

**DETERMINANTS OF TAX AVOIDANCE IN INDONESIAN SHARIA-
LISTED ENERGY COMPANIES**

A THESIS

Presented as a Partial Fulfillment of the Requirements to obtain Bachelor Degree
in Accounting Department



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**Determinants of Tax Avoidance in Indonesian Sharia-Listed Energy
Companies**

THESIS

Prepared and submitted to fulfill one of the requirements for a Bachelor's Degree
in Accounting at the Faculty of Business and Economics, UII

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2026**

DECLARATION OF AUNTENTICITY

Herein I declare to the originality of this thesis. I have not presented someone's work to obtain my university degree, nor I have presented anyone else's words, ideas, or expression without acknowledgement. All quotation is cited and listed in the bibliography of the thesis. If in the future this statement is proven to be false, I am willing to accept any sanction complying with the determined regulation or its consequence.

Yogyakarta, 14 July 2026



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The researcher fully acknowledges that this thesis remains far from flawless, with deficiencies and shortcomings likely present throughout, since perfection belongs to Allah Subhanahu wa Ta'ala alone. With this in mind, and in all humility, the researcher warmly welcomes constructive criticism and suggestions that may shape future improvement. Ultimately, it is the researcher's sincere hope that this thesis, in whatever measure, brings genuine benefit both to herself and to its readers.

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ABSTRACT

This study aims to examine the influence of financial characteristics consisting of profitability, sales growth, capital intensity, and liquidity, as well as audit quality, on tax avoidance among energy sector companies listed on the Financial Services Authority's (OJK) Sharia Securities List (DES) over the period of 2021-2025. Tax avoidance in this study is proxied using the Cash Effective Tax Rate (Cash ETR) developed by Dyreng et al. (2008). The inconsistent results from previous studies regarding the relationship between financial characteristics and tax avoidance behavior, as well as the limited number of studies specifically examining tax avoidance among companies listed on the OJK's Sharia Securities List, serve as the primary motivation for this study.

This study employs a quantitative approach using purposive sampling, resulting in a sample of 17 energy sector companies listed on the OJK's Sharia Securities List, with a total of 85 observations over the 2021-2025 period. Data analysis was conducted using panel data regression with the Random Effects Model (REM), corrected using the Panel Corrected Standard Errors (PCSE), through EViews 14SV software.

The results show that sales growth has a significant negative effect on tax avoidance, indicating that companies with high sales growth tend to optimize their tax liabilities to maximize internal cash flow for funding business expansion. Meanwhile, profitability, capital intensity, liquidity, and audit quality do not have a significant effect on tax avoidance.

Keywords: tax avoidance, Cash ETR, profitability, sales growth, capital intensity, liquidity, audit quality, Sharia Securities List.

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CHAPTER I

INTRODUCTION

1.1 The Context of the Study

As a fiscal instrument, tax holds a vital function in financing national development. Within the Indonesian context, tax revenue represents the primary pillar of the State Budget (APBN), accounting for over 80 % of total state income. Data published by the Komite Pengawas Perpajakan (2024) shows that tax revenue realization in 2023 amounted to Rp1,869.23 trillion, or 102.8% of the targeted figure set in the APBN. This substantial reliance of the state on the tax sector positions tax compliance among business entities as a strategic issue that cannot be overlooked.

On the other hand, as parties subject to tax obligations, companies generally seek to minimize the tax burden they must bear. Such efforts may be pursued through two avenues: legally sanctioned methods (tax avoidance) and unlawful ones (tax evasion). Tax avoidance itself refers to a set of legal actions undertaken by taxpayers to reduce their tax liabilities by exploiting loopholes within existing tax regulations (Quthbi & Renfiana, 2023). Although classified as legal, this practice nonetheless results in imposes fiscal losses on the state, as it contributes to a significant erosion of the tax revenue base.

On a global level, the phenomenon of tax avoidance has become a serious concern for various international organizations. The Organization for Economic Co-operation and Development (OECD), through its Base Erosion and Profit

Shifting (BEPS) project, estimates that tax revenue losses resulting from tax avoidance by multinational corporations amount to between USD 100 and 240 billion per year or the equivalent of 4 to 10 percent of total global corporate tax revenue. In Indonesia, this situation is reflected in a tax ratio that remains relatively low compared to other Southeast Asian countries. IMF data cited by Simanjuntak (2026) notes that Indonesia's tax-to-GDP ratio in 2024 was only 10.08 percent, far below Thailand (15.95), the Philippines (15.36%), and Vietnam (12.96%).

The energy sector is one of the most interesting sectors to examine in the context of tax avoidance. Energy companies generally have unique financial characteristics, namely extremely large fixed assets (capital-intensive), cash flows that fluctuate in line with global energy to financial risk. These characteristics create distinct incentives and capabilities for energy companies to engage in aggressive tax planning. Data from the Directorate General of Taxes (DJP) indicates that the mining and energy sectors are among those receiving special attention regarding tax compliance.

This phenomenon is not without real-world examples in Indonesia. An investigative report by Global Witness (2019) titled "Taxing Times for Adaro" revealed alleged tax avoidance practices carried out by PT Adaro Energy Tbk through its Singapore-based subsidiary. Global Witness estimates that the tax shortfall that should have been paid in Indonesia amounts to approximately USD 14 million per year during the 2009-2017 period or a total of around USD 125 million over that timeframe. What is particularly noteworthy about this case is the

fact that PT Adaro Energy Tbk was listed on the OJK's Sharia Securities List (DES) during certain periods. This situation serves as both concrete evidence and a critical question: does a company's Sharia status truly guarantee more compliant and responsible tax behavior? Empirical evidence indicates that Sharia status does not automatically guarantee a higher level of tax compliance, as demonstrated by studies on companies listed in the Indonesia Sharia Stock Index (Dewi & Priyadi, 2023; Nibras & Hadinata, 2020)

This question is becoming increasingly relevant given the rapid growth of Indonesia's Islamic capital market. According to data from the Financial Services Authority (OJK, 2024), the number of Islamic stocks listed on the DES continues to rise, reaching 679 stocks in the second quarter of 2024. The concept of Sharia in the context of business and investment emphasizes principles such as justice (*'adl*), honesty (*amanah*), and compliance with the law (*halal*). In the context of taxation, companies that claim compliance with Sharia principles should have a higher commitment to social responsibilities, including tax obligations.

Research materials in finance and accounting identify various factors that influence tax avoidance. Profitability is one of the most frequently studied variables. Companies with high profitability typically have a higher tax burden, creating a stronger incentive not to pay taxes. Return on Assets (ROA), as a proxy for profitability, illustrates the ability to generate a profit from the company's total assets. Darsani and Sukartha (2021) found that profitability has a positive effect on tax avoidance, whereas Anggriantari and Purwantini (2020) and Lestari et al. (2023) found a significant negative effect. Mixed results were also shown by

Dewi and Priyadi (2023), Putri et al. (2023), Wulandari and Sudarma (2022), and Tarigan & Ubaidillah (2023).

Sales growth is another relevant variable. Companies with high sales growth require greater financial resources to fund their expansion, which may encourage tax avoidance as a source of internal funding. Dewi and Priyadi (2023) found that sales growth has a significant effect on tax avoidance. However, Apriatna and Oktris (2021) and Iwenty and Surjandari (2022) did not find a significant effect, indicating that the relationship between sales growth and tax avoidance still yields inconsistent results.

Capital intensity is a highly relevant variable, particularly for the capital-intensive energy sector. According to Richardson and Lanis (2007), as cited in Nibras and Hadinata (2020), companies with large fixed-asset investments can utilize depreciation expenses as a significant tax deduction. Darsani and Sukartha (2021) and Sahara (2022) found a positive effect of capital intensity on tax avoidance. Conversely, Monika and Noviari (2021) and Nibras and Hadinata (2020) found no significant effect, suggesting that this relationship depends on the industry context and the study period.

A company's liquidity is also linked to tax avoidance behavior. Companies with high liquidity have greater financial capacity to meet their tax obligations, so theoretically they have a higher level of tax compliance. Rahayu et al. (2022) and Febrianto et al. (2021) found that liquidity has a significant positive effect on tax avoidance. Meanwhile, Sahabuddin et al. (2024) found a significant

negative effect, whereas Tarigan & Ubaidillah (2023) and Sahabuddin et al. (2024) found no significant effect. This inconsistency indicates that the relationship between liquidity and tax avoidance remains a subject of debate in the literature.

Audit quality is the final variable examined in this study. Public Accounting Firms (PAFs) affiliated with the Big Four are assumed to possess greater competence and resources in detecting and curbing inappropriate financial reporting practices, including aggressive tax avoidance strategies (Kurniasih & Sari, 2013, as cited in Nibras & Hadinata, 2020). Gunawan et al. (2021) found a significant negative effect of audit quality on tax avoidance, while Rizkiana and Suripto (2022) found a significant positive effect. On the other hand, Monika and Noviari (2021), Wulandari and Sudarma (2022) , and Rusdiani and Umaimah (2023) found no significant effect.

Prior studies on tax avoidance have generally focused on manufacturing companies or companies in general without distinguishing specific industrial sectors. Studies specifically targeting energy sector companies that meet Sharia criteria remain very limited. Significant inconsistencies in results were also found for each variable: Darsani and Sukartha (2021) found a positive effect of profitability, while Anggriantari and Purwantini (2020) and Lestari et al. (2023) found a negative effect. Regarding capital intensity, Darsani and Sukartha (2021) and Sahara (2022) found a positive effect, while Monika and Noviari (2021) and Nibras and Hadinata (2020) found no significant effect. For the liquidity variable, Rahayu et al. (2022) and Febrianto et al. (2021) found a positive effect, whereas

Tarigan & Ubaidillah (2023) and Sahabuddin et al. (2024) found no significant effect. In terms of audit quality, Gunawan et al. (2021) found a significant negative effect, while Monika and Noviani (2021) and Rusdiani & Umaimah (2023) found no significant effect. This inconsistency highlights the need for further research with a more specific context, namely, Sharia energy companies in a more recent period.

Based on the above discussion, there is an academic and practical need to examine the influence of capital intensity, profitability, sales growth, liquidity, and audit quality on tax avoidance among Sharia-compliant energy companies listed in the OJK's Sharia Securities List for the 2021-2025 period. This research is expected to fill a gap in the existing literature, provide a deeper understanding of the tax behavior of Sharia-compliant energy companies, and provide empirical evidence that can be used as a basis for consideration by various stakeholders, including tax authorities, Sharia capital market regulators, and investors.

1.2 Research Questions

Based on the background described above, the research questions in this research are as follows:

1. Does Profitability affect Tax Avoidance in Sharia-compliant energy companies listed on the OJK's Sharia Securities List?
2. Does Sales Growth affect Tax Avoidance in Sharia-compliant energy companies listed on the OJK's Sharia Securities List?

3. Does Capital Intensity affect Tax Avoidance in Sharia-compliant energy companies listed on the OJK's Sharia Securities List?
4. Does Liquidity affect Tax Avoidance in Sharia-compliant energy companies listed on the OJK's Sharia Securities List?
5. Does Audit Quality affect Tax Avoidance in Sharia-compliant energy companies listed on the OJK's Sharia Securities List?

1.3 Research Objectives

In line with the problem formulation, this research aims to analyze:

1. The effect of profitability on tax avoidance in Sharia-compliant energy companies listed on the OJK's Sharia Securities List.
2. The effect of sales growth on tax avoidance in Sharia-compliant energy companies listed on the OJK's Sharia Securities List.
3. The effect of capital intensity on tax avoidance in Sharia-compliant energy companies listed on the OJK's Sharia Securities List.
4. The effect of liquidity on tax avoidance in Sharia-compliant energy companies listed on the OJK's Sharia Securities List.
5. The effect of audit quality on tax avoidance in Sharia-compliant energy companies listed on the OJK's Sharia Securities List.

1.4 Benefits of the Research

This research is expected to benefit various stakeholders, including:

1. For Academic Purposes

The results of this research are expected to enrich the tax accounting literature on the determinants of tax avoidance among energy sector companies listed on the OJK's Sharia Securities List, while also providing empirical evidence to address the inconsistencies in previous research findings regarding the effects of financial characteristics and audit quality on tax avoidance particularly within the context of Sharia-listed companies.

2. For Regulators

The results of this research are expected to provide evidence-based input for the formulation of more effective tax supervision policies, particularly regarding energy sector issuers listed on the OJK's Sharia Securities List, as well as to serve as a consideration in refining sharia screening criteria from a tax compliance perspective.

3. For Corporate Management and Sharia Investors

The results of this research are expected to serve as a reference for corporate management in understanding the financial factors that influence tax decisions while taking Sharia values into account, as well as to provide additional information for Sharia investors in assessing the quality of corporate governance and compliance with Islamic principles, one aspect of which is reflected in the company's tax behavior.

4. For Future Researchers

The results of this research are expected to serve as a guide and reference for researchers interested in examining the topic of tax avoidance among Sharia companies in Indonesia, and can be further developed with additional variables or more comprehensive analytical methods across different time periods.

1.5 Systematics of the Research

The research is systematically organized into five interconnected and sequential chapters. The structure of this research is as follows:

CHAPTER I : INTRODUCTION

Chapter I outlines the context of the study, the problem formulation, the objectives of the research, the benefits of the research, and the systematics of the research.

CHAPTER II : LITERATURE REVIEW

Chapter II presents the theoretical foundations underpinning the research, a review of relevant prior studies, the development of research hypotheses, and the conceptual framework.

CHAPTER III : RESEARCH METHODOLOGY

Chapter III explains the type of research, the population and sample, sampling techniques, data collection methods, operational definitions and measurement of research variables, as well as the data analysis methods used.

CHAPTER IV : RESULTS AND DISCUSSION

Chapter IV discusses the results of the analysis and the discussion of the research.

CHAPTER V : CONCLUSION

Chapter V provides conclusions drawn from the research findings, as well as suggestions for future research and for relevant stakeholders.

CHAPTER II

LITERATURE REVIEW

2.1 Theoretical Framework

2.1.1 Agency Theory

Agency theory was pioneered in their seminar paper “Theory of the Firm: Managerial Behavior, Agency Costs and Ownership Structure” by Jensen and Meckling (1976). This theory describes the work of a contract between two parties, the principal (i.e., shareholders) and agent (i.e., managers), in which the principal gives up decision-making authority to the agent to operate the firm. This agency relationship shows that both parties here are assumed rational actors who act to maximize their respective interests which in this context can create a conflict of interest (Rusdiani & Umaimah, 2023).

In the context of taxation, agency theory provides a relevant framework for understanding tax avoidance behavior. Managers as agents want to reduce the company’s tax burden since they have a performance-linked bonus based on net income which is enhanced by reducing taxes. The knowledge difference between managers and shareholders makes it impossible for companies to stop managers from adopting the opportunistic mode of behavior with respect to tax avoidance activity. Rahayu et al. (2022) assert that under conditions of weak corporate governance, managers can exploit the complexity of transactions to conceal tax avoidance activities from shareholder oversight.

2.1.2 Sharia Securities List

The Sharia Securities List (DES) is a list of securities in the Indonesian capital market that do not conflict with Sharia principles, officially established by the Financial Services Authority (OJK) pursuant to OJK Regulation No. 35/POJK.04/2017 on the criteria and submission of the Sharia Securities List. The DES is updated every six months, specifically in May and November of each year, so the Sharia status of a security is dynamic and may change in line with changes in the company's financial condition.

A security may be listed and maintained on the Sharia Securities List if it meets the three main criteria established by the Financial Services Authority, as follows: First, the security must be a Sharia-compliant security issued by an issuer or public company that explicitly conducts its business activities in accordance with Sharia principles; second, shares issued by non-Sharia issuers or public companies may still be classified as Sharia-compliant securities provided that they do not engage in business activities that conflict with Sharia principles, do not conduct transactions involving *riba*, *gharar*, or *maisir*, and meet certain financial ratios, namely, total interest-based debt does not exceed 45% of total assets, and non-halal revenue does not exceed 10% of total revenue; and third, it includes Sharia-compliant securities other than shares, whether issued through a public offering or not, provided they comply with capital market laws and regulations and the Sharia principles established by the MUI National Sharia Council.

One important point to note in the context of this research is that the criteria for selecting the Sharia Securities List do not include tax compliance as an

evaluation indicator. This means that a company can maintain its Sharia Securities List status even if it engages in aggressive tax avoidance practices, provided that the three criteria mentioned above are met. This situation is a serious concern, given that tax compliance is, in fact, an integral part of corporate social responsibility, as emphasized by Fahira & Machdar (2024), who state that ethical business practices include compliance with tax regulations. This principle should be inherent in every company listed in the Sharia Securities List.

This discrepancy becomes even more relevant when examined from an Islamic perspective, where companies whose shares are listed on the DES are not only required to meet technical financial criteria but are also expected to uphold Sharia ethical principles in all aspects of their operations, including tax obligations. One of these fundamental principles is *amanah* (trust/integrity), which positions managers as trustees accountable to shareholders, society, and Allah for managing the company's resources honestly and transparently. Haryani et al. (2025) emphasize that the accounting profession and corporate financial management must transform into stewards of *amanah*, whose accountability is not merely limited to formal compliance with regulations but also encompasses a transcendental responsibility to Allah. In the context of taxation, this implies that companies listed in the DES should demonstrate a higher commitment to tax compliance as a tangible manifestation of the principle of stewardship toward the state and society. Furthermore, Ratnawati et al. (2025) assert that Islamic ethical principles such as justice (*'adl*), trust (*amanah*), accountability (*hisbah*), and the public interest (*maslahah*) constitute the ethical dimensions that should underpin

the tax compliance behavior of sharia-compliant companies, regardless of the company's scale and financial characteristics.

2.1.3 Tax Avoidance

Tax avoidance is a concept that has been defined in many ways by experts from various perspectives. Chen et al. (2010) and Hanlon & Heitzman (2010) broadly define tax avoidance as any form of explicit effort by a company to reduce its tax liability, ranging from entirely legal tax planning to actions that fall into a legal gray area. This definition emphasizes that tax avoidance is not a black-and-white phenomenon but rather a continuum ranging from entirely lawful actions to those that potentially violate the spirit of tax regulations (as cited in Aronmwan & Okaiwele, 2020).

Anindya (2025) distinguishes the concept of tax avoidance from two concepts that are often conflated: tax planning and tax evasion. Tax planning is an effort to optimize tax efficiency that is carried out legally, transparently, and in full accordance with the spirit of tax regulations. Tax avoidance falls between the two extremes, whereby actions are formally legal but contrary to the intent and objectives intended by the drafters of tax laws. Meanwhile, tax evasion is the illegal avoidance of taxes through data manipulation, concealment of income, or providing false information to tax authorities.

From the perspective of agency theory, tax avoidance is viewed as a manifestation of the conflict of interest between managers and shareholders. Managers have an incentive to engage in tax avoidance in order to increase

reported profits (Jensen & Meckling, 1976, as cited in Rahayu et al., 2022). Although tax avoidance is legal, this practice can still be ethically harmful to society because it contributes to a reduction in government revenue that should be used to fund public services and development (Quthbi & Renfiana, 2023).

Aronmwan & Okaiwele (2020) identified various indicators used in the literature to measure the level of tax avoidance, including the effective tax rate (ETR), current ETR, cash ETR, and cash flow ETR. Rusdiani & Umaimah (2023) confirmed that the cash ETR developed by Dyreng et al. (2008) is the most accurate proxy for capturing actual tax avoidance behavior because it is based on taxes actually paid in cash, rather than merely tax expenses recorded on an accrual basis, and is therefore not affected by manipulation through deferred tax accounts. The lower a company's Cash ETR, the stronger the indication of tax avoidance.

2.1.4 Profitability

Profitability is one of the most fundamental indicators of a company's financial performance and is widely studied in the accounting and finance literature. Conceptually, profitability reflects a company's ability to generate profits from its operational activities efficiently and effectively over a specific period. Brigham and Houston (2019), as quoted in Hisbullah (2021), define profitability as the net result of a series of managerial policies and decisions made in managing a company's assets, capital, and revenue.

In the tax literature, profitability is closely linked to tax avoidance behavior. This can be explained through two contradictory perspectives. The first

perspective, based on agency theory, states that the higher a company's profitability, the greater its tax burden, thereby giving management a stronger incentive to seek loopholes in tax laws to minimize its tax liability (Anggraeni & Oktaviani, 2021). The second perspective argues the opposite; Derashid & Zhang (2003), as cited in Nibras & Hadinata (2020), state that highly profitable companies actually tend to be more compliant with their tax obligations because they possess sufficient financial capacity and face greater reputational risks if they are found to be engaging in tax avoidance.

Some commonly used indicators to measure profitability include Return on Assets (ROA), Return on Equity (ROE), and Net Profit Margin (NPM). ROA was chosen as a proxy in this research because it reflects a company's overall ability to generate profits from all of its assets, regardless of how those assets are financed. Nibras & Hadinata (2020) assert that ROA is the most relevant profitability indicator in the context of tax avoidance analysis because it comprehensively reflects a company's operational effectiveness. Anggraeni & Oktaviani (2021) confirm that companies with high ROA show a greater tendency to engage in tax avoidance as a means of maintaining their net profit levels.

2.1.5 Sales Growth

Sales growth is a business performance indicator that reflects a company's ability to expand the scale of its operations from one period to the next. Conceptually, sales growth illustrates the extend of the increase in sales revenue a company has achieved over a specific period, which can serve as a benchmark for

future growth as well as an indication of the success of the company's previous efforts (Lailliyah et al., 2024).

From the perspective of agency theory, management focused on sales growth will seek to maximize available financial resources to fund business expansion. One approach is through tax efficiency, in which tax savings are treated as a source of internal funding that does not incur explicit capital costs. This aligns with the view of Quthbi & Renfiana (2023), who state that companies with high sales growth tend to be more aggressive in their tax planning because they require more cash to finance their growth.

On the other hand, rapid sales growth can also increase a company's visibility to tax authorities, meaning that stricter oversight may actually limit the company's ability to engage in tax avoidance. Illmi & Merliana (2024) found that sales growth does not have a significant effect on the Cash ETR, indicating that sales growth is not always a determining factor in a company's tax avoidance behavior in a heavily regulated sector. The inconsistency of these findings makes sales growth an interesting variable to re-examine in the context of sharia-compliant energy companies.

2.1.6 Capital Intensity

Capital intensity is a concept that describes the extent to which a company's operations depend on investment in tangible fixed assets such as land, buildings, machinery, equipment, and production infrastructure. Companies with high capital intensity generally operate in industries that inherently require large

capital investments, such as the energy, mining, heavy manufacturing, and telecommunications sectors. Richardson and Lanis (2007) define capital intensity as the ratio of net fixed assets to a company's total assets, which reflects the extent of the company's commitment to long-term investments in physical assets (Nibras & Hadinata, 2020).

From a tax perspective, capital intensity has significant implications for tax avoidance behavior through the depreciation mechanism. Tax regulations in Indonesia allow companies to depreciate their fixed assets periodically and treat these depreciation expenses as deductions from taxable income. Thus, companies with a large fixed-asset base inherently have greater capacity to legally reduce their tax burden by optimizing their depreciation claims (Andhari & Sukartha, 2017). This concept aligns with the view of Monika & Noviari (2021), who assert that the intensity of fixed-asset use is one of the structural determinants of tax avoidance behavior.

Capital intensity is highly relevant in the context of the energy sector, given that this industry is one of the most capital-intensive sectors in the world. Energy companies generally have substantial investments in the form of oil refineries, pipeline networks, power plants, drilling facilities, and distribution infrastructure worth trillions of rupiah. Setiawan (2025) confirms that for mining and energy companies in Indonesia, high capital intensity is consistently correlated with a lower Cash ETR, indicating a higher degree of tax avoidance through the use of fixed asset depreciation expenses as a tax-reducing instrument.

2.1.7 Liquidity

Liquidity is one of the fundamental dimensions in corporate financial analysis that reflects a business entity's ability to meet its short-term financial obligations using its most readily convertible assets. Sutrisno (2009) defines liquidity as a company's ability to convert assets into cash or to obtain cash in order to meet its due obligations. An adequate level of liquidity is a prerequisite for the continuity of a company's operations and the trust of its stakeholders, including creditors and suppliers (Mahardika & Suci, 2021).

In the context of taxation, liquidity has a complex conceptual relationship with tax avoidance behavior. Nur & Subardjo (2020) argue that companies facing liquidity pressures, meaning those with low liquidity ratios, are more inclined to defer or minimize tax payments as part of their short-term cash flow management strategy. Under conditions of cash constraints, large tax payments can threaten a company's operational sustainability, prompting management to explore various legally available tax-saving mechanisms.

On the other hand, there is a contrasting view that companies with very high liquidity actually possess greater financial capacity and flexibility to utilize various complex tax planning instruments, including managing the timing of revenue and expense recognition for tax purposes. Rahayu et al. (2022) found that liquidity has a significant positive effect on tax avoidance, indicating that greater cash availability actually provides management with broader opportunities for tax planning. Meanwhile, Atthaila et al. (2025) suggest that the relationship between liquidity and tax avoidance is not uniform across all industrial sectors. The

inconsistency of these findings makes liquidity a relevant variable to be re-examined specifically in the context of energy sector companies listed on the Sharia Securities List.

2.1.8 Audit Quality

Audit quality is a multidimensional concept that has become one of the central topics in the international auditing literature. DeAngelo (1981), as cited in Andri et al. (2020), defines audit quality as the combined probability that an auditor will (1) detect violations in a client's accounting system (the competence dimension), and (2) report those violations to the public (the independence dimension). This definition emphasizes that audit quality is determined not only by the auditor's technical ability but also by the auditor's integrity and firmness in disclosing findings that may be unwelcome to the client.

One of the most commonly used proxies for measuring audit quality in empirical research is the size of the public accounting firm. Wahyuni & Wahyudi (2021) state that audit quality is related to the size of the public accounting firm, with firms affiliated with the Big Four (Deloitte, PricewaterhouseCoopers, Ernst & Young, and KPMG) consistently associated with higher audit quality compared to non-Big Four firms. This is because Big Four firms have a high international reputation and credibility, so the audited financial statements have greater credibility, and their auditors tend to be more rigorous in detecting tax avoidance practices (Putri & Halmawati, 2023). In relation to tax avoidance, the presence of high-quality auditors serves as an effective external oversight mechanism in limiting management's room to maneuver for aggressive tax avoidance. Wijaya

(2025) demonstrated that among energy sector companies in Indonesia, higher audit quality is consistently correlated with a higher Cash ETR, indicating a lower level of tax avoidance.

2.2 Previous Research

A summary of relevant studies conducted by previous researchers is presented in the table below:

Table 2.2 Previous Research

No.	Researchers, Year, and Title	Variables		Result
		Independent	Dependent	
1	Apriatna & Oktris (2022) The Effect of Profitability, Company Size, Sales Growth and Leverage on Tax Avoidance with Leverage as Moderating Variable	Profitability (ROA), Company Size, Sales Growth, Leverage	Tax Avoidance (CETR)	The study found that profitability, firm size, sales growth, and leverage did not affect tax avoidance. Leverage also did not moderate the relationship between the independent variables and tax avoidance.
2	Wulandari & Sudarma (2022) The Influence of Ownership Structure,	Family Ownership, Government Ownership,	Tax Avoidance (Cash ETR)	The results of the study show that only government ownership and institutional

No.	Researchers, Year, and Title	Variables		Result
		Independent	Dependent	
	Leverage, Profitability, Company Size, and Audit Quality on Tax Avoidance in Indonesia	Institutional Ownership, Foreign Ownership, Leverage, Profitability (ROA), Firm Size, Audit Quality		ownership have a positive effect on tax avoidance. Other variables, including family ownership, institutional ownership, foreign ownership, leverage, profitability, firm size, and audit quality, have no effect.
3	Dewi & Priyadi (2023) Pengaruh Sales Growth, Profitabilitas, dan Leverage terhadap Tax avoidance pada Perusahaan Pertambangan yang Terdaftar di Indeks Saham Syariah Indonesia (ISSI)	Sales Growth, Profitability (ROA), Leverage	Tax Avoidance (ETR)	The study found that sales growth and profitability had a significant effect on tax avoidance, while leverage did not have a significant effect. Taken together, all independent variables had an effect on tax avoidance.
4	Anggriantari &	Profitability	Tax	The results of the study

No.	Researchers, Year, and Title	Variables		Result
		Independent	Dependent	
	Purwantini (2020) Pengaruh Profitabilitas, Capital Intensity, Inventory Intensity, dan Leverage pada Penghindaran Pajak	(ROA), Capital Intensity, Inventory Intensity, Leverage	Avoidance (ETR)	indicate that Inventory Intensity had a positive and significant effect on tax avoidance, Profitability had a negative and significant effect on tax avoidance, while Capital Intensity and Leverage have no effect on tax avoidance.
5	Sahara (2022) Pengaruh Komisaris Independen, Komite Audit, Kualitas Auditm dan Capital Intensity terhadap Tax Avoidance dengan Karakter Eksekutif sebagai Variabel Moderasi	Komisaris Independen, Komite Audit, Kualitas Audit, Capital Intensity	Tax Avoidance	Independently, independent directors have a negative effect on tax avoidance. The audit committee has a significant effect on tax avoidance. Audit quality and capital intensity have a positive effect on tax avoidance. Collectively, all independent variables

No.	Researchers, Year, and Title	Variables		Result
		Independent	Dependent	
				affect tax avoidance. Executive characteristics moderate the effects of the audit committee and capital intensity on tax avoidance, but do not moderate the effects of independent directors and audit quality on tax avoidance.
6	Rahayu et al. (2022) Liquidity, Leverage, Tax Avoidance: The Moderating Role of Firm Size	Liquidity (CR), Leverage	Tax Avoidance (ETR)	The study findings show that liquidity has an effect on tax avoidance, leverage does not exhibit such an effect, and firm size fails to moderate the relationship between either liquidity or leverage and tax avoidance.
7	Sahabuddin et al. (2024)	Liquidity (LDR)	Tax Avoidance	The findings reveal that liquidity significantly

No.	Researchers, Year, and Title	Variables		Result
		Independent	Dependent	
	Examining the Influence of Liquidity on Tax Avoidance: The Role of Capital Structure in Indonesian Sharia Banks (2019-2023)		(ETR)	influences tax avoidance, capital structure likewise exerts a significant effect on tax avoidance, and capital structure functions as a mediating variable in the relationship between liquidity and tax avoidance.
8	Rusdiani & Umaimah (2023) Pengaruh Komisaris Independen, Komite Audit, dan Kualitas Audit terhadap Tax Avoidance	Komisaris Independen, Komite Audit, Kualitas Audit	Tax Avoidance (CETR)	The results of the study indicate that independent commissioners had a significant effect on tax avoidance, whereas the audit committee and audit quality had no effect on tax avoidance.
9	Rizkiana & Sripto (2022) The Effect of Audit	Audit Quality, Accounting Conservatism	Tax Avoidance	The results of the study indicate that audit quality has a significant positive

No.	Researchers, Year, and Title	Variables		Result
		Independent	Dependent	
	Quality and Accounting Conservatism on Tax Avoidance			effect on tax avoidance. Accounting conservatism has no effect on tax avoidance. Taken together, audit quality and accounting conservatism have a significant effect on tax avoidance.
10	Iwenty & Surjandari (2022) The Effect of Sales Growth, Corporate Social Responsibility, and Institutional Ownership on Tax Avoidance with Profitability as Moderating Variables	Sales Growth, Corporate Social Responsibility (CSR), Institutional Ownership, Profitability	Tax Avoidance	The study found that CSR had a significant negative effect on tax avoidance. Institutional ownership and sales growth have no effect. Profitability had a significant negative effect on tax avoidance. Profitability moderated the relationship between institutional ownership and tax avoidance, but did not moderate the

No.	Researchers, Year, and Title	Variables		Result
		Independent	Dependent	
				relationships between sales growth and CSR.
11	Monika & Noviani (2021) The Effects of Financial Distress, Capital Intensity, and Audit Quality on Tax Avoidance	Financial Distress, Capital Intensity, Audit Quality	Tax Avoidance (CETR)	The results of the study indicate that financial distress has a negative effect on tax avoidance. Capital intensity and audit quality have no effect on tax avoidance. Taken together, all independent variables have a significant effect on tax avoidance.
12	Tarigan & Ubaidillah (2023) The Influence of Liquidity, Profitability, and Capital intensity Toward Tax Avoidance in Mining Companies Listed on	Liquidity (CR), Profitability (ROA), Capital Intensity	Tax Avoidance (ETR)	The results of the study indicate that profitability has a significant effect on tax avoidance. Liquidity and capital intensity do not have a significant effect. Taken together, all variables have a

No.	Researchers, Year, and Title	Variables		Result
		Independent	Dependent	
	the Indonesia Stock Exchange			significant effect on tax avoidance.
13	Putri et al. (2023) The Effect of Profitability, Liquidity, Leverage, Capital Intensity, and Company Size on Tax Avoidance	Profitability (ROA), Liquidity (CR), Leverage (DER), Capital Intensity, Company Size	Tax Avoidance	The results of the study indicate that Profitability and Leverage have a significant positive effect on Tax Avoidance. Liquidity, Capital Intensity, and Firm Size do not have a significant effect.

2.3 Hypothesis Formulation

2.3.1 The Effect of Profitability on Tax Avoidance

Profitability reflects a company's ability to generate profits from all of its assets, which in this research is measured using Return on Assets (ROA). Within the framework of agency theory, management, as the agent, has an interest in maximizing the company's performance to secure optimal compensation, while the government, as the tax authority, expects the company to pay taxes in full based on the actual profits earned (Rahayu et al., 2022). This conflict-of-interest drives management to seek strategies that can legally reduce the tax burden, including through tax avoidance, especially when the company's profitability

increases and the tax liability to be paid also rises. Thus, the higher a company's profitability, the greater the incentive for management to utilize tax planning strategies to minimize tax liabilities, resulting in a lower Cash ETR and an increased level of tax avoidance.

On the other hand, Nibras & Hadinata (2020) state that companies with high profitability generally also have better financial capacity and a more comprehensive understanding of their tax obligations. This situation encourages management to comply with tax obligations more rigorously, as the company's positive reputation must be maintained in the eyes of stakeholders, including investors and tax authorities. Furthermore, profitable companies tend to have better governance systems, thereby limiting the scope for tax avoidance. Thus, the higher a company's profitability, the higher its reported Cash ETR tends to be, indicating a lower level of tax avoidance.

A study conducted by Apriatna & Oktris (2022) found that profitability does not have a significant effect on tax avoidance. Companies with high profitability levels are still able to pay taxes in accordance with applicable regulations due to their sound financial condition, profitability has not been shown to encourage or reduce tax avoidance behavior. In contrast to these findings, Wulandari & Sudarma (2022) found that profitability has a negative effect on tax avoidance. Companies with high ROA tend to have higher Cash ETR levels, reflecting better tax compliance, as profitable companies prioritize transparency in financial reporting and avoid the reputational risks that may arise from tax

avoidance practices. Therefore, based on the above discussion, the hypothesis is formulated as follows:

H1: Profitability (ROA) has a negative effect on tax avoidance among Sharia-compliant energy companies listed on the OJK's Sharia Securities List during the 2021-2025 period.

2.3.2 The Effect of Sales Growth on Tax Avoidance

Sales growth reflects a company's ability to expand the scale of its business from one period to the next. From the perspective of agency theory, growth-oriented management will seek to maximize available internal resources to fund the company's business expansion.

Companies experiencing high sales growth require greater cash flow to finance their expansion activities. One strategy management can pursue is to improve efficiency by minimizing tax burdens, so that cash originally intended for tax payments can be redirected as a source of internal funding. For sharia-compliant energy companies operating amid the surge in energy prices during the 2021-2025 period, the pressure to optimize cash flow is intensifying alongside significant sales growth.

Research conducted by Apriatna & Oktris (2022) found that sales growth does not have a significant effect on tax avoidance. Companies with stable and increasing sales growth tend not to be driven to engage in tax avoidance, as these conditions reflect the company's ability to fulfill all its obligations, including tax obligations, in accordance with applicable regulations. Contrary to these findings,

Dewi & Priyadi (2023) found in their study that sales growth has a significant effect on tax avoidance. The higher a company's sales growth, the greater the likelihood of generating profits, thereby incentivizing the company to minimize its tax burden in order to maximize the profits reported to its principal. Therefore, based on the above discussion, the hypothesis is formulated as follows:

H2: Sales Growth (SG) has a negative effect on tax avoidance at Sharia-compliant energy companies listed on the OJK's Sharia Securities List during the 2021-2025 period.

2.3.3 The Effect of Capital Intensity on Tax Avoidance

Capital intensity shows how large a proportion of a company's total assets is comprised of fixed assets, which in this research is measured using the ratio of net fixed assets to total assets. Within the framework of agency theory, management, as the agent, has the discretion to allocate the company's funds into various forms of investment, including fixed assets. These investment decisions are not solely oriented toward operational needs but can also be used as a tool to influence the company's tax burden.

A company's fixed assets give rise to periodic depreciation expenses, which are deductible from taxable income. The larger the proportion of a company's fixed assets, the higher the accumulated depreciation expense recognized each year, thereby reducing the company's taxable income and lowering its tax liability. Cost-efficiency-oriented management can strategically leverage this mechanism by increasing investment in fixed assets as a means to

legally optimize tax savings. Thus, the higher a company's capital intensity, the greater the potential for tax avoidance strategies.

A study conducted by Anggriantari & Purwantini (2020) found that capital intensity does not have a significant effect on tax avoidance. Companies with a high proportion of fixed assets essentially use those assets purely to support operational activities and long-term investments, rather than as instruments for intentional tax avoidance, thus high capital intensity does not necessarily lead to an increase in tax avoidance practices. In contrast to these findings, Sahara (2022) found that capital intensity has a significant positive effect on tax avoidance. Companies with high levels of fixed asset investment derive fiscal benefits from substantial depreciation expenses, which directly reduce taxable income and ultimately encourage increased tax avoidance as part of management's tax efficiency strategy. Therefore, based on the above discussion, the hypothesis is formulated as follows:

H3: Capital Intensity (CI) has a positive effect on tax avoidance among Sharia-compliant energy companies listed on the OJK's Sharia Securities List during the 2021-2025 period.

2.3.4 The Effect of Liquidity on Tax Avoidance

Liquidity represents a company's ability to meet its short-term financial obligations, which in this study is measured using the current ratio. Within the framework of agency theory, a company's liquidity affects managerial decisions

regarding cash flow management, including the tax strategies adopted by management.

When a company holds a high level of liquidity, it generally possesses adequate cash reserves to cover short-term obligations, tax payments included, without resorting to aggressive tax-saving measures. In fact, a sound cash position tends to reinforce management's commitment to fulfilling tax obligations responsibly, given that the absence of financial strain removes much of the incentive to engage in tax avoidance. Consequently, as a company's liquidity rises, so too does its capacity to meet tax obligations, which in turn drives the Cash ETR upward while reducing the extent of tax avoidance undertaken.

A study conducted by Rahayu et al. (2022) found that liquidity has a significant positive effect on tax avoidance. Mining companies with high liquidity levels tend to continue engaging in tax avoidance because the ability to meet short-term obligations does not necessarily reduce tax avoidance practices. In contrast to these findings, Sahabuddin et al. (2024) found that in Sharia-based companies, high liquidity is actually correlated with better tax compliance, as companies with strong cash positions are able to meet their tax obligations without needing to resort to tax avoidance strategies. Therefore, based on the above discussion, the hypothesis is formulated as follows:

H4: Liquidity (CR) has a negative effect on tax avoidance in Sharia-compliant energy companies listed on the OJK's Sharia Securities List during the 2021-2025 period.

2.3.5 The Effect of Audit Quality on Tax Avoidance

Audit quality represents the auditor's ability to detect and report inaccuracies or violations in a client's financial statements, which in this research is measured using a dummy variable based on the public accounting firm's affiliation with The Big Four. Within the framework of agency theory, information asymmetry between principals and agents creates opportunities for management to take actions that prioritize personal interests, including tax avoidance strategies. The presence of a high-quality external auditor serves as an independent oversight mechanism capable of reducing this information asymmetry, thereby limiting management's leeway to engage in opportunistic actions in the area of taxation.

Firms affiliated with the Big Four are generally regarded as holding a stronger reputation, deeper expertise, and more extensive resources compared to their non-Big Four counterparts, which allows them to deliver audit reports that are more reliable and transparent. Because high-quality auditors tend to apply more rigorous oversight, management is pushed toward greater accuracy in financial reporting, including how tax obligations are disclosed. As a result, companies audited by Big Four firms typically show a higher Cash ETR, a pattern that points to tax payments more closely aligned with actual financial conditions and, by extension, a comparatively lower tendency toward tax avoidance.

Furthermore, companies audited by Big Four firms face greater reputational pressure to maintain full compliance with tax regulations, as any association with aggressive tax planning strategies could damage the credibility of

both the company and the auditing firm itself. This reputational mechanism incentivizes management to avoid aggressive tax positions, resulting in a higher Cash ETR that reflects stronger tax compliance. Additionally, Big Four auditors typically possess deeper knowledge of complex tax structures and are more likely to flag aggressive tax arrangements during the audit process, further constraining management's ability to engage in tax avoidance without detection. Taken together, these mechanisms suggest that companies audited by Big Four firms are expected to exhibit higher Cash ETR values, reflecting a comparatively lower tendency toward tax avoidance, which supports the expectation that audit quality exerts a positive influence on Cash ETR among energy sector companies listed on OJK's Sharia Securities List.

A study conducted by Rusdiani & Umainah (2023) found that audit quality does not have a significant effect on tax avoidance. Auditors from both Big Four and non-Big Four firms are essentially tasked only with auditing the fairness of financial statement presentation and do not specifically assess the presence or absence of tax avoidance, given that tax avoidance is a legal effort to reduce the tax burden that does not fall under the category of violations required to be reported in the auditor's report. Contrary to these findings, Rizkiana & Suripto (2022) found that audit quality has a significant positive effect on tax avoidance. Companies that use the services of Big Four accounting firms will have more reliable financial information because auditors from these firms maintain high audit standards, making it easier to detect indications of aggressive tax planning and minimize discrepancies in financial reporting which ultimately

drives an increase in the Cash ETR score as a reflection of better tax compliance.

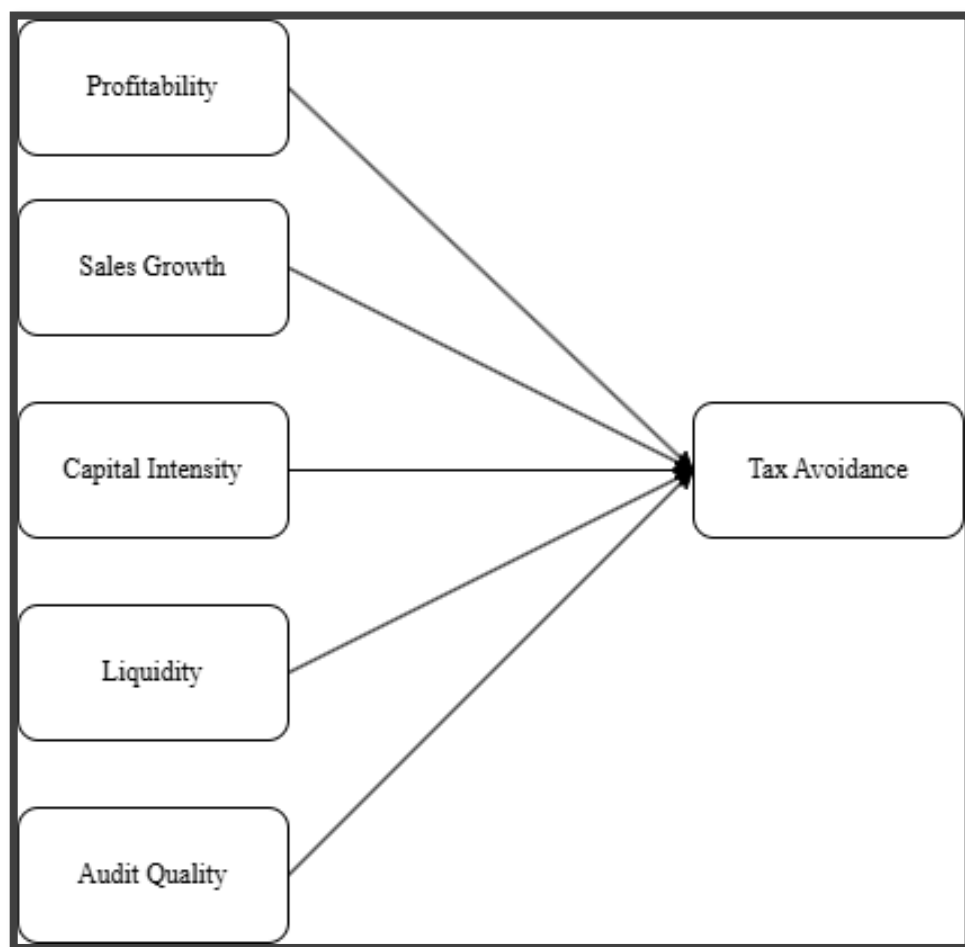
Therefore, based on the above discussion, the hypothesis is formulated as follows:

H5: Audit Quality (AQ) has a positive effect on tax avoidance among Sharia-compliant energy companies listed on the OJK's Sharia Securities List during the 2021-2025 period.

2.4 Research Framework

The research framework presented in this study depicts how firm financial characteristics and audit quality relate to tax avoidance behavior encompassing energy companies included in the Sharia Securities List published by Indonesia's Financial Services Authority (OJK) for the period 2021-2025. Five independent variables are examined, namely Profitability, Sales Growth, Capital Intensity, Liquidity, and Audit Quality. Tax Avoidance, the dependent variable in this framework, is operationalized using the Cash Effective Tax Rate (Cash ETR).

Figure 2.1 Research Framework



CHAPTER III

RESEARCH METHODOLOGY

3.1 Population and Sample

The population in this study consists of energy sector firms listed under OJK's Sharia Securities List. Purposive sampling was chosen as the research sampling method. It was basically selecting samples through specific criteria rather than selecting samples randomly. Sugiyono (2013) defines purposive sampling as selecting data sources based on particular considerations the researcher sets beforehand, which, fair enough, makes sense given how specific this research needed to be.

The criteria for the companies included in the sample for this research are as follows:

1. Energy sector companies that have not been delisted and have been consistently listed on the OJK's Sharia Securities List during 2021-2025 period.
2. Companies that published complete annual financial statements (audited) and annual reports that were publicly accessible during the 2021-2025 research period.
3. Companies with a Cash ETR in the range of 0 to 1 during the research period.

3.2 Data Sources and Method of Data Collection

The data used in this research consists of secondary data obtained indirectly from the research subjects. The data used includes annual reports and financial statements of energy sector companies listed on the OJK's Sharia Securities List for the period 2021-2025. The data sources were obtained from the official website of the Indonesia Stock Exchange (BEI) at www.idx.id/id, the official OJK website at <https://ojk.go.id/id/>, and the official websites of each company included in the research sample.

3.3 Definitions and Measurement of Research Variables

This research sets out to examine how financial characteristics and audit quality shape tax avoidance behavior among energy sector companies listed on OJK's Sharia Securities List. Accordingly, two categories of variables are employed throughout this study: the dependent variable and a set of independent variables.

3.3.1 Dependent Variable

The dependent variable examined in this research is tax avoidance, measured through the Cash Effective Tax Rate (Cash ETR), a proxy originally developed by Dyreng et al. (2008) and referenced in Rusdiani & Umaimah (2023). This metric represents the proportion of cash tax payments relative to pre-tax profit. A lower Cash ETR value signals a stronger indication of tax avoidance practices within a company. The formula used to calculate this variable is presented below:

$$Cash\ ETR = \frac{Cash\ Paid\ for\ Income\ Tax}{Profit\ Before\ Tax}$$

3.3.2 Independent Variables

This section describes the measurement of the independent variables in this research, which include financial characteristics consisting of profitability, sales growth, capital intensity, and liquidity, as well as audit quality. A summary of the measurement techniques for each variable is as follows:

1) Profitability

Profitability is captured in this research through Return on Assets (ROA), a ratio reflecting how efficiently a company converts its total assets into profit. Apriatna & Oktris (2022) apply this same measure, calculating ROA as the comparison between profit for the year and total company assets. The formula applied for this variable is presented below:

$$ROA = \frac{\text{Profit for the Year}}{\text{Total Assets}}$$

2) Sales Growth

Sales growth reflects the extent to which a company's sales revenue increases from one period to the next. This research follows the approach used by Dewi & Priyadi (2023), who measure sales growth as the difference between current period revenue and prior period revenue, divided by prior period revenue. The formula applied for this variable is as follows:

$$SG = \frac{Revenue_t - Revenue_{t-1}}{Revenue_{t-1}}$$

3) Capital Intensity

Capital intensity describes the proportion of a company's fixed assets relative to its total assets. Richardson and Lanis (2007), as cited in Nibras & Hadinata (2020), define capital intensity as the ratio of net fixed assets to a company's total assets, which reflects the extent of the company's commitment to long-term investments in physical assets. This variable is calculated using the following formula:

$$CI = \frac{\text{Net Fixed Assets}}{\text{Total Assets}}$$

4) Liquidity

Liquidity in this research is proxied using the current ratio, which reflects a company's ability to meet its short-term obligations using its current assets. Rahayu et al. (2022) measured liquidity using the current ratio, which is derived from the ratio of a company's current assets to its current liabilities. This variable is calculated using the following formula:

$$CR = \frac{\text{Current Assets}}{\text{Current Liabilities}}$$

5) Audit Quality

Audit quality in this research is captured through a dummy variable reflecting whether a company's auditor belongs to the Big Four network. According to Wahyuni & Wahyudi (2021), audit quality correlates with accounting firm size, with Big Four affiliated firms consistently linked to stronger audit quality than their non-Big Four counterparts. Companies

audited by a Big Four firm receive a value of 1, while those audited by a non-Big Four firm receive a value of 0.

3.4 Data Analysis Technique

3.4.1 Descriptive Statistics

Descriptive statistics are useful for providing an overview or description of the data or objects under research using available sample or population data, and are not intended to test hypotheses. This analysis uses measurements of the mean, standard deviation, minimum value, and maximum value of each research variable (Sugiyono, 2013).

3.4.2 Panel Data Regression Analysis

This research employed panel data regression analysis, which combines cross-sectional and time-series data (Widarjono, 2018). This panel regression analysis aims to determine the effect of financial characteristics represented by the variables Profitability (ROA), Sales Growth (SG), Capital Intensity (CI), and Liquidity (CR), as well as Audit Quality (AQ), on the dependent variable of tax avoidance, which proxied by the Cash Effective Tax Rate (Cash ETR). To support this research, the researcher used Microsoft Excel software and performed statistical data analysis using EViews 14SV.

The use of panel data in this research offered several advantages. First, panel data combines time-series and cross-sectional data, thereby yielding a higher degree of freedom because it provides a larger number of observations. Second, panel data can address issues arising from omitted variable bias because

this analysis combines both individual and temporal dimensions simultaneously (Widarjono, 2018).

The regression equation in this research can be formulated as follows:

$$\text{Cash ETR}_{it} = \beta_0 + \beta_1 \text{ROA} + \beta_2 \text{SG} + \beta_3 \text{CI} + \beta_4 \text{CR} + \beta_5 \text{AQ} + e_{it}$$

Explanation:

Cash ETR = Cash Effective Tax Rate (Tax Avoidance)

β = Constanta

ROA = Return on Assets

SG = Sales Growth

CI = Capital Intensity

CR = Current Ratio

AQ = Audit Quality

There are three approaches to estimating regression models using panel data, as follows:

a. Common Effect Model (OLS)

The Common Effect Model represents the most straightforward approach to estimating panel data regression, operating under the assumption that both intercept and slope coefficients remain constant across time periods and cross-sectional units. This model does not

distinguish between individual firm behavior or time-based variation, treating the data pattern as uniform throughout. Structurally, it mirrors OLS estimation in minimizing the sum of squared residuals, though the underlying data differs; rather than relying on either pure time-series or pure cross-sectional data, this model pools panel data together into a single combined structure.

b. Fixed Effects Model (FEM)

The fixed-effects model estimates panel data by introducing dummy variables to capture differences in intercepts across entities. Underlying this model is the assumption that each firm carries its own distinct intercept, yet this intercept stays constant through time, while regression coefficients remain uniform both across firms and across time periods. In other words, variation between firms gets absorbed through differing intercepts, while the slope coefficients are held fixed. Because of this reliance on dummy variables, the approach is also referred to as the least-squares dummy variable (LSDV) method, or alternatively, the covariance model.

c. Random Effects Model

The Random Effects Model is a method for estimating panel data regression models under the assumption that the slope coefficients are constant but the intercepts vary across individuals and over time, as represented by the error term. Unlike the Fixed Effects Model, which uses dummy variables to represent differences in characteristics among

individuals, the Random effects Model addresses the loss of degrees of freedom resulting from the use of these dummy variables by incorporating individual differences into the error term. The appropriate method for estimating this model is Generalized Least Squares (GLS).

a) Data Analysis Stage

According to Widarjono (2018), to select the most appropriate model for panel data analysis, several tests can be conducted, as follows:

1) Chow Test

The Chow test, sometimes labeled the F-test, serves to determine whether a fixed-effects specification outperforms the common-effects model. Two hypotheses guide this procedure:

H_0 = Common Effects Model

H_1 = Fixed Effects Model

Decision-making here rests on the probability value: a probability equal to or exceeding 0.05 leads to accepting H_0 , pointing toward the common-effects model as the better fit. Conversely, a probability below 0.05 leads to rejecting H_0 , favoring the fixed-effects model instead.

An alternative basis for this decision involves comparing the calculated F-statistic against its corresponding table value. Should the calculated F-value exceed the table F-value, H_0 gets rejected, again indicating the fixed-effects model as appropriate. Should the calculated

F-value fall below the table F-value, H_0 is retained, confirming the common-effects model as the better choice.

2) Lagrange Multiplier (LM) Test

This test serves to establish whether the random-effects specification holds an edge over the common-effects model. The hypotheses examined are as follows:

H_0 = Common-Effects Model

H_1 = Random-Effects Model

The decision here hinges on the Breusch-Pagan chi-square value: a value exceeding 0.05 leads to accepting H_0 , confirming the common-effects model as the appropriate choice. Should this value fall below 0.05, the random-effects model becomes the preferred specification instead.

3) Hausman Test

The Hausman test helps establish whether a fixed-effects or random-effects specification fits the data better. Hausman built this test around the principle that LSDV within the fixed-effects framework and GLS both qualify as efficient estimators, while OLS falls short on that front. The hypotheses tested are as follows:

H_0 = Random-Effects Model

H_1 = Fixed-Effects Model

Deciding between these rests on comparing the observed chi-square statistic against its critical value from the chi-square table, or

alternatively, examining the p-value directly. When the observed chi-square value exceeds the critical value, or when the p-value surpasses 0.05, H_0 stands accepted, pointing to the random-effects model as the more suitable choice. Should the observed value fall short of the critical threshold, or the p-value dip below 0.05, H_0 is rejected, favoring the fixed-effects model instead.

3.4.3 Classical Assumption Tests

Classical assumption testing was carried out to confirm that the regression model selected fits appropriately with the data used in this research. Three tests make up this evaluation: the Multicollinearity Test, the Heteroscedasticity Test, and Normality Test. Because this research relies on panel data, a structure combining both cross-sectional and time-series elements, the Autocorrelation Test was excluded, following the reasoning laid out by Napitupulu et al. (2021), who note that autocorrelation testing suits time-series data more specifically.

3.4.3.1 Normality Test

The normality test seeks to determine whether the residual values generated by the regression model follow a normal distribution. Within EViews, this examination is carried out through the Jarque-Bera (JB) test, which assesses residual normality by referring to skewness and kurtosis measures (Widarjono, 2018). The hypotheses applied in this test are formulated as follows:

H_0 = the residuals are normally distributed

H_1 = the residuals are not normally distributed

Regarding the decision criteria, H_0 is accepted when the p-value exceeds 0.05, indicating normally distributed residuals, whereas H_0 is rejected when the p-value falls below 0.05, indicating that the residuals deviate from a normal distribution.

3.4.3.2 Multicollinearity Test

The multicollinearity test seeks to identify whether a linear relationship exists among the independent variables within a regression model. A well-specified regression model is characterized by the absence of correlation between these independent variables. Multicollinearity can be detected by inspecting the correlation coefficient, where a value above 0.85 signals its presence within the model (Widarjono, 2018).

3.4.3.3 Heteroscedasticity Test

A heteroscedasticity test examines deviations from the assumption of homoscedasticity, which occurs when the error term has non-constant variance. This condition affects the efficiency of the estimation process, while the estimates themselves remain consistent and unbiased, rendering the results of the t-test and F-test invalid. If a problem arises in this test, it can be detected using the White method. This method employs an approach that does not require the assumption of normality in the error term. The hypotheses used in this test are as follows:

H_0 = no heteroscedasticity

H_1 = heteroscedasticity is present

The basis for decision-making is that if the probability value is > 0.05 , H_0 is accepted, meaning there is no heteroscedasticity. Conversely, if the probability value is < 0.05 , H_1 is accepted, meaning heteroscedasticity is present (Widarjono, 2018).

3.4.4 Significance Tests

3.4.4.1 Coefficient of Determination Test (Adjusted R^2)

The Coefficient of Determination test measures the proportion of variance in the dependent variable that the model's independent variables manage to explain, with whatever remains attributed to factors outside the model's scope (Widarjono, 2018). Values for this coefficient span from zero to one, and an Adjusted R^2 closer to 1 signals stronger explanatory power over the dependent variable's variation. On the flip side, values drifting toward 0 suggest the model struggles to account for that variation.

3.4.4.2 Simultaneous Significance Test (F-Test)

The F-test is intended to verify whether the independent variables, taken together, exert a significant simultaneous effect on the dependent variable (Widarjono, 2018), using a significance threshold of $\alpha = 0.05$. Should the resulting significance value fall below 0.05, H_0 gets rejected in favor of H_1 , confirming that the independent variables collectively hold significant influence over the dependent variable. A significance value at or above 0.05, on the other hand, leads to retaining H_0 , indicating no significant simultaneous effect from these variables as a group.

3.4.4.3 Partial Statistical Test (t-Test)

The t-test is applied to assess the influence of each individual independent variable on the dependent variable (Ghozali, 2013). This decision rests on comparing the calculated t-value against its critical counterpart, or alternatively, reviewing the significance value at a 5% threshold ($\alpha = 0.05$). Should the calculated t-value surpass the critical value, or the significance level dip below 0.05, H_0 is rejected in favor of H_1 , pointing to a meaningful effect of the independent variable on the dependent variable. Where the calculated t-value falls short of the critical value, or significance exceeds 0.05, H_0 remains unrejected, signaling no significant effect from that independent variable.

CHAPTER IV

FINDINGS AND DISCUSSION

4.1 Description of the Research Objects

The research subjects considered in this study consist of energy sector companies listed on the Sharia Securities List published by the Financial Services Authority (OJK), specifically those that have published complete annual reports and financial statements across five consecutive years, namely 2021, 2022, 2023, 2024, and 2025.

This research used Microsoft Excel and EViews 14SV software for data processing. Sampling was conducted using purposive sampling. After selecting the sample based on the established criteria, 17 companies were included in the sample, with a total of 85 panel data observations over the 2021-2025 observation.

Table 4.1 Research Sample Distribution

No.	Description	Total
1	Number of Energy Sector Companies Listed on the Sharia Securities List that were delisted and listed from 2021 to 2025 according to Sharia Securities List decisions issued by the OJK.	84
2	Newly listed or delisted energy sector companies.	(51)
3	Energy sector companies whose annual and financial reports are incomplete.	(3)
4	Energy sector companies with a negative Cash ETR or a Cash ETR greater than one	(13)
Total number of energy sector companies listed in the Sharia Securities List.		17
Research sample = 17 x 5 years = 85 samples		

4.2 Descriptive Analysis

Descriptive statistics provide a clearer and more easily understood picture of the data. These statistics describe the data in terms of the mean, standard deviation, minimum value, and maximum value (Sugiyono, 2013). The variables used in this research are the Cash Effective Tax Rate (Cash ETR) as a proxy for tax avoidance, as well as independent variables including Profitability (ROA), Sales Growth (SG), Capital Intensity (CI), Liquidity (CR), and Audit Quality (AQ).

These variables were tested using descriptive statistics, as shown in Table 4.2 below:

Table 4.2 Descriptive Statistics

	CASH_ETR	ROA	SG	CI	CR	AQ
Mean	0.289034	0.167473	0.250071	0.246000	2.311989	0.517647
Median	0.258100	0.113600	0.052300	0.185400	1.560700	1.000000
Maximum	0.881700	0.616300	1.751200	0.748200	12.70860	1.000000
Minimum	0.024900	0.013200	-0.543500	0.002300	0.435200	0.000000
Std. Dev.	0.196807	0.147298	0.496189	0.215699	2.076391	0.502654
Skewness	1.030475	1.332086	1.314473	1.020214	2.866457	-0.070632
Kurtosis	3.850835	4.071514	4.100671	2.830719	12.13642	1.004989
Jarque-Bera	17.60717	29.20440	28.76838	14.84668	412.0391	14.16675
Probability	0.000150	0.000000	0.000001	0.000597	0.000000	0.000839
Sum	24.56790	14.23520	21.25600	20.91000	196.5191	44.00000
Sum Sq.	10.35452	4.206524	25.99656	9.052057	816.5077	44.00000
Sum Sq. Dev.	3.253562	1.822514	20.68106	3.908197	362.1576	21.22353
Observations	85	85	85	85	85	85

Based on the results in Table 4.2 above, it can be seen that the Cash ETR variable has a mean value of 0.289034, which means that, on average, the companies in the sample pay cash taxes amounting to 28.9% of their profit before tax. The maximum Cash ETR value of 0.881700 indicates that some companies

pay taxes amounting to as much as 88.17% of their profit before tax, while the minimum value of 0.024900 indicates that some companies pay cash taxes amounting to only 2.49% of their profit before tax. The standard deviation of 0.196807 reflects considerable variation among the sample companies in terms of effective tax rates.

The first independent variable, Profitability (ROA), has a mean of 0.167473, a maximum value of 0.616300, a minimum value of 0.013200, and a standard deviation of 0.147298. The average ROA of 16.74% reflects that energy sector companies listed on the Sharia Securities List are, on average, able to generate a net profit of 16.74% of their total assets.

The Sales Growth (SG) variable shows a mean of 0.250071, a maximum value of 1.751200, a minimum value of -0.543500, and a standard deviation of 0.496189. This very high standard deviation reflects significant variation in sales growth among the sample companies, with some experiencing very rapid growth while others experienced a decline in sales.

Furthermore, the Capital Intensity (CI) variable shows an average value of 0.246000, a maximum value of 0.748200, a minimum value of 0.002300, and a standard deviation of 0.215699. The average CI value of 24.60% indicates that, on average, the companies in the sample have fixed assets amounting to 24.60% of their total assets.

The Liquidity (CR) variable records an average value of 2.311989, alongside a maximum of 12.70860 and a minimum of 0.435200, with a standard

deviation reaching 2.076391. This average CR figure suggests that, on the whole, sample companies hold current assets amounting to roughly 2.31 times their current liabilities, pointing toward a fairly sound liquidity position.

The Audit Quality (AQ) variable, captured through a dummy measure, shows a mean value of 0.517647, indicating that around 51.76% of total observations involved firms audited by Big Four-affiliated public accounting firms, while the remaining 48.24% were handled by non-Big Four auditors. A standard deviation of 0.502654 points to a fairly balanced split between these two groups.

4.3 Panel Data Regression Analysis

Several methods can be used to estimate regression models with panel data in order to identify the best method. There are three approaches that can be used to select the most appropriate method, as follows:

4.3.1 Chow Test

The Chow test was applied to assess whether a fixed-effects model offers a better fit than a common-effects model

Table 4.3. Chow Test Result

Redundant Fixed Effects Tests			
Equation: EQ_ENERGY			
Test cross-section fixed effects			
Effects Test	Statistic	d.f.	Prob.
Cross-section F	5.451517	(16,63)	0.0000
Cross-section Chi-square	73.864537	16	0.0000

The results presented in Table 4.3 reveal a Prob. Cross-section F value of 0.00000 alongside a Prob. Cross-section Chi-square value of 0.0000, with both figures falling below the 0.05 threshold. This outcome leads to rejecting H_0 in favor of H_1 , confirming the fixed-effects model as the more suitable specification compared to the common-effects model. Building on this result, the Hausman test follows next, aimed at determining whether the fixed-effects or random-effects model stands as the most appropriate choice.

4.3.2 Hausman Test

The Hausman test serves to identify which specification, fixed-effects or random-effects, fits better for this research. Decision-making within this test rests on the following criteria:

- a. A Chi-square probability value exceeding 0.05 leads to accepting H_0 , confirming the random-effects model as the more appropriate choice.
- b. A Chi-square probability value falling below 0.05 leads to rejecting H_0 , pointing instead toward the fixed-effects model as the better fit.

Table 4.4 Hausman Test Result

Correlated Random Effects - Hausman Test
Equation: EQ_ENERGY
Test cross-section random effects

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	2.105177	5	0.8344

The findings in Table 4.4 report a cross-sectional random probability of 0.8344, a value comfortably above the 0.05 threshold. This outcome supports

accepting H_0 while rejecting H_1 , leading to the conclusion that the random-effects model stands as the most suitable specification for this research.

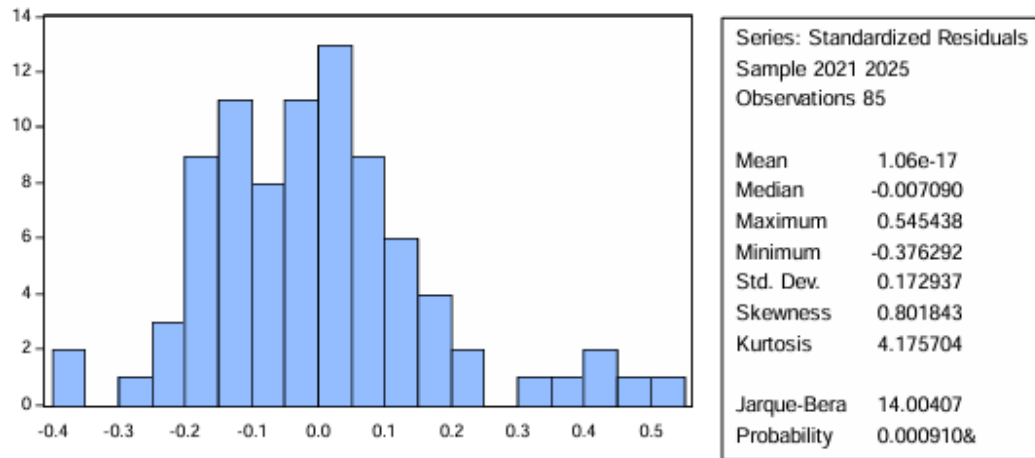
4.4 Tests of Classical Assumptions

After performing panel data regression analyses and identifying the best model using the random-effects model, the subsequent stage involves testing the classical assumptions. These tests include the Normality Test, the Multicollinearity Test, and the Heteroscedasticity Test.

4.4.1 Normality Test

The normality test functions to assess whether the residuals produced by a regression model conform to a normal distribution. This assessment relies on the Jarque-Bera (JB) test within EViews, which gauges residual normality through skewness and kurtosis measures. The decision criteria specify that H_0 is accepted when the p-value exceeds 0.05, signifying normally distributed residuals, while H_0 is rejected when the p-value falls below 0.05, signifying that the residuals depart from normality (Widarjono, 2018).

Figure 4.1 Normality Test Result



Based on the results of the normality test shown in the figure above, the Jarque-Bera value was found to be 14.00407 with a p-value of 0.000910 (< 0.05); therefore, H_0 is rejected, meaning that the regression model residuals are not normally distributed. Therefore, this study uses Panel Corrected Standard Errors (PCSE) to address this violation of the normality assumption.

4.4.2 Multicollinearity Test

This multicollinearity test seeks to establish whether a linear relationship exists between the independent variables within the regression model. A well-specified regression model is one free from correlation across these predictor variables. Multicollinearity can be identified by examining the correlation coefficients between the independent variables, where a value exceeding 0.85 signals its presence within the model.

Table 4.5 Multicollinearity Test Result

	ROA	SG	CI	CR	AQ
ROA	1.000000	0.341155	-0.307621	-0.045053	-0.011739
SG	0.341155	1.000000	-0.210982	-0.179465	0.008000
CI	-0.307621	-0.210982	1.000000	0.184385	-0.240583
CR	-0.045053	-0.179465	0.184385	1.000000	0.028917
AQ	-0.011739	0.008000	-0.240583	0.028917	1.000000

The values shown in Table 4.5 reveal that no correlation coefficient between the independent variables surpasses the 0.85 threshold. The strongest correlation observed sits between ROA and SG, registering at 0.341155, a value still comfortably below that limit. Based on this outcome, the model can be considered free from multicollinearity.

4.4.3 Heteroscedasticity Test

A heteroscedasticity test examines deviations from the assumption of homoscedasticity, which occurs when the error term has non-constant variance. This condition leads to an inefficient estimation process, even though the estimates themselves remain consistent and unbiased, resulting in invalid t-tests and F-tests. If a problem arises in this test, it can be detected using the White method. This method does not require the assumption that the error term is normally distributed. Decision rule: if the p-value is > 0.05 , there is no heteroscedasticity; conversely, if the p-value is < 0.05 , heteroscedasticity is present (Widarjono, 2018).

Table 4.6 Heteroscedasticity Test Result

R-squared	0.136260	Mean dependent var	0.127665
Adjusted R-squared	0.081593	S.D. dependent var	0.115822
S.E. of regression	0.110996	Akaike info criterion	-1.490669
Sum squared resid	0.973292	Schwarz criterion	-1.318247
Log likelihood	69.35344	Hannan-Quinn criter.	-1.421316
F-statistic	2.492539	Durbin-Watson stat	1.399953
Prob(F-statistic)	0.037816		

Based on the test results in Table 4.6 above, the Prob. (F-statistic) value is $0.037816 < 0.05$. Therefore, it can be concluded that H_0 was rejected while H_1 , was accepted, which means that heteroscedasticity is present in this test. To address this issue, the model estimation was performed using the White period method so that the resulting standard errors are robust to heteroscedasticity.

4.5 Panel Regression Analysis Equation

Table 4.7 Estimated Effects of Profitability, Sales Growth, Capital Intensity, Liquidity, and Audit Quality on Tax Avoidance

Dependent Variable: CASH_ETR				
Method: Panel EGLS (Cross-section random effects)				
Date: 06/24/26 Time: 19:40				
Sample: 2021 2025				
Periods included: 5				
Cross-sections included: 17				
Total panel (balanced) observations: 85				
Swamy and Arora estimator of component variances				
White period (cross-section cluster) standard errors & covariance (d.f. corrected)				
Standard error and t-statistic probabilities adjusted for clustering				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.414382	0.062813	6.597115	0.0000
ROA	-0.345369	0.173495	-1.990657	0.0639
SG	-0.156021	0.040986	-3.806724	0.0016
CI	-0.148260	0.157817	-0.939441	0.3615
CR	-0.008083	0.008322	-0.971238	0.3459
AQ	0.051520	0.047674	1.080656	0.2959
Effects Specification				
			S.D.	Rho
Cross-section random			0.143472	0.5572
Idiosyncratic random			0.127886	0.4428
Weighted Statistics				
R-squared	0.348753	Mean dependent var		0.107028
Adjusted R-squared	0.307535	S.D. dependent var		0.150841
S.E. of regression	0.125521	Sum squared resid		1.244695
F-statistic	8.461160	Durbin-Watson stat		1.695092
Prob(F-statistic)	0.000002			
Unweighted Statistics				
R-squared	0.227864	Mean dependent var		0.289034
Sum squared resid	2.512191	Durbin-Watson stat		0.839853

Based on the tests conducted using the Chow test and the Hausman test, the most appropriate model to use is the random-effects model. Given that the results of the heteroscedasticity test indicate the presence of heteroscedasticity, the model was estimated by adding the White period correction to obtain robust

standard errors. From the results of the regression analysis using the random-effects model, the model equations used are as follows:

$$Y = 0.414382 - 0.345369 X_1 - 0.156021 X_2 - 0.148260 X_3 - 0.008083 X_4 + 0.051520 X_5 + e$$

a. Constanta

The constant value of 0.414382 indicates that if all independent variables (ROA, SG, CI, CR, and AQ) were set to zero, the Cash ETR would be 0.414382. This means that when all financial characteristics and audit quality variables are excluded from the calculation, the company's average effective tax rate is 41.44%.

b. ROA

Return on Assets carries a regression coefficient of -0.345369 , implying that a one-unit rise in ROA, with other variables held constant, brings Cash ETR down by 0.345369. Such a decline in Cash ETR points toward greater tax avoidance activity.

c. SG

Sales Growth shows a regression coefficient of -0.156021 , meaning each one-unit increase in sales growth corresponds to a 0.156021 reduction in Cash ETR, assuming other variables stay fixed. This drop, again, signals heightened tax avoidance behavior.

d. CI

Capital Intensity yields a regression coefficient of -0.148260 , suggesting that a one-unit increase in capital intensity leads Cash ETR to fall by 0.148260 , holding all else constant.

e. CR

The Current Ratio produced a regression coefficient of -0.008083 , indicating that a one-unit increase in the current ratio is associated with a 0.008083 decrease in Cash ETR, with other variables remaining unchanged.

f. AQ

Audit Quality registered a regression coefficient of 0.051520 , reflecting that firms audited by Big Four accounting firms tend to record a Cash ETR higher by 0.051520 compared to those audited by non-Big Four firms, all else held equal.

4.6 Significance Test

Based on the results of the Chow test and the Hausman test, the most appropriate model to use is the random-effects model with PCSE correction. The next step is to conduct a significance test of that model.

4.6.1 Coefficient of Determination Test (Adjusted R^2)

The coefficient of determination test was carried out to gauge the strength of the relationship between the independent variables and the dependent variable. The resulting Adjusted R^2 value appears in Table 4.8 below:

Table 4.8 Coefficient of Determination Test

Weighted Statistics			
R-squared	0.348753	Mean dependent var	0.107028
Adjusted R-squared	0.307535	S.D. dependent var	0.150841
S.E. of regression	0.125521	Sum squared resid	1.244695
F-statistic	8.461160	Durbin-Watson stat	1.695092
Prob(F-statistic)	0.000002		

The coefficient of determination results displayed in Table 4.8 register an Adjusted R² value of 0.307535, pointing toward a relatively modest capacity of the regression model to account for variation in the dependent variable. Put more precisely, this figure means that just 30.75% of the variation observed in the Cash Effective Tax Rate (Cash ETR), the proxy chosen for tax avoidance among energy sector companies listed on OJK's Sharia Securities List across the 2021–2025 period, can be attributed to the independent variables examined here, namely profitability (ROA), sales growth (SG), capital intensity (CI), liquidity (CR), and audit quality (AQ). The remaining 69.25% of variation in Cash ETR, meanwhile, stems from other factors sitting outside this research's regression model.

4.6.2 Simultaneous Significance Test (F-Test)

The F-test was applied to assess whether the independent variables, taken together, exert a significant influence on the dependent variable within a regression model. In this research, this test evaluates whether financial characteristics, namely profitability (ROA), sales growth (SG), capital intensity (CI), and liquidity (CR), together with audit quality (AQ), jointly shape tax

avoidance among energy sector companies listed on OJK's Sharia Securities List over the 2021–2025 period.

Table 4.9 F-Test Result

Weighted Statistics			
R-squared	0.348753	Mean dependent var	0.107028
Adjusted R-squared	0.307535	S.D. dependent var	0.150841
S.E. of regression	0.125521	Sum squared resid	1.244695
F-statistic	8.461160	Durbin-Watson stat	1.695092
Prob(F-statistic)	0.000002		

The F-test results displayed in the table above register an F-statistic of 8.461160, accompanied by a significance value of 0.000002, which falls below the 0.05 threshold. This outcome supports rejecting H0 in favor of H1, confirming that the independent variables collectively exert a significant effect on the dependent variable. Put differently, financial characteristics comprising profitability (ROA), sales growth (SG), capital intensity (CI), and liquidity (CR), together with audit quality (AQ), jointly shape tax avoidance among energy sector companies listed on OJK's Sharia Securities List across the 2021–2025 period.

4.6.3 Partial Statistical Test (t-Test)

The t-test in this research isolates the effect each independent variable holds individually on the dependent variable. Findings from this test are outlined below:

Table 4.10 t-Test Result

- Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.414382	0.062813	6.597115	0.0000
ROA	-0.345369	0.173495	-1.990657	0.0639
SG	-0.156021	0.040986	-3.806724	0.0016
CI	-0.148260	0.157817	-0.939441	0.3615
CR	-0.008083	0.008322	-0.971238	0.3459
AQ	0.051520	0.047674	1.080656	0.2959

Based on the t-test results presented in the table above, the following conclusions can be drawn:

1. The ROA variable (X1) produced a regression coefficient of -0.345369 , a calculated t-value of -1.990657 , and a significance level of 0.0639 , which exceeds the 0.05 significance threshold. H_0 is therefore accepted while H_a is rejected, indicating that profitability holds no significant influence over tax avoidance among energy sector companies listed on OJK's Sharia Securities List during 2021–2025.
2. The SG variable (X2) yielded a regression coefficient of -0.156021 , a t-value of -3.806724 and a significance level of 0.0016 ($p < 0.05$). Consequently, H_0 is rejected and H_a is accepted, confirming that sales growth exerts a significant effect on tax avoidance within the same population and period.
3. The CI variable (X3) shows a regression coefficient of -0.148260 , a calculated t-value of -0.939441 , and a significance level of 0.3615 , exceeding 0.05 ($p > 0.05$). Accordingly, H_0 is accepted and H_a is rejected,

meaning capital intensity has no significant on tax avoidance among these companies during the same period.

4. The CR variable (X4) yields a regression coefficient of -0.008083 , a calculated t-value of -0.971238 , and a significance level of 0.3459 , again above 0.05 ($p > 0.05$). Accordingly, H_0 is accepted and H_a is rejected, pointing to liquidity's has no significant effect on tax avoidance among these companies during the same period.
5. The AQ variable (X5) presents a regression coefficient of 0.051520 , a calculated t-value of 1.080656 , and a significance level of 0.2959 , exceeding 0.05 ($p > 0.05$). H_0 is accepted and H_a is rejected, indicating that audit quality has no significant effect on tax avoidance among these energy sector companies during the 2021–2025 period.

4.7 Discussion of the Hypotheses

4.7.1 The Effect of Profitability (ROA) on Tax Avoidance

The first hypothesis testing result indicates that profitability (ROA) exerts no significant effect on tax avoidance. This is reflected in the t-value of -1.990657 obtained for ROA, accompanied by a probability value of 0.0639 , which exceeds the 0.05 threshold, leading to the acceptance of H_0 and the rejection of H_a . Since the probability value surpasses the established significance level, no meaningful association can be established between profitability and tax avoidance. The regression coefficient of -0.345369 , while negative in direction and implying that an increase in ROA corresponds to a decrease in Cash ETR, fails to reach statistical significance. From the perspective of agency theory, this outcome

implies that managers do not systematically leverage profit gains to pursue tax avoidance, given that highly profitable firms may instead place greater emphasis on maintaining reputational integrity and regulatory compliance rather than adopting aggressive tax planning measures.

These results align with prior studies. Apriatna & Oktris (2022) similarly reported an insignificant effect of profitability on tax avoidance, attributing this to the fact that financially sound, highly profitable firms remain capable of fulfilling their tax obligations in accordance with prevailing regulations, which suggests profitability does not reliably push avoidance behavior in either direction. Darsani & Sukartha (2021) reached a comparable conclusion, noting that profitability does not consistently determine tax avoidance practices, and that the link between the two variables is likely shaped by additional contextual influences beyond profitability alone. Nevertheless, this finding diverges from the results reported by Anggriantari & Purwantini (2020), Tarigan & Ubaidillah (2023), and Wulandari & Sudarma (2022), all of whom found that profitability has a negative effect on tax avoidance. Several factors may account for this discrepancy. The aforementioned studies employed broader samples encompassing multiple industry sectors or the mining sector in general, whereas the present study specifically restricts its sample to energy sector companies listed in the Sharia Securities List, a narrower scope that may itself drive divergent results. Companies listed in the Sharia Securities List also exhibit distinct governance characteristics, as they are required to meet OJK's stringent selection criteria, suggesting that the relationship between profitability and tax behavior may be

moderated by Sharia compliance standards that were not present in the samples of previous studies. Differences in the research period and prevailing macroeconomic conditions further contribute to the inconsistency observed across these findings.

This pattern carries particular significance when applied to energy sector companies listed on the Sharia Securities List. Fadilla et al. (2025) observe that firms within the energy sector operate as capital-intensive businesses with extended business cycles heavily tied to global energy commodity price movements, conditions under which the link between profitability and tax strategy tends toward inconsistency. Within such a setting, elevated profitability does not automatically translate into greater tax avoidance, as companies are more inclined to channel their financial resources toward capital expenditures and business reinvestment rather than structured tax planning efforts. From an Islamic ethical standpoint, moreover, companies listed on the Sharia Securities List are bound not merely by technical financial criteria but are also expected to uphold the principle of *amanah* across all financial obligations, taxation included. While tax avoidance remains permissible under positive law, the practice carries potential tension with the principles of *'adl* (justice) and *maslahah* (public interest), given that it reduces a company's contribution to the state and community, parties that are meant to benefit from tax revenue. This non-significant result lends further weight to the point raised in subsection 2.1.2, that even though the Sharia Securities List's criteria stop short of incorporating tax compliance indicators as a formal hisbah mechanism, highly profitable firms nonetheless appear to sustain their

commitment to tax compliance as an informal expression of accountability toward the state and society, allowing the principle of *amanah* to operate effectively even in the absence of explicit external oversight. H1, proposing that profitability negatively affects tax avoidance among energy sector companies listed in OJK's Sharia Securities List during 2021-2025, is accordingly not supported.

4.7.2 The Effect of Sales Growth on Tax Avoidance

The second hypothesis test reveals that sales growth produces a significant negative effect on tax avoidance, as demonstrated by the t-value of -3.806724 with an accompanying probability value of 0.0016, which falls below the 0.05 threshold, resulting in the rejection of H0 and acceptance of Ha. Because the probability value is smaller than the predetermined significance level, a significant relationship between sales growth and tax avoidance can be confirmed. The negative regression coefficient of -0.156021 points to an inverse pattern, where higher sales growth corresponds to a lower Cash ETR, signaling intensified tax avoidance behavior. Viewed through agency theory, this finding suggests that managers operating amid rapid sales expansion are motivated to reduce the firm's tax burden as a way of maximizing internally available cash flow for business growth, given that tax savings serve as a cost-free internal financing mechanism.

These results align with what prior studies have established. Sunny Kulimno (2025) identified a significant negative effect of sales growth on tax avoidance among energy sector firms listed on the Indonesia Stock Exchange (BEI) throughout 2020-2023, noting that firms with stronger sales growth tend to adopt more aggressive tax planning approaches to optimize the cash flow

necessary for sustaining their growth trajectory. Dewi & Priyadi (2023) similarly reported a significant relationship between sales growth and tax avoidance, explaining that elevated sales growth heightens the likelihood of greater profit generation, which subsequently motivates firms to reduce their tax burden so as to present larger profits to their principals. While the present study's findings correspond with these two prior works, it offers a distinct contribution by situating this relationship specifically within energy sector companies listed on OJK's Sharia Securities List, a context that stands apart given that such companies face not only pressure to pursue business expansion but also obligations tied to Sharia compliance standards mandated by OJK, meaning the dynamics linking sales growth and tax avoidance within this sample carry characteristics that differ from those observed in earlier research.

This pattern proves especially relevant when situated within the context of energy sector companies listed on the Sharia Securities List. Bangsawan et al. (2025) observed that, among energy firms listed on the IDX, sales growth carries a significant negative effect on tax avoidance, given that firms undergoing rapid revenue growth tend to direct surplus cash flow toward capital expenditures and operational expansion rather than aggressive tax strategies. Considering the energy sector's inherently high capital intensity, periods of robust sales growth generate substantial reinvestment demands, which naturally push management toward optimizing tax liabilities as a means of maximizing internally available funds. Yet this finding simultaneously exposes a tension between formal legality and Islamic ethics, in that tax avoidance pursued to finance business expansion,

while defensible under positive law, may sit uneasily with the principles of '*adl* and *maslahah*, since it diminishes the firm's contribution to the state precisely at a moment when business growth signals strengthening financial capacity. This reinforces what was already established in subsection 2.1.2, namely that the Sharia Securities List's selection criteria do not incorporate tax compliance indicators as part of its *hisbah* (oversight) mechanism, leaving the principle of *amanah*, which is meant to function as an internal management safeguard, without sufficient external accountability structures to deter tax avoidance once pressure to expand intensifies. What this ultimately suggests is that, despite being listed on the Sharia Securities List and expected to uphold *amanah*, companies may allow the pressure of financing growth to outweigh their commitment to tax compliance as a form of social responsibility. H2, which holds that sales growth negatively affects tax avoidance among energy sector companies listed in OJK's Sharia Securities List during 2021-2025, is therefore supported.

4.7.3 The Effect of Capital Intensity on Tax Avoidance

Based on the results of the third hypothesis test, capital intensity does not have a significant effect on tax avoidance. This result is evident from the calculated t-value for capital intensity of -0.939441 with a probability value of 0.3615 (> 0.05); therefore, H_0 is accepted and H_a is rejected. A probability value greater than the specified significance level indicates that there is no significant relationship between capital intensity and tax avoidance. Although the regression coefficient of -0.148260 shows a negative direction, suggesting that a higher proportion of fixed assets tends to lower the Cash ETR, this relationship is not

statistically significant. Within the agency theory framework, this suggests that managers do not consistently utilize fixed asset investments as a strategic tool to minimize tax burdens but rather prioritize long-term operational needs in their fixed asset investment decisions.

Previous research supports these findings. Monika & Noviari (2021) found that capital intensity does not have a significant effect on tax avoidance, as the fixed asset depreciation policies of the sample companies generally followed prevailing fiscal regulations and were not aggressively utilized as a tax avoidance tool. In line with this, Anggriantari & Purwantini (2020) also found that capital intensity does not have a significant effect on tax avoidance, indicating that holding a large amount of fixed assets does not necessarily prompt management to utilize depreciation mechanisms as a planned tax avoidance strategy. In contrast, this finding departs from studies reporting a significant effect of capital intensity on tax avoidance, such as the research conducted by Jannah et al. (2025) on energy sector firms listed on the IDX during 2021-2024. Several factors may explain this divergence. This study confined its sample to companies listed in the DES, whereas Jannah et al. (2025) covered the entire energy sector without applying any sharia-based screening, meaning the differing sample composition likely produced differing relational patterns. The considerable variation in fixed asset holdings across companies within this study's sample further suggests that not all firms actively rely on depreciation mechanisms as a tax planning instrument, which helps explain why the effect of capital intensity on tax avoidance remains inconsistent and statistically insignificant. Companies listed in

the Sharia Securities List are also more likely to prioritize adherence to tax regulations as part of upholding Sharia principles, rather than exploiting depreciation-related loopholes to reduce their tax obligations.

This pattern holds particular weight for energy sector companies listed on the Sharia Securities List. Fadilla et al. (2025) point out that firms in the energy sector typically hold fixed assets in the form of infrastructure and operational equipment characterized by very long economic lifespans, which translates into comparatively small annual depreciation charges, too modest to meaningfully sway overall tax decisions. The substantial variation in fixed asset holdings across the sample firms further indicates that the link between capital intensity and tax avoidance lacks consistency and cannot be generalized across all energy companies within the Sharia Securities List. Read indirectly, these non-significant results align with the fiduciary principle governing asset management, in that the sizable investments Sharia Securities List companies' channel into energy infrastructure appear grounded in long-term operational requirements, a manifestation of responsible resource stewardship, rather than a calculated instrument for optimizing depreciation expenses to lower tax liabilities. Put differently, decisions surrounding fixed asset investment within these firms seem driven more by genuine business needs than by any motive tied to tax avoidance, consistent with the expectation that Sharia Securities List companies uphold their fiduciary duty by managing capital honestly rather than exploiting available tax provisions. H3, which proposes that capital intensity positively affects tax

avoidance among energy sector companies listed in OJK's Sharia Securities List during 2021-2025, is therefore not supported.

4.7.4 The Effect of Liquidity on Tax Avoidance

The fourth hypothesis test indicates that liquidity, as proxied by the Current Ratio, does not exert a significant effect on tax avoidance. This is reflected in the t-value of -0.971238 obtained for the current ratio, accompanied by a probability value of 0.3459, which exceeds the 0.05 threshold, leading to the acceptance of H_0 and the rejection of H_a . Since the probability value surpasses the established significance level, no meaningful relationship can be confirmed between liquidity and tax avoidance. The regression coefficient of -0.008083, although negative in direction and implying that a higher current ratio corresponds to a lower Cash ETR, thereby suggesting a greater tendency toward tax avoidance, does not reach statistical significance. Within the agency theory framework, this finding implies that a firm's liquidity position does not consistently shape managerial decisions concerning tax strategy, as managers likely weigh a range of other, more influential factors when formulating the firm's overall tax policy.

Previous research supports these findings. Tarigan & Ubaidillah (2024) found that liquidity does not have a significant effect on tax avoidance, as a company's tax planning decisions are driven more by profitability and asset structure than by its ability to meet short-term obligations. In line with this, Putri et al. (2023) also found that liquidity does not have a significant effect on tax avoidance, indicating that the level of a company's current ratio is not a primary consideration for management in determining tax strategies. Conversely, this

finding diverges from that of Rahayu et al. (2022), who reported a significant positive effect of liquidity on tax avoidance among mining sector firms, indicating that companies with higher liquidity levels tend to be more actively engaged in tax avoidance given their greater financial flexibility to pursue complex tax planning strategies. Several factors may help account for this discrepancy. Rahayu et al. (2022) examined mining sector firms broadly, without limiting the sample to Sharia-compliant companies, whereas the present study focuses specifically on energy sector firms listed on the Sharia Securities List, whose financial conduct may be shaped by Sharia compliance standards that restrict aggressive tax planning. The energy sector's comparatively stable revenue streams, stemming from natural resource management, may also diminish management's incentive to leverage liquidity for tax avoidance purposes, in contrast to the more volatile cash flow patterns typically seen across the broader mining sector. The pronounced variation in liquidity levels among the sample companies, reflected in the high standard deviation of the Current Ratio, may further account for the weakened relationship between liquidity and tax avoidance observed in this study's sample.

This pattern carries especially strong implications for energy sector companies listed on the Sharia Securities List. Given that such firms typically derive relatively stable revenue from natural resource management, fluctuations in liquidity within a given period are unlikely to exert direct influence over management's tax strategy decisions. One way to interpret this non-significant outcome is through the lens of trustworthiness in honoring obligations, where tax duties are upheld as ongoing commitments rather than something contingent on

short-term shifts in cash position. Looking at it from the angle of '*adl*' (justice) as well, firms holding greater cash reserves would, if anything, be expected to demonstrate an even stronger capacity to meet their tax obligations in full, rather than using that financial cushion as leverage to withhold a fair contribution to the state. The absence of a significant liquidity effect on tax avoidance therefore, points to Sharia Securities List companies not treating available cash as a bargaining chip for their tax obligations, which in turn upholds fairness in fiscal contributions regardless of how a firm's short-term finances happen to look. On these grounds, H4, which proposes a negative effect of liquidity on tax avoidance among energy sector companies listed in OJK's Sharia Securities List during 2021-2025, is not supported by the data.

4.7.5 The effect of Audit Quality on Tax Avoidance

Based on the results of the fifth hypothesis test, audit quality does not have a significant effect on tax avoidance. This result is evident from the calculated *t*-value for audit quality of 1.080656 with a probability value of 0.2959 (> 0.05); therefore, H_0 is accepted and H_a is rejected. A probability value is greater than the specified significance level indicates that there is no significant relationship between audit quality and tax avoidance. Although the regression coefficient of 0.051520 shows a positive direction, suggesting that companies audited by Big Four firms tend to have higher Cash ETR values, which reflects a lower level of tax avoidance, this relationship is not statistically significant. Within the agency theory framework, this suggests that the presence of high-quality external auditors does not consistently reduce managers' opportunistic behavior regarding taxation,

as tax strategy decisions are fundamentally internal management policies not directly influenced by external auditors.

Previous research supports these findings. Rusdiani & Umaimah (2023) found that audit quality does not have a significant effect on tax avoidance, as external auditors play a role in expressing an opinion on the fairness of financial statements but do not directly determine the tax strategies chosen by management. In line with this, Wulandari & Sudarma (2022) also found that audit quality does not have a significant effect on tax avoidance, indicating that a public accounting firm's affiliation with the Big Four is not a primary determinant of a company's tax behavior. In contrast, this finding diverges from that of Rizkiana & Suripto (2022), who reported a significant positive effect of audit quality on tax avoidance, with firms audited by Big Four accounting firms tending to exhibit higher Cash ETR values, reflecting stronger tax compliance. Several factors may help explain this discrepancy. Rizkiana & Suripto (2022) drew on a broader sample without confining it to companies listed in the Sharia Securities List, whereas the present study specifically examines energy sector firms within the Sharia Securities List that have already undergone rigorous OJK screening, resulting in a sample whose corporate governance standards remain relatively homogeneous regardless of audit firm affiliation. It is also quite plausible that energy companies listed in the Sharia Securities List and audited by non-Big Four firms already maintain adequate internal control systems owing to Sharia compliance obligations, such that differences in audit quality between Big Four and non-Big Four auditors no longer carry meaningful weight in shaping tax

behavior. Variations in sample composition and the study period likely contributed further to the inconsistency between this study's findings and those of Rizkiana & Suropto (2022).

This pattern is particular relevance for energy sector companies listed on the Sharia Securities List. The screening criteria imposed for inclusion on securities listing on OJK's Sharia Securities List already enforce strict standards concerning corporate governance and compliance, to the extent that Big Four accounting firms, functioning as an external oversight mechanism, no longer add meaningful incremental influence over management's tax-related decisions (Lestari et al., 2023). Moreover, all public accounting firms operating within Indonesia are bound by the Professional Standards for Public Accountants (SPAP) set forth by the Indonesian Institute of Public Accountants (IAPI), suggesting that the gap in audit quality between Big Four and non-Big Four firms regarding tax compliance oversight may not be substantial. Viewed through a hisbah (accountability) lens, these non-significant results suggest that oversight of tax behavior among Sharia Securities List companies does not hinge solely on external accounting firm affiliation, but rather on internal accountability mechanisms embedded within sharia compliance status itself, such as OJK's recurring six-month evaluation of financial criteria and compliance for listed companies. Therefore, the hisbah principle, within this context, appears to operate through regulatory oversight channels that function independently of external audit quality, leaving audit quality without significant predictive power over tax avoidance within this sample. As a result, H5, positing a positive effect of audit

quality on tax avoidance among energy sector companies listed in OJK's Sharia Securities List during 2021-2025, is not supported by the data.

CHAPTER V

CONCLUSIONS

5.1 Conclusions

This research aimed to examine the effect of financial characteristics namely profitability (ROA), sales growth, capital intensity, and liquidity (CR), as well as audit quality, on tax avoidance, measured using the Cash Effective Tax Rate (Cash ETR) among energy sector companies listed on the OJK's Sharia Securities List for the 2021-2025 period. Based on the results of hypothesis testing using a Random Effects model with PCSE correction, the following conclusions can be drawn:

1. Profitability (ROA) has no significant effect on tax avoidance among energy sector companies listed on the OJK's Sharia Securities List during the 2021–2025 period, thus H1 is not supported. These results indicate that the level of profitability does not consistently influence management's decisions regarding tax avoidance strategy, as companies with high profitability in the energy sector tend to allocate their financial resources toward capital expenditure and reinvestment rather than structured tax planning activities.
2. Sales growth has a negative effect on tax avoidance among energy sector companies listed on the OJK's Sharia Securities List for the 2021–2025 period, thus supporting H2. These results indicate that the higher a company's sales growth, the greater its tax avoidance activities, as managers facing rapid sales growth have an incentive to minimize the

company's tax burden in order to maximize internal cash flow available for business expansion and capital expenditure requirements inherent to the energy industry.

3. Capital intensity does not have a significant effect on tax avoidance among energy sector companies listed in the OJK's Sharia Securities List for the 2021-2025 period, thus H3 is not supported. These results indicate that the proportion of fixed assets does not consistently prompt management to utilize depreciation mechanisms as a tax avoidance tool, likely due to the very long economic life of these assets, meaning that the annual depreciation expense is not significant enough to influence tax decisions.
4. Liquidity (CR) does not have a significant effect on tax avoidance among energy sector companies listed in the OJK' Sharia Securities List for the 2021-2025 period, which means H4 is not supported. These results indicate that a company's liquidity conditions do not consistently influence managerial decisions regarding tax strategies, as energy sector companies generally have relatively stable revenue sources, meaning short-term liquidity conditions are not a primary determinant in tax strategies.
5. Audit quality does not have a significant effect on tax avoidance among energy sector companies listed in the OJK's Sharia Securities List for the 2021-2025 period, thus H5 is not supported. These results show that a public accounting firm's affiliation with the Big Four does not consistently reduce managers' opportunistic behavior regarding taxation, likely due to

the OJK's strict selection criteria for the Sharia Securities List, which have established adequate governance standards, meaning that the role of external auditors no longer provides a significant incremental impact.

5.2 Research Implications

The results of this research have several important implications for various stakeholders:

1. For the Financial Services Authority (OJK), the results of this research indicate that the Sharia Securities List selection criteria do not include tax compliance, even though honest tax payment is part of corporate social responsibility that should align with Sharia values. The OJK may consider incorporating tax compliance indicators as an additional criterion in the Sharia Securities List selection process to strengthen the integrity of Sharia investment instruments in Indonesia.
2. For the Directorate General of Taxes (DJP), the finding that sales growth has a significant negative influence on Cash ETR indicates that energy sector companies experiencing rapid revenue growth tend to be more active in tax planning. This may serve as a consideration for the DJP to increase the intensity of its oversight of energy sector companies that demonstrate consistently high sales growth, as such companies have stronger incentives to minimize their tax burden in order to maximize internal cash flow available for business expansion.
3. For investors and stakeholders, this research provides information that a company's Sharia status does not automatically guarantee a higher level of

tax compliance. Investors who consider Sharia aspects in their portfolios need to pay attention to tax compliance indicators separately as part of a comprehensive investment analysis.

4. For management of energy sector companies listed in the Sharia Securities List, this research serves as a reminder that the principle of *amanah* in Sharia corporate governance implies a moral obligation to fulfill tax obligations responsibly as a tangible contribution to the state and society.

5.3 Research Limitations

This research has several limitations that should be taken into account when interpreting the results:

1. This research only covers energy sector companies listed in the OJK's Sharia Securities List, with a sample size of 17 companies over the 2021-2025 period. Therefore, generalizing the findings to other sectors or companies outside the Sharia Securities List should be done with caution
2. The adjusted R^2 value of 30.75% indicates that the independent variables used in this study were unable to explain 69.25% of the variability in the cash ETR. This suggests that there are still other factors influencing tax avoidance that are not included in the model used in this study, such as debt burden, firm size, institutional ownership, and corporate governance.
3. This research depends exclusively on Cash ETR to represent tax avoidance. Although this measure is commonly employed within the literature, it may fall short of capturing every dimension of tax avoidance behavior, since it presumes that tax planning activities are entirely

reflected through cash tax payments. Other measures, including Book-Tax Difference (BTD) or accrual-based Effective Tax Rate (ETR), could potentially offer a more thorough representation of tax avoidance practices.

4. The 2021-2025 study period overlaps with a distinctive economic climate marked by the post-COVID-19 recovery phase alongside considerable fluctuations in energy commodity prices. Such circumstances may have shaped both the profitability levels and tax-related behavior of energy sector firms in ways unique to this timeframe, which could constrain the extent to which these findings apply beyond the period examined.
5. Issues of potential endogeneity between the independent variables and tax avoidance remain unaddressed within this research. As an illustration, firms engaging in tax avoidance might subsequently exhibit elevated profitability or sales growth figures, giving rise to a reverse causality concern capable of introducing bias into the regression estimates.

5.4 Suggestions

Based on the limitations outlined above, the following are several recommendations for future research:

1. It is suggested that future research expand its scope of research to other sectors listed in the OJK's Sharia Securities List, such as the raw materials sector, the industrial sector, or the Islamic finance sector, in order to provide a more comprehensive picture of tax avoidance among Sharia-based companies in Indonesia.

2. Future research is advised to include additional independent variables that may influence tax avoidance, such as leverage, firm size, institutional ownership, independent directors, or corporate governance, to enhance the model's ability to explain variations in tax avoidance.
3. Future research is recommended to extend the research period to capture long-term patterns in the relationship between financial characteristics and tax avoidance behavior, as well as to account for the impact of evolving tax regulations in Indonesia.

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APPENDICES

Appendix 1 List of Companies included in the research sample

No	Stock Code	Name of The Securities Publisher
1	AKRA	PT AKR Corporindo Tbk
2	BESS	PT Batulicin Nusantara Maritim Tbk
3	BSSR	PT Baramulti Suksessarana Tbk
4	BYAN	PT Bayan Resources Tbk
5	DSSA	PT Dian Swastatika Sentosa Tbk
6	ELSA	PT Elnusa Tbk
7	ENRG	PT Energi Mega Persada Tbk
8	GEMS	PT Golden Energi Mines Tbk
9	HRUM	PT Harum Energi Tbk
10	ITMG	PT Indo Tambangraya Megah Tbk
11	MYOH	PT Samindo Resources Tbk
12	PGAS	PT Perusahaan Gas Negara Tbk
13	PTBA	PT Bukit Asam Tbk
14	SGER	PT Sumber Global Energi Tbk
15	SMMT	PT Golden Eagle Energy Tbk
16	TCPI	PT Transcoal Pacific Tbk
17	TEBE	PT Dana Brata Luhur Tbk

Appendix 2 Cash ETR calculation results

NO	CODE	YEAR	CASH TAX PAID	PROFIT BEFORE TAX	CETR
1	AKRA	2021	1,266,735,679	1,436,743,040	0.8817
		2022	1,785,055,986	3,085,916,786	0.5785
		2023	1,970,285,390	3,687,471,936	0.5343
		2024	2,247,687,582	2,838,907,151	0.7917
		2025	2,686,557,758	3,307,520,236	0.8123
2	BESS	2021	5,544,857,213	115,531,892,914	0.0480

		2022	3,130,308,445	58,751,082,752	0.0533
		2023	6,085,262,804	81,094,051,677	0.0750
		2024	1,190,020,733	30,177,974,281	0.0394
		2025	4,236,881,921	63,632,003,505	0.0666
3	BSSR	2021	16,450,560	264,208,458	0.0623
		2022	86,353,258	308,781,175	0.2797
		2023	72,337,993	220,589,954	0.3279
		2024	44,294,650	171,630,306	0.2581
		2025	37,913,986	104,719,296	0.3621
4	BYAN	2021	119,701,026	1,627,573,741	0.0735
		2022	590,496,773	2,945,310,061	0.2005
		2023	848,022,911	1,632,968,496	0.5193
		2024	422,670,121	1,205,522,529	0.3506
		2025	320,754,584	1,012,019,262	0.3169
5	DSSA	2021	65,114,831	379,375,031	0.1716
		2022	325,338,705	1,600,348,213	0.2033
		2023	352,299,105	1,181,069,686	0.2983
		2024	173,760,627	710,243,648	0.2446
		2025	141,040,884	464,084,517	0.3039
6	ELSA	2021	9,300	230,752	0.0403
		2022	48,625	486,887	0.0999
		2023	17,749	646,611	0.0274
		2024	17,308	881,074	0.0196
		2025	199,453	888,378	0.2245
7	ENRG	2021	105,571,089	130,092,217	0.8115
		2022	65,565,049	140,359,117	0.4671
		2023	42,210,719	101,298,341	0.4167
		2024	31,973,683	94,903,219	0.3369
		2025	27,563,553	128,099,303	0.2152
8	GEMS	2021	50,158,145	460,840,753	0.1088
		2022	154,900,102	898,692,704	0.1724
		2023	271,836,938	682,980,975	0.3980
		2024	176,377,827	635,760,266	0.2774
		2025	141,040,884	354,175,846	0.3982

9	HRUM	2021	8,556,723	127,569,867	0.0671
		2022	28,050,259	477,547,194	0.0587
		2023	139,721,673	263,000,453	0.5313
		2024	87,138,857	115,105,273	0.7570
		2025	27,436,970	71,616,170	0.3831
10	ITMG	2021	60,891	621,089	0.0980
		2022	213,553	1,544,792	0.1382
		2023	399,147	644,112	0.6197
		2024	137,139	494,821	0.2771
		2025	133,032	287,214	0.4632
11	MYOH	2021	6,876,839	34,596,651	0.1988
		2022	7,408,788	18,697,587	0.3962
		2023	4,719,200	22,599,671	0.2088
		2024	7,076,588	22,326,700	0.3170
		2025	5,481,520	18,562,277	0.2953
12	PGAS	2021	43,479,365	467,938,895	0.0929
		2022	101,252,687	542,704,261	0.1866
		2023	253,201,247	523,887,009	0.4833
		2024	247,402,313	578,289,878	0.4278
		2025	57,075	335,971	0.1699
13	PTBA	2021	1,307,229	10,358,675	0.1262
		2022	3,957,385	16,202,314	0.2442
		2023	2,521,878	8,154,313	0.3093
		2024	1,389,802	6,259,246	0.2220
		2025	910,318	3,773,209	0.2413
14	SGER	2021	34,567,100,197	270,778,171,010	0.1277
		2022	125,898,936,220	748,250,494,759	0.1683
		2023	147,639,717,584	840,910,489,431	0.1756
		2024	182,997,047,666	810,943,455,658	0.2257
		2025	114,263,374,991	238,256,115,308	0.4796
15	SMMT	2021	6,413,309,295	258,001,970,758	0.0249
		2022	22,718,499,373	463,165,596,772	0.0491
		2023	75,811,152,452	280,054,340,392	0.2707
		2024	22,751,283,252	39,036,159,163	0.5828

		2025	1,858,695	6,178,631	0.3008
16	TCPI	2021	25,730	85,411	0.3012
		2022	28,423	116,698	0.2436
		2023	29,421	189,705	0.1551
		2024	35,043	93,100	0.3764
		2025	37,420	128,591	0.2910
17	TEBE	2021	20,805,281	202,891,081	0.1025
		2022	77,240,460	423,102,362	0.1826
		2023	136,827,650	297,964,736	0.4592
		2024	67,744,300	172,213,909	0.3934
		2025	48,939,973	177,924,770	0.2751

Appendix 3 Calculated values of the Independent Variables

NO	CODE	YEAR	ROA	SG	CI	CR	AQ
1	AKRA	2021	0.0483	0.4558	0.2118	1.2918	1
		2022	0.0912	0.8670	0.1838	1.4043	1
		2023	0.1016	(0.1147)	0.1804	1.4443	1
		2024	0.0725	(0.0798)	0.1922	1.5607	1
		2025	0.0772	0.1882	0.1863	1.4727	1
2	BESS	2021	0.1685	0.3674	0.6712	1.2398	0
		2022	0.0724	0.0059	0.6902	1.1788	0
		2023	0.1157	(0.1051)	0.7211	2.1738	0
		2024	0.0366	(0.1234)	0.6883	4.3271	0
		2025	0.0871	0.1092	0.6016	5.2272	0
3	BSSR	2021	0.4713	1.0858	0.1403	1.6017	0
		2022	0.5926	0.4884	0.1756	1.2452	0
		2023	0.3973	0.1024	0.1764	1.3793	0
		2024	0.3434	(0.1645)	0.1856	1.7539	0
		2025	0.2269	(0.2574)	0.1658	2.3460	0
4	BYAN	2021	0.5202	1.0444	0.1744	3.1313	1
		2022	0.5834	0.6491	0.1431	1.3106	1
		2023	0.3715	(0.2386)	0.2085	1.4203	1

		2024	0.2679	(0.0377)	0.2265	1.6404	1
		2025	0.2323	(0.0054)	0.2546	2.6618	1
5	DSSA	2021	0.0861	0.4363	0.1599	1.6967	0
		2022	0.1998	1.7512	0.2373	1.3577	0
		2023	0.2825	(0.1581)	0.1795	1.7268	0
		2024	0.1469	(0.3982)	0.1762	2.3306	0
		2025	0.0818	(0.0751)	0.2352	2.2044	0
6	ELSA	2021	0.0150	0.0530	0.2504	1.7362	1
		2022	0.0428	0.5124	0.1941	1.4846	1
		2023	0.5240	0.0210	0.1968	1.4422	1
		2024	0.0671	0.0660	0.1820	1.3052	1
		2025	0.0655	0.0825	0.1933	1.4851	1
7	ENRG	2021	0.0373	0.2500	0.0023	0.5549	0
		2022	0.0559	0.1129	0.0039	0.5331	0
		2023	0.0498	(0.0690)	0.0037	0.6667	0
		2024	0.0461	0.1109	0.0450	0.5879	0
		2025	0.0503	0.0657	0.0363	0.4352	0
8	GEMS	2021	0.4270	0.4942	0.0954	1.0210	1
		2022	0.6163	0.8411	0.0699	1.5305	1
		2023	0.4030	(0.0062)	0.0792	1.3682	0
		2024	0.3898	(0.0677)	0.0887	1.3537	0
		2025	0.2171	(0.1077)	0.0942	1.5007	0
9	HRUM	2021	0.1124	1.1301	0.0672	3.0730	1
		2022	0.2970	1.6904	0.0406	2.3006	1
		2023	0.1198	0.0233	0.1036	1.6831	1
		2024	0.0302	0.3841	0.3792	1.8684	1
		2025	0.0132	0.0450	0.5765	1.3942	1
10	ITMG	2021	0.2853	0.7521	0.0995	2.7088	1
		2022	0.4543	0.7509	0.5730	3.2591	1
		2023	0.2284	(0.3470)	0.0768	4.3495	1
		2024	0.1561	(0.0294)	0.0738	4.4755	1
		2025	0.0809	(0.1837)	0.0885	3.7607	1
11	MYOH	2021	0.1644	(0.0738)	0.1629	6.7169	1
		2022	0.0832	(0.1192)	0.1387	7.8756	1

		2023	0.0781	(0.0518)	0.2487	2.9745	1
		2024	0.0723	0.3381	0.2109	4.2819	1
		2025	0.6640	(0.0868)	0.1896	5.2445	1
12	PGAS	2021	0.0485	0.0522	0.3528	2.5363	1
		2022	0.0558	0.1754	0.3660	2.2289	1
		2023	0.0571	0.0218	0.3972	1.2940	1
		2024	0.0685	0.0390	0.3911	1.7514	1
		2025	0.1136	0.0214	0.5313	2.5948	1
13	PTBA	2021	0.2225	0.6890	0.2304	2.4280	1
		2022	0.2817	0.4575	0.1854	2.2830	1
		2023	0.1623	(0.0975)	0.2210	1.5197	1
		2024	0.1230	0.1111	0.2091	1.2721	0
		2025	0.0674	(0.0026)	0.2548	1.1190	1
14	SGER	2021	0.1637	0.9824	0.0188	1.4656	0
		2022	0.1753	1.6625	0.0058	1.4131	0
		2023	0.1508	0.1784	0.0259	1.4998	0
		2024	0.1411	0.1989	0.0762	1.8468	0
		2025	0.0368	(0.5435)	0.1472	1.7155	0
15	SMMT	2021	0.2377	1.4268	0.0121	2.1268	0
		2022	0.3406	1.0644	0.0116	1.0831	0
		2023	0.2540	(0.0315)	0.0146	1.0769	1
		2024	0.0278	(0.1961)	0.0121	1.0767	1
		2025	0.0424	1.0174	0.0189	1.0447	1
16	TCPI	2021	0.0297	(0.0009)	0.6921	0.7987	0
		2022	0.0412	0.0523	0.6971	0.8175	0
		2023	0.0538	0.0384	0.7482	0.8060	0
		2024	0.0242	0.0551	0.6725	1.3480	0
		2025	0.0324	(0.0062)	0.6289	1.0970	0
17	TEBE	2021	0.1674	1.2632	0.6713	2.5068	0
		2022	0.2517	0.7450	0.5598	1.9337	0
		2023	0.1926	(0.1913)	0.5869	9.4517	0
		2024	0.1155	(0.1037)	0.5268	9.5762	0
		2025	0.1037	(0.1473)	0.4293	12.7086	0