government intervention can impose additional regulatory burdens that restrict managerial discretion over cash flow, thereby reducing free cash flow availability. Given this argument, this study hypothesizes that:

H3: Government effectiveness has a negative effect on free cash flow.

Firm Size and Free Cash Flow

Larger firms typically have more stable revenue streams, greater access to capital markets, and better financial management capabilities. Agency Theory suggests that firm size influences cash flow management through governance mechanisms and agency costs. Larger firms, with more complex organizational

structures, may experience higher agency costs due to difficulties in monitoring managerial actions. However, they also benefit from stronger internal controls, which can mitigate agency problems and enhance free cash flow efficiency. Study finds that company with higher size tends to do earnings management (Ali et al., 2015). From a Stakeholder Theory perspective, larger firms are more accountable to multiple stakeholders, including investors, employees, and regulators. Due to their greater market presence and reputational concerns, they tend to adopt more strategic financial management practices, ensuring efficient utilization of free cash flow while maintaining operational stability. Thus, the hypothesis is:

H4: Firm size has a positive effect on free cash flow.

METHOD

This study adopts a quantitative research approach using panel data regression analysis to examine the impact of Sharia compliance, audit quality, government effectiveness, and firm size on cash flow efficiency. The study employs a random effects model (REM) to account for unobserved heterogeneity across firms while ensuring efficient and consistent estimation. REM was chosen based on Chow, Hausman and Breusch-Pagan LM tests. To ensure the validity of regression model, classical assumption tests were performed. The data indicated no multicollinearity and no autocorrelation, while heteroskedasticity was addressed by using robust standard errors (vce robust).

The population of this study includes all energy sector companies listed on the Indonesia Stock Exchange (IDX) from 2020 to 2023. The energy sector is selected caused by its exposure to market volatility, financial risks, and regulatory compliance requirements. A purposive sampling technique was used to select the sample based on specific inclusion and exclusion criteria to ensure data completeness and consistency. The final sample comprises 61 companies, resulting in 243 firm-year observations after applying the following criteria:

1. Energy companies listed on IDX during the study period.
2. Companies with complete financial and audit-related data.
3. Exclusion of firms with missing key variables.

This sampling approach ensures the representativeness of energy sector firms while minimizing the risk of data bias due to missing values. Missing data were treated using listwise deletion. Based on the results of secondary data collection from companies listed on the IDX from 2020 to 2023, the following number of samples was obtained.

Table 1. Number of Samples

No	Criteria	Number
1	The company is classified as a manufacturing company in the energy sector	90
2	The company listed on IDX after the study period or delisted during the study period	(28)
3	Number of companies meeting the criteria	61

No	Criteria	Number
4	Number of years	x4
		244
5	Number of companies have not yet published their 2023 annual reports	(1)
	Number of Samples	243

Source: Data Collection Results from Company and IDX (2025)

The study employs the panel data regression model as follows.

$$FCF_{it} = \beta_0 + \beta_1 SHR_{it} + \beta_2 AQ_{it} + \beta_3 GE_{it} + \beta_4 SIZE_{it} + \beta_5 AGE_{it} + \beta_6 LEV_{it} + \beta_7 LIQ_{it} + \varepsilon_{it}$$

β_0 : Intercept
$\beta_{1,2,..7}$: Coefficients
ε_{it} : Error terms

The study examines the following variables.

Table 2. Operational Definition of Variables

Variable	Operational Definition	Indicator
Dependent		
Free Cash Flow (FCF)	The amount of cash available after covering operational and capital expenditures, reflecting financial flexibility.	$FCF = \frac{\text{Cash Flow} - \text{Capex}}{\text{Total Assets}}$
Independents		
Sharia Compliance (SHR)	Compliance with Islamic financial principles, ensuring transactions adhere to Sharia rules. Based on Financial Services Authority Board of Commissioners Decision No. KEP-33/D-04/2021, No. KEP-38/D-04/2022, No. KEP-52/D.04/2023, No. KEP-20/D.04/2024	Dummy variable (1 = Sharia-compliant, 0 = non-Sharia)
Audit Quality (AQ)	The credibility of a firm's financial reports based on the auditor type.	Dummy variable (1 = Big 4, 0 = Non-Big 4)
Government Effectiveness (GE)	The quality of public services, policy formulation, and regulatory enforcement affecting corporate governance.	GE Index from Worldwide Governance Indicators (WGI)
Firm Size (SIZE)	The total value of a company's assets, representing its scale of operations.	Ln(Total Assets)
Controls		
Firm Age (AGE)	The number of years since a company went public (IPO).	Ln(Firm Age)

Variable	Operational Definition	Indicator
Leverage (LEV)	The proportion of total liabilities to total assets, indicating financial risk.	$Debt\ Ratio = \frac{Total\ Liabilities}{\text{total assets}}$
Liquidity (LIQ)	A company's ability to meet short-term obligations using its current assets.	$Current\ Ratio = \frac{Current\ Assets}{\text{Current Liabilities}}$

RESULT AND DISCUSSION

Descriptive Statistics

Variables measured in ratios will be presented with descriptive statistics in the form of centrality measures, namely the average or mean and dispersion measures, namely standard deviation, minimum value and maximum value. The results are as follows.

Table 3. Descriptive Statistics

Variables	N	Minimum	Maximum	Mean	Std. Dev.
FCF	243	-0.36	0.66	0.07	0.14
GE	243	0.32	0.58	0.42	0.10
SIZE*	243	69.60	169,616.47	14,580.51	27,463,57
AGE	243	0	33	13.57	8.65
LEV	243	0.00	2.26	0.57	0.35
LIQ	243	0.01	34.99	2.11	3.03

*in billion rupiah

Source: Data Processed (2025)

The descriptive statistics provide an overview of the distribution and characteristics of the variables examined in this study. The average Free Cash Flow (FCF) is 0.07, indicating that, on average, energy sector firms generate a relatively small proportion of free cash flow compared to their total assets. This modest average may reflect the high capital expenditure and reinvestment needs typical in the energy industry, which can constrain the accumulation of free cash flow.

However, the FCF values range from -0.36 to 0.66, suggesting that some firms experience negative FCF, meaning they spend more cash than they generate, while others have strong financial flexibility. In the energy sector, negative FCF may result from large-scale infrastructure projects, high debt servicing costs, or delayed revenue recognition due to long project cycles. These conditions can challenge a firm's financial sustainability and increase dependency on external financing. The standard deviation of 0.14 reflects a moderate level of variation, implying that while most firms operate around the average, significant outliers exist.

Government Effectiveness (GE) has an average score of 0.42, with values ranging between 0.32 and 0.58. This indicates that the sampled firms generally operate in an environment characterized by moderate institutional quality and governance capability. Compared to global standards based on the Worldwide Governance Indicators (WGI), this average suggests that Indonesia's government effectiveness is relatively lower than that of high-income countries, where scores typically exceed 0.95. This aligns with prior studies Malik, (2024) that explain regulatory governance

in Indonesia may still need reforms. The relatively low standard deviation of 0.10 suggests minimal variation in government effectiveness experienced across the sample firms, indicating that the institutional environment is uniform for firms within the same national jurisdiction.

The Firm Size (SIZE) variable exhibits significant dispersion, with an average value of IDR 14,580.51 billion and a wide range from IDR 69.60 billion to IDR 169,616.47 billion. The standard deviation of IDR 27,463.57 billion suggests substantial differences between smaller and larger firms, highlighting the importance of considering firm heterogeneity in financial performance analysis. Similarly, Firm Age (AGE) has an average of 13.57 years, with values ranging from newly established firms (0 years) to firms operating for over three decades (33 years). The standard deviation of 8.65 reflects a broad distribution in firm longevity.

Leverage (LEV), measured as the debt ratio, has a mean of 0.57, meaning that, on average, firms finance around 57% of their assets with debt. However, the values range from 0.00 to 2.26, indicating that some firms rely entirely on equity financing, while others have significantly high debt levels. The standard deviation of 0.35 suggests moderate variation in leverage across firms. Liquidity (LIQ), measured using the current ratio, has an average of 2.11, implying that most firms maintain twice as many current assets as current liabilities, reflecting good short-term financial health. However, the liquidity ratio varies widely, from 0.01 to 34.99, with a standard deviation of 3.03, suggesting that some firms may struggle with liquidity constraints while others hold excessive cash reserves.

These findings offer key insights into firms' financial conditions and operational environments. The presence of firms with negative FCF underscores the importance of effective cash management strategies. The moderate government effectiveness suggests that while regulatory environments are relatively stable, there are areas for improvement in policy efficiency. The large dispersion in firm size highlights significant firm heterogeneity, which may influence financial performance. Furthermore, the wide range in liquidity ratios suggests that while some firms manage their working capital efficiently, others may either be excessively conservative in holding cash or face liquidity challenges.

The variables measured on a nominal scale will be presented with descriptive statistics in the form of frequencies with the following results.

Table 4. Dummy Data Variable Frequency Results

Variables	Frequency	Percentage (%)
SHR		
Non-Sharia (0)	67	27.57
Sharia Compliant (1)	176	72.43
Total	243	100
AQ		
Non-Big4 (0)	164	67.49
Big4 (1)	79	32.51
Total	243	100

Source: Data Processed (2025)

Table 4 presents the frequency of the dummy variables used in this study. In terms of Sharia Compliance (SHR), most firms (72.43% or 176 observations) are classified as sharia-compliant, while the remaining 27.57% (67 observations) operate under conventional financial principles. This indicates a significant dominance of sharia-compliant firms within the energy sector, which aligns with the increasing adoption of Islamic financial principles in corporate governance and investment decisions. The high proportion of sharia-compliant firms may reflect regulatory incentives, market preferences, or corporate strategies aimed at tapping into the growing Islamic finance market.

Regarding Audit Quality (AQ), the sample reveals that 67.49% (164 observations) of firms engage non-Big 4 audit firms, while only 32.51% (79 observations) are audited by Big 4 firms. This suggests that most energy sector firms prefer or rely on smaller audit firms, possibly due to cost considerations or the perception that their financial reporting requirements do not necessitate services from top-tier global audit firms. However, the presence of Big 4 auditors in one-third of the sample indicates that some firms recognize the value of higher audit quality in enhancing financial transparency and investor confidence.

Model Estimation Test

To determine which panel data regression model is better to use, the common effect model (CEM), fixed effect model (FEM), or random effect model (REM), the Chow test, Hausman test, and Lagrange-Multiplier test are carried out. Based on these three tests, the results can be compiled as follows.

Table 5. Estimation Model Test Results

No	Test	CEM	FEM	REM	Conclusion
1	Chow Test	-	V	-	REM
2	Hausman Test	-	-	V	
3	Lagrange Multiplier Test	-	-	V	

Source: Data Processed (2025)

Based on the table above, the Chow test shows that the estimation model uses FEM, while the Hausman test and Lagrange Multiplier test show that the estimation model uses REM. Thus, a more appropriate model is REM.

Hypothesis Test

The panel data regression hypothesis test was carried out by considering the coefficient of determination test (R2), F test, and t test. Hypothesis testing is carried out to answer the development of hypotheses that have been put forward. Below are presented the predicted directions, variable coefficient sizes, and the influence of the independent variable on the dependent variable.

Table 6. Hypothesis Testing

No	Variables	Prediction	Coefficient (Beta)	P > |t| 1 tail	Conclusion
1	SHR	+	0.038	0.036**	H1 accepted
2	AQ	+	0.069	0.004*	H2 accepted

3	GE	-	-0.164	0.003*	H3 accepted
4	SIZE	+	0.012	0.077***	H4 accepted
5	AGE	-	-0.001		
6	LEV	-	-0.026		
7	LIQ	+	0.001		
R2-between			25,38%		
F value			0,00		

Source: Data Processed (2025);*sig. 0.01; ** sig 0.05; *** sig. 0.10

The regression analysis provides insights into the relationship between Sharia Compliance (SHR), Audit Quality (AQ), Government Effectiveness (GE), Firm Size (SIZE), and Free Cash Flow (FCF), while controlling for Firm Age (AGE), Leverage (LEV), and Liquidity (LIQ). The R^2-between value of 25.38% indicates that approximately one-quarter of the variation in free cash flow across firms can be explained by the independent variables included in the model. In the context of social science research, an R^2-between value at least 10% is generally considered acceptable (Ozili, 2022). The F-statistic is significant at 0.00, confirming the overall model fit. The results of hypothesis testing and interpretation are explained below.

1. Sharia Compliance (SHR) shows a positive and significant effect on FCF ($\beta = 0.038$, $p = 0.036$), supporting H1.
2. Audit Quality (AQ) has a positive and highly significant effect on FCF ($\beta = 0.069$, $p = 0.004$), leading to the acceptance of H2.
3. Government Effectiveness (GE) exhibits a negative and significant effect on FCF ($\beta = -0.164$, $p = 0.003$), confirming H3.
4. Firm Size (SIZE) has a positive but marginally significant effect on FCF ($\beta = 0.012$, $p = 0.077$), supporting H4 at the 10% significance level.

Discussion

Sharia Compliance and Free Cash Flow

The results indicate that sharia compliance has a significant positive effect on free cash flow. This finding aligns with Stakeholder Theory, which suggests that sharia-compliant firms prioritize ethical financial management and the interests of multiple stakeholders, including investors, customers, and regulators. Due to restrictions on excessive leverage and speculative activities, sharia-compliant firms tend to adopt a more conservative approach to financial management, leading to higher levels of free cash flow. The adherence to sharia principles ensures that firms maintain disciplined cash management strategies, avoiding unnecessary financial risks.

Furthermore, sharia-compliant firms often have stricter dividend payout policies compared to their conventional counterparts. Islamic financial principles emphasize profit-sharing mechanisms and reinvestment of retained earnings, rather than aggressive dividend distribution. This conservative financial policy allows firms to accumulate higher free cash flow, providing them with greater financial flexibility for future investments and operational stability. Unlike conventional firms, which may distribute a significant portion of their profits to shareholders, sharia-compliant

firms are incentivized to retain earnings and deploy capital in ways that align with ethical and long-term value creation.

From an Agency Theory perspective, sharia compliance also helps mitigate agency conflicts between managers and shareholders. In conventional firms, excessive free cash flow can lead to managerial opportunism, such as empire-building investments or inefficient capital allocation. However, in sharia-compliant firms, strong ethical guidelines and governance mechanisms limit managerial discretion over cash flow, reducing the likelihood of opportunistic behaviour. This disciplined approach to cash flow management ensures that financial resources are used efficiently, benefiting both shareholders and other stakeholders.

The positive impact of sharia compliance on free cash flow is also consistent with prior empirical research. This result can support finding from Guizani and Ajmi, (2021) that sharia compliance firms tend to have higher cash. Besides, studies have found that Sharia-compliant firms exhibit better profitability than non-Sharia firms (Alsharari and Alhmoud, 2019). These characteristics contribute to stronger cash flow management and sustainable financial performance. Overall, the findings underscore the importance of ethical financial practices in enhancing cash flow efficiency and ensuring long-term financial stability.

Audit Quality and Free Cash Flow

The results show that audit quality has a significant positive effect on free cash flow. This is consistent with Agency Theory, which posits that high-quality audits reduce information asymmetry and enhance financial transparency. Firms audited by Big 4 accounting firms are subject to stricter scrutiny, leading to more reliable financial reporting and better governance. Higher audit quality ensures that financial statements accurately reflect a firm's cash flow position, reducing the risk of managerial misreporting and inefficient capital allocation (DeFond and Zhang, 2014).

A strong audit function also improves managerial accountability by imposing stricter monitoring mechanisms. However, firms audited by Big 4 firms are less likely to engage in earnings management due to the reputational risk associated with audit failures. This increased oversight ensures that free cash flow is managed effectively, reducing the risk of agency conflicts and financial misreporting.

From a Stakeholder Theory perspective, high audit quality enhances trust among investors, creditors, and other stakeholders. When financial reports are audited by reputable firms, stakeholders have greater confidence in the accuracy of financial disclosures, leading to improved investment decisions and lower capital costs. This increased transparency also facilitates better financial planning, allowing firms to optimize their cash flow management and allocate resources efficiently. As a result, firms with high audit quality are more likely to generate and maintain higher levels of free cash flow.

Empirical evidence supports the positive relationship between audit quality and free cash flow. Studies have shown that firms audited by Big 4 firms exhibit better earnings quality, lower financial risk, and higher investor confidence compared to non-Big 4 firms. These findings suggest that audit quality plays a critical role in shaping financial management strategies, particularly in ensuring that free cash flow

is utilized in a manner that maximizes shareholder value and promotes financial sustainability.

Government Effectiveness and Free Cash Flow

The results reveal a significant negative relationship between government effectiveness and free cash flow, indicating that higher government effectiveness is associated with lower free cash flow. This finding aligns with Agency Theory, which suggests that excessive government intervention can impose regulatory burdens that restrict managerial discretion over cash flow. In environments with strong government effectiveness, firms may face stricter compliance requirements, higher taxation, and increased regulatory oversight, which can limit their ability to accumulate free cash flow.

One possible explanation for this negative relationship is that highly effective governments often enforce stringent corporate governance and financial disclosure regulations. While these measures improve overall financial transparency, they can also increase compliance costs and administrative burdens for firms (Djankov et al., 2002). As a result, firms operating in countries with strong governance institutions may experience reduced financial flexibility, leading to lower levels of free cash flow.

From a Stakeholder Theory perspective, strong government effectiveness may shift firms' priorities toward broader societal and environmental objectives, rather than maximizing cash reserves. Governments with high institutional quality often encourage corporate social responsibility (CSR) initiatives, sustainable investments, and equitable wealth distribution. While these initiatives contribute to long-term social welfare, they may also reduce the amount of free cash flow available for internal use.

This result supports finding from (Aggarwal, 2013; Affes and Jarboui, 2023) regarding the impact of government effectiveness on corporate financial outcomes. While some research suggests that strong institutions enhance investor confidence and corporate performance (La Porta et al., 1998). The findings of this study support the latter view, indicating that firms operating in highly regulated environments may face constraints that limit their ability to generate and retain free cash flow.

Firm Size and Free Cash Flow

The results indicate a positive but marginally significant relationship between firm size and free cash flow. This is consistent with Stakeholder Theory, which suggests that larger firms are more accountable to various stakeholders and, therefore, engage in better financial planning and resource allocation. Larger firms typically have more stable revenue streams, greater bargaining power, and better access to capital markets, which contribute to improved cash flow efficiency.

Larger company allows them to manage costs more effectively and improve cash flow generation. They also have diversified revenue sources, which reduce financial risk and increase operational stability. Additionally, larger firms are more likely to implement advanced financial management systems and employ professional financial planners, further enhancing their ability to optimize free cash flow.

From an Agency Theory perspective, firm size can influence cash flow management through governance mechanisms. Larger firms often have more complex organizational structures, which can lead to higher agency costs. However, they also have stronger internal controls and more sophisticated monitoring systems, which help mitigate agency problems and improve cash flow efficiency.

Empirical evidence supports the positive relationship between firm size and free cash flow. produced finding on the role of firm size in financial performance. Prior studies have found results regarding the impact of firm size on corporate financial outcomes (Karim et al., 2024). These findings highlight the importance of firm size as a determinant of financial sustainability and strategic cash flow management.

CONCLUSION

The study confirms that ethical governance (sharia compliance), audit quaility, and firm scale drive free cash flow in the energy sector, while excessive regulation may constrain it. The findings indicate that sharia compliance positively influences free cash flow, supporting the notion that ethical financial practices and conservative investment strategies enhance financial stability. Audit quality, particularly firms audited by Big 4 firms, also has a significant positive impact on free cash flow, reinforcing the role of high-quality audits in ensuring financial transparency and efficiency. Conversely, government effectiveness negatively affects free cash flow, suggesting that increased regulatory oversight may impose financial constraints that limit firms' ability to accumulate and manage excess cash. Lastly, firm size positively influences free cash flow, highlighting the advantages of economies of scale and enhanced financial management in larger firms.

Based on these findings, several key recommendations emerge for businesses, policymakers, and investors. First, firms should consider the benefits of sharia compliance by strengthening sharia-based governance beyond ethical considerations, as it contributes to stronger financial discipline and efficient cash flow management. Second, businesses should prioritize high-quality audits, preferably from reputable firms, such as Big 4 audits to enhance transparency and investor confidence, ultimately improving cash flow efficiency. Third, policymakers should balance regulatory oversight with corporate financial flexibility by adopting proportionate regulation to avoid excessive constraints on firms' ability to manage their resources effectively. Finally, firms should leverage their size and financial capacity to implement better governance mechanisms that ensure optimal free cash flow utilization.

While this study provides valuable insights, it has certain limitations that future research could address. Limitations include sector focus and exclusion of board-level governance. Future studies should explore the role of industry-specific factors, macroeconomic conditions, and corporate governance structures in influencing free cash flow. In additional, enlarging the dataset to include firms across industries from various countries with varying economy and regulatory environments could provide an understanding of these relationships more comprehensively. Further research could also investigate the mediating effects of financial performance or investment efficiency in the relationship between these variables and free cash flow.

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