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THE ROLE OF FIRM SIZE IN MODERATING THE EFFECTS OF PROFITABILITY AND LEVERAGE ON HEDGING

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ABSTRACT

This study aims to examine the effects of profitability and leverage on hedging decisions and to analyze the moderating role of firm size among coal mining companies listed on the Indonesia Stock Exchange (IDX). This quantitative study uses secondary data obtained from companies' annual reports during the 2021–2024 observation period. Using purposive sampling, 29 companies were selected, resulting in 116 firm-year observations. The data were analyzed using moderated binary logistic regression, with firm size included as both a main effect and a moderating variable. Before constructing the interaction terms, profitability, leverage, and firm size were mean-centered to reduce potential multicollinearity. The results indicate that profitability has a significant negative effect on hedging decisions ($p = 0.017$), while leverage does not have a significant effect ($p = 0.401$). Firm size has a significant main effect on hedging decisions ($p < 0.001$). Furthermore, the interaction between profitability and firm size is significant ($p = 0.002$), indicating that firm size moderates the relationship between profitability and hedging decisions. However, the interaction between leverage and firm size is not significant ($p = 0.324$). These findings suggest that the relationship between profitability and hedging decisions varies according to firm size, while leverage does not show a significant relationship with hedging decisions within the selected sample.

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INTRODUCTION

International trade and financing activities expose corporations to the risk of unpredictable foreign exchange rate volatility. Companies with high foreign currency exposure must mitigate this macroeconomic uncertainty through hedging policies using derivative instruments such as forward contracts, futures, swaps, and options (Griz Alditia et al., 2025). Sharp exchange rate fluctuations can disrupt cash flow stability, erode net profit margins, and even threaten a corporation's survival(Wahyuningsih et al., 2025). Therefore, adopting a risk management strategy is crucial for creating financial certainty and maintaining the company's value in the eyes of the market.

Management's decision to implement hedging strategies is heavily influenced by internal financial conditions, such as profitability and leverage capacity. According to the financial distress cost theory, companies with high debt levels (leverage) face a significant risk of bankruptcy, which prompts management to take preventive action by using derivatives to secure liquidity and meet their obligations to creditors.

On the other hand, from the perspective of *pecking order theory*, high profitability provides an abundance of internal funds that can serve as a natural hedge while also providing an incentive to protect revenue streams from being disrupted by market shocks (Ratnaningsih et al., 2021). This sound financial management sends a positive signal to investors regarding the robustness of the company's risk management framework (Izabel et al., 2025).

Although the theoretical foundation is well-established, the existing empirical literature on the financial determinants of *hedging* decisions still reveals inconsistent findings (a *research gap*). A study by (Ratnaningsih et al., 2021) demonstrated that profitability and *leverage* have a significant positive effect on hedging decisions. However, these findings contradict those of studies (Wisnu et al., 2023), which found that *leverage* does not play a significant role. Meanwhile, the level of profitability also shows inconsistencies in the direction of the relationship when influencing various corporate strategic financial decisions, particularly in the extractive and mining sectors (Meldisthy et al., 2024). This research gap indicates the presence of other contingent factors that intervene in these causal relationships.

To bridge these empirical inconsistencies, this study incorporates firm size as a moderating variable. The asset scale of a business entity is a key determinant of a corporation's capability to adopt complex financial instruments (Wahyuningsih et al., 2025). Large firms are supported by well-established organizational structures, expert human resources, and more efficient access to global financial markets due to economies of scale. Therefore, profitability capacity or *leverage* burden in large companies is predicted to drive *hedging* decisions more strongly than in small companies. The role of firm size as a contingency variable that conditions internal variables has also been widely demonstrated in various corporate policies (Murtiningrum et al., 2025).

The novelty of this study lies in examining firm size as a moderating variable in the relationship between profitability and leverage and corporate hedging decisions. Rather than examining firm size only as a factor that is directly associated with hedging decisions, this study considers whether differences in firm size change the strength of the relationship between internal financial characteristics and hedging decisions. This approach provides a more conditional perspective on how company characteristics

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influence hedging decisions among listed coal companies in Indonesia.

Based on this argument, the primary objective of this study is to analyze the effects of profitability and *leverage* on *hedging* decisions, as well as to thoroughly examine the role of firm size in moderating the effects of these two financial variables on companies listed on the Indonesia Stock Exchange. Academically, this research expands on the integration of *financial distress cost theory* and *pecking order theory* within the framework of moderation regression analysis in the context of emerging markets. From a practical perspective, the research findings are expected to serve as a strategic guide for financial managers in measuring the efficiency threshold of transaction costs for asset-scale-based hedging and to provide predictive insights for investors in assessing the effectiveness of corporate financial risk management (Griz Alditia et al., 2025).

LITERATURE REVIEW

Signaling Theory

Signaling theory posits that the communication of financial or non-financial information by management to the public serves as a *signal* that can influence the perceptions of investors and external parties in assessing a company's business prospects. In the context of foreign exchange risk management, disclosures regarding the implementation of hedging strategies in the capital markets are viewed positively by investors. By publishing these risk management policies, companies can demonstrate their commitment and professionalism in mitigating the impact of market volatility, which ultimately sends a positive signal to potential investors and reduces information asymmetry (Dewi et al., 2019).

Pecking Order Theory and Financial Distress Cost Theory

The Pecking Order Theory argues that companies establish a hierarchy in their financing policies, prioritizing the accumulation of internal funds (retained earnings) before deciding to seek external financing through debt or new equity (Nurina et al., 2026). Corporations with high net income or profitability theoretically have a strong supply of internal capital, which acts as a natural hedge to cushion operational volatility (Ratnaningsih et al., 2021). Meanwhile, according to the Financial Distress Cost Theory, a linear increase in debt triggers significant fixed interest expenses, thereby undermining financial stability and forcing management to adopt commercial hedging instruments.

Hedging Decisions (*Hedging*)

A *hedging* decision is a strategic policy adopted by management to use financial derivative instruments to manage and reduce exposure to financial losses arising from fluctuations in foreign exchange rates (Ratnaningsih et al., 2021b). The decision to enter into a derivative contract is generally treated as a dichotomous (*dummy*) variable to identify management's commitment to locking in the value of future transactions (Gewar et al, 2022).

Profitability

Profitability is an internal financial indicator that reflects a company's level of operational

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efficiency and its actual ability to convert the assets and capital it manages into net income (Ratnaningsih et al., 2021). According to the *Pecking Order Theory*, a high profit margin reflects a strong accumulation of internal funds that can independently serve as a buffer against operational risk.

Leverage

Leverage is a financial ratio that represents the extent to which a company's capital structure is financed by long-term liabilities or third-party debt relative to its equity (Gewar et al, 2022). High levels of debt expose a company to financial risks that require structured mitigation, such as hedging (Ratnaningsih et al., 2021).

Firm Size

Firmsize describes the scale of a business entity's economic characteristics as measured by its wealth or total real assets held by the corporation. The scale of these assets is a decisive factor in determining transaction volume, the availability of human resources, and the entity's ability to access complex derivative markets.

These theoretical perspectives provide a basis for understanding why profitability, leverage, and firm size may influence corporate hedging decisions. Profitability reflects the company's financial capacity to manage risks, while leverage reflects the financial pressure arising from the use of debt. Firm size may further influence these relationships because companies with different scales may have different resources, risk exposures, and risk-management capabilities. Therefore, firm size is considered not only as a company characteristic but also as a potential moderating factor that may change the relationship between profitability and leverage and hedging decisions.

Hypothesis Development

The Effect of Profitability on Hedging Decisions

Companies with the ability to generate strong operating profits have an abundant supply of internal funds (Sudjiman et al, 2022). Through the lens of the *Pecking Order Theory*, the abundance of liquidity from retained earnings provides financial self-sufficiency, thereby reducing management's urgency to use external derivative instruments because they have the capacity to absorb cost shocks on their own (*natural hedging*) (Ratnaningsih et al., 2021). However, efforts to maintain the stability of profit growth trends in the face of foreign exchange rate distortions can serve as a strong incentive for management to lock in transaction values in order to send positive signals to the market (Puspitasari, 2024). Empirical research of (Ratnaningsih et al., 2021) indicates that profitability has a significant influence on *hedging* decisions. Based on this argument, the first hypothesis is formulated:

H_1: Profitability has a positive effect on a company's hedging decisions..

The Effect of Leverage on Hedging Decisions

A high proportion of debt in a corporation's funding structure directly exposes the company to greater financial risk (Gewar et al., 2022). The periodic interest payments that must be made constrain the company's free cash flow, so to prevent default,

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management is encouraged to adopt hedging strategies as a means of safeguarding liquidity. Empirical evidence from (Ratnaningsih et al., 2021) supports the argument that an increase in leverage linearly increases the probability that management will engage in hedging activities. Based on this framework, the second hypothesis is formulated:
H_2: *Leverage has a positive effect on a company's hedging decisions.*

The Effect of Firm Size on Hedging Decisions
Larger corporations inherently possess greater asset capacity, broader international market exposure, and more complex financial operations, which exponentially elevate their vulnerability to foreign exchange rate fluctuations Furthermore, big firms typically benefit from greater access to financial markets and have the necessary capital to afford the setup and management costs of complex risk mitigation instruments, such as derivative contracts. Empirical literature demonstrates that as firm size expands, the organizational capability and economic justification for implementing formal risk management policies become significantly stronger. Based on these considerations, the hypothesis is formulated:
H_3: *Firm size has a positive effect on a company's hedging decisions.*

Company Size Moderates the Effect of Profitability on Hedging Decisions
Large companies have well-established organizational structures and significantly higher trading volumes than small companies (Salahudin, 2025). Through *economies of scale*, large-asset firms supported by high internal profitability are considered far more efficient at absorbing the premium costs of derivative contracts compared to smaller entities (Gewar et al, 2022). The capacity to transform net income into risk mitigation policies has proven to be more effective in corporations with a sufficient scale of assets (Ratnaningsih et al., 2021). Based on the dynamics of this relationship, the third hypothesis is formulated:
H_4: Firm size strengthens the positive effect of profitability on a company's hedging decisions.

Company Size Moderates the Effect of Leverage on Hedging Decisions
High debt burdens (*leverage*) in large companies create systemic risk and subject them to strict *monitoring* by external capital providers (Sari, 2021). A large total asset base provides advantages such as ease of access, strong bargaining power, and legal standing in executing various international derivative products. Therefore, debt pressure will trigger more aggressive risk management actions if supported by the large firm's capacity to mitigate bankruptcy costs (Ratnaningsih et al., 2021). Furthermore, large firms tend to have more adequate resources for managing financial risk, including the ability to effectively use hedging instruments to maintain cash flow stability and firm performance. Based on this argument, the fourth hypothesis is formulated:
H_5: Firm size strengthens the positive effect of leverage on a company's hedging decisions.

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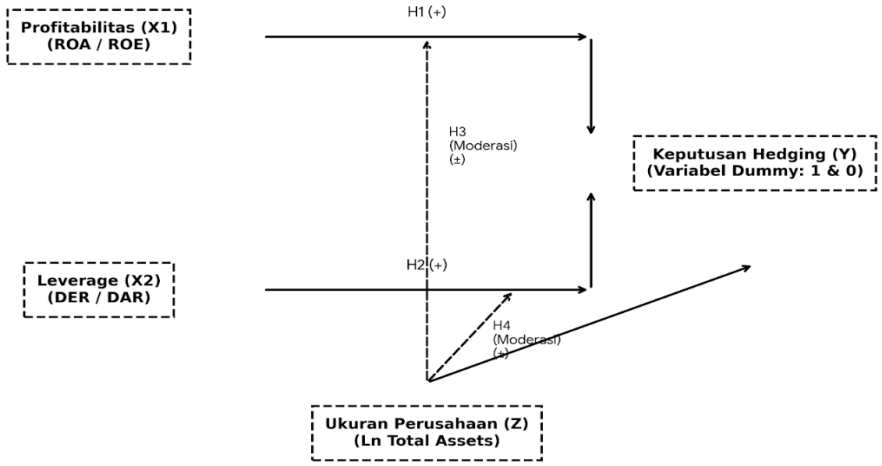


Figure 1. Conceptual Framework

RESEARCH METHOD

Research Design

This study employs a quantitative research design using a causal-comparative associative approach (Sunday et al, 2023). This approach is applied to empirically test and prove the existence of a cause-and-effect relationship as well as the impact of interactions between the independent variables (profitability and *leverage*) on the dependent variable (*hedging* decisions), with firm size serving as a moderating variable (Luthfiyah et al, 2024). Through this quantitative approach, the analysis focuses on processing numerical data from financial statements to produce structured conclusions. Furthermore, the use of quantitative methods is considered capable of yielding more objective research results because the testing is conducted through systematic and measurable statistical techniques. Thus, the relationships between variables in the study can be analyzed more accurately, thereby supporting the process of drawing conclusions based on empirical evidence obtained from company data.

Population and Sample

The population of this study consists of coal mining companies listed on the Indonesia Stock Exchange (IDX) during the observation period. The sample was selected using purposive sampling based on predetermined criteria relevant to the availability and consistency of the data required for the analysis. Initially, 44 coal mining companies were identified. Five companies were excluded because they did not publish complete annual reports during the observation period. Nine companies were excluded because they reported losses during the observation period, while one company was excluded because it did not provide complete information required to measure the research variables. Based on these criteria, 29 companies were selected as the final sample, resulting in 116 firm-

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year observations over four consecutive years.The criteria for screening the observational data are detailed in the following table:

Table 1. Research Sample

Sample Selection Criteria	Total
1. Coal companies listed on the Indonesia Stock Exchange (IDX) consecutively during the observation period.	44
2. Companies that did not publish complete annual financial reports (*annual report*) during the study period.	5
3. Companies that incurred losses during the observation period.	9
4. Companies that do not disclose complete information regarding derivative instruments, ROA, DER, and total assets.	1
Number of Companies Meeting the Sample Criteria	**29**
Total Sample Size (Number of Companies × Years of Observation) (29 × 4)	**116**

The exclusion of loss-making companies represents a limitation of the sample selection process. Because profitability is one of the main explanatory variables in this study, excluding firms with negative profitability may reduce the representativeness of the sample and potentially affect the observed relationship between profitability and hedging decisions. Therefore, the findings should be interpreted within the scope of the selected sample and may not fully represent coal mining companies experiencing negative profitability during the observation period.

Operational Definitions of Variables

The research variables are broken down into quantitative operational indicators based on audited financial statements. Details regarding the operational definitions, indicator formulas, measurement scales, and references to valid articles are presented in the table below:

Table 2. Operational Definitions of Variables

Variable	Indicators	Scale	Source
***Hedging* Decision (Y)**	*Dummy* Variable 1. Hedging Decision = 1 2. No Hedging = 0	Nominal	(Liu et al., 2023; Eka et al., 2025)
Profitability (X1)	ROA = Net Income/total Assets	Ratio	(Saraswati & Suryantini, 2019)
Leverage (X2)	DER = Total Liabilities / Total Equity	Ratio	(Lee et al., 2023)
Firm Size (Z)	Firm Size = ln (Total Assets)	Ratio	(Safitri et al., 2026)

Data Analysis Methods

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The data analysis techniques in this study were conducted using a structured inferential statistical approach. Since the dependent variable (Y) is dichotomous or binary (using *dummy* variables of 1 and 0), the valid statistical testing model used is *Moderated Logistic Regression* or *Moderated Logistic Regression (MLR) (Juliano Sunday & Nyoman Yuliarmi, 2023).* Before constructing the interaction terms, the continuous variables, namely profitability (ROA), leverage (DER), and firm size, were mean-centered by subtracting the respective sample mean from each observation. The centered variables were then used to construct the interaction terms, namely ROA × Firm Size and DER × Firm Size. Mean-centering was performed to reduce potential multicollinearity between the main-effect variables and their interaction terms and to facilitate the interpretation of the regression coefficients.

RESEARCH RESULTS AND DISCUSSION

Results

Results of Descriptive Statistical Analysis

Descriptive statistical analysis was used to provide an overview of the distribution characteristics of the variables examined in this study, including sample size (N), minimum value, maximum value, mean, and standard deviation. The variables examined in this analysis include Profitability (ROA), *Leverage* (DER), Company Size, and the dependent variable *Hedging* Decision (Hedging). A summary of the descriptive statistical analysis results is presented in Table 3 below:

Table 3. Descriptive Statistics

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
HEDGING	116	0	1	.32	.468
ROA	116	.001	.62	.1731	.145221
DER	116	.005	10.79	116.47	1.983.37
FIRM SIZE	116	28.000	32.765	18604.64	14396.348
Valid N (listwise)	116				

Hedging Decisions: The mean value of 0.32 indicates that, out of the total research sample, only about 32% of companies implement hedging policies, while the majority—68%—choose not to hedge.

Profitability (ROA): ROA values range from a minimum of 0.001 (0.1%) to a maximum of 0.62 (62%). The average value for companies in generating profit from their assets is 0.1731 (17.31%). The narrow range of values and small standard deviation (0.145221) indicate that profitability variation among companies is relatively homogeneous and at a fairly good positive level.

Leverage (DER): The debt-to-equity ratio (DER) has a very wide range, from a minimum of 0.005 to a maximum of 10.79. The average DER of 116.47 indicates that, in

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general, the companies in the sample have total debt that is slightly higher than their total equity (116.4%). The high standard deviation (1.983.37) reflects the existence of highly contrasting variations in capital structure among the companies in the sample.

Firm Size: Firm size, based on total assets, ranges from a minimum of 28.000 to a maximum of 32.765. The average Firm Size is 18604.64, with a standard deviation of 14396.348.

SS

Results of the Regression Model Goodness-of-Fit Test (Hosmer and Lemeshow Test)

The regression model goodness-of-fit test (*goodness of fit test*) in logistic regression analysis is conducted to test the empirical hypothesis regarding whether the proposed model fits the observed data. The evaluation of this empirical model fit is assessed using the *Hosmer and Lemeshow Test* statistical indicator. The results of the regression model goodness-of-fit test based on the SPSS data processing output are presented in Table 4 below:

Table 4. Results of the Regression Model Validity Test
Hosmer and Lemeshow Test

Step	Chi-square	df	Sig.
1	11.086	8	.179

The *Hosmer-Lemeshow Test* yielded a p-value of 0.179 (> 0.05). This result indicates that there is no significant difference between the *hedging* decision probabilities estimated by the model and the actual empirical data; therefore, the model is considered to fit the data well and is free from specification errors.

Results of Simultaneous Testing of the Logistic Regression Model

Table 5. Simultaneous Test
Omnibus Tests of Model Coefficients

		Chi-square	df	Sig.
Step 1	Step	17.798	5	.003
	Block	17.798	5	.003
	Model	17.798	5	.003

Based on the test results in Table 5, the Omnibus Tests of Model Coefficients yielded a *chi-square* value of 17.798 with a significance level (*p-value*) of 0.003. Since the significance value is < 0.05, the model is deemed significant in a simultaneous analysis; therefore, the statistical decision is to reject H0. This proves that, taken together, the addition of independent variables—consisting of Profitability (*Return on Assets*/ROA), Leverage (*Debt to Equity Ratio*/DER), and two interaction terms between X and Z (X1_Z) and (X2_Z)—has a significant effect on changes in the probability of a company's *hedging* decision. In other words, the collectively formed regression model is deemed valid and operational.

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Table 6. Partial Test

Variables in the Equation								95% C.I.for EXP(B)	
		B	S.E.	Wald	df	Sig.	Exp(B)	Lower	Upper
Step 1[a]	ROA_C	-9.705	4.081	5.656	1	.017	.000	.000	.181
	DER_C	-.346	.412	.704	1	.401	.708	.316	1.587
	FIRMSIZE_C	.000	.000	3.646	1	.056	1.000	1.000	1.000
	ROA_FIRMSIZE_C	.000	.000	10.034	1	.002	1.000	1.000	1.001
	DER_FIRMSIZE_C	.000	.000	.971	1	.324	1.000	1.000	1.000
	Constant	-.274	.401	.465	1	.495	.761		

a. Variable(s) entered on step 1: ROA_C, DER_C, FIRMSIZE_C, ROA_FIRMSIZE_C, DER_FIRMSIZE_C.

The equation for the logistic regression coefficient model, derived from the table of data analysis results, is as follows:

$$\ln\left(\frac{P}{1-P}\right) = -0{,}274 - 9{,}705 \cdot ROA - 0{,}346 \cdot DER + 0{,}000 \cdot FIRMSIZE + 0{,}000 \cdot (ROA \times FIRMSIZE) + 0{,}000 \cdot (DER \times FIRMSIZE)$$

(Note: The coefficient value of 0.000 for FIRMSIZE and the interaction variables occurs due to rounding to 3 decimal places in SPSS as a result of the large scale of the absolute data).

Direct Effect of Profitability (ROA: The coefficient for ROA is statistically significant at the 5% level. This indicates a negative baseline relationship between profitability and the likelihood of adopting corporate hedging strategies prior to accounting for firm size interaction dynamics.

Direct Effect of Leverage (DER): The parameter for financial leverage (DER) is not statistically significant. This suggests that corporate leverage independently does not exert a statistically meaningful impact on the probability of engaging in hedging activities within the sampled dataset.

Direct Effect of Firm Size (FIRMSIZE): displays an estimated coefficient of 0.000. At a standard significance threshold of $\alpha = 0.05$, firm size does not directly influence hedging propensity, although it exhibits marginal significance at the 10% level.

Moderating Effect of Firm Size on Profitability: The interaction term between profitability and firm size yields a highly significant result. Because the p-value (0,002) is well below the 0.01 significance threshold, the empirical evidence confirms that firm size significantly acts as a moderating variable, altering the effect of profitability on corporate hedging decisions.

Moderating Effect of Firm Size on Leverage: The interaction parameter DER × FIRMSIZE is statistically insignificant. Consequently, firm size does not serve a moderating function in the relationship between financial leverage and hedging decisions.

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Coefficient of Determination (Nagelkerke R-squared)

Table 7. Coefficient of Determination
Model Summary

Step	*-2 Log likelihood*	*Cox & Snell R Square*	*Nagelkerke R Square*
1	127.454	.142	.199

The Nagelkerke R-squared value of 0.199 indicates that the contribution of the independent variables, after being moderated by *Firm Size*, accounts for 19,9% of the variation in *hedging* decisions, while the remaining 80,1% is influenced by other factors beyond the scope of this study.

Discussion

The Effect of Profitability on Hedging Decisions

Based on the results of the binary logistic regression analysis, it was found that the profitability variable, measured using Return on Assets (ROA_C), yields a negative regression coefficient (B) of -9.705 with a significance level of 0.017. Since this significance value is smaller than the alpha error level of 0.05 (0.017 < 0.05), it can be interpreted that profitability has a significant negative partial effect on a company's decision to implement a hedging policy. This finding indicates that the higher a corporation's ability to generate net operating profit from managing its assets, the lower the probability that management will execute derivative trades. The odds ratio value, Exp(B), of 0.000reinforces that strong profit capacity acts as a factor that reduces the company's reliance on hedging transaction costs in financial markets.

From a theoretical and analytical perspective, this finding provides empirical support for the Pecking Order Theory framework. Under the propositions of this theory, corporations with superior financial performance (high profitability) possess abundant retained earnings and internal cash flows, thereby gaining a very high degree of financial flexibility. The managerial policy of abstaining from external hedging is viewed as utilizing internal liquidity as a natural buffer to absorb foreign exchange volatility shocks without incurring transaction fees and contractual complexities associated with external derivatives. Profit is not merely allocated to fund investments, but strategically serves as a substitute for external commercial hedging instruments. This finding expands upon the perspective put forward by (Listiana et al., 2022) namely that high profitability provides companies with independent financial resilience to manage exchange rate risk efficiently without relying on derivative market contracts.

The findings of this study are supported by several previous studies that reach consistent conclusions. First, a study by (Listiana et al., 2022) found that companies with solid internal financial capacity tend not to participate in derivatives markets because they possess sufficient liquidity to absorb operational risks internally. Second, a study by (Affan et al., 2022) confirms that the availability of strong internal financial resources reduces managerial urgency to adopt external hedging instruments. Third, a study by (Alghifari et al., 2022) demonstrates a aligned framework where high internal earning

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capacity provides corporations with the flexibility to optimize capital structure and risk management internally.

However, the results of this study are inconsistent (contradictory) with several other empirical studies. A study by (Fajri et al., 2023) found that profitability has a significant positive effect on hedging decisions because highly profitable companies seek to protect future cash flow certainty against foreign exchange volatility. Furthermore, a study by (Witiastuti et al., 2021) indicates that high profit levels prompt corporations to actively participate in derivative transactions to maintain financial performance stability in the eyes of external investors. **H1: Rejected.**

The Effect of Leverage on Hedging Decisions

The results of the logistic regression analysis show that the leverage variable, proxied by the Debt-to-Equity Ratio (DER_C), yields a regression coefficient (B) of -0.346 with a significance level of 0.401. Since the significance value of the test is greater than the materiality level (0.401 > 0.05), it is concluded that leverage does not have a significant partial effect on the hedging decisions of the sample companies. This finding suggests that the extent of debt in a corporation's capital structure is not a primary determinant driving managerial responses to actively trade in the foreign exchange derivatives market.

The lack of significance of leverage's effect in this model indicates a discrepancy with the general assumptions of the Financial Distress Cost Theory.This situation may arise because the majority of long-term debt held by the sample companies consists of domestic debt denominated in local currency (Rupiah) or is backed by secure internal restructuring commitments; thus, market exchange rate fluctuations do not automatically escalate interest expense risks or corporate bankruptcy potential. Furthermore, capital providers (creditors) have likely implemented protective debt covenants from the outset, so management is no longer required to conduct additional derivative hedging on its own. This objective finding is consistent with the analysis from previous research by (Affan et al., 2022) which demonstrated that accounting liability exposure does not directly justify patterns of adopting corporate risk management instruments.

The findings of this study are also supported by several other studies that reach similar conclusions. First, a study by (Affan et al., 2022) found that leverage does not have a significant effect on hedging decisions because debt levels do not necessarily reflect actual foreign currency risk exposure. Second, a study by (Listiana et al., 2022) indicates that leverage does not significantly affect hedging activities because companies rely more on internal operational adjustments than on external derivative instruments. Third, a study by (Fajri et al., 2023) demonstrates that debt ratios are not a primary determinant of hedging decisions as long as financial obligations are not directly tied to international exchange rate transactions.

However, the results of this study are inconsistent (contradictory) with several other empirical studies. A study by (Witiastuti et al., 2021) found that leverage has a significant positive effect on hedging decisions because higher debt ratios increase default risks due to exchange rate volatility, thereby prompting management to engage in hedging. Finally, a study by (Alghifari et al., 2022) indicates that leverage influences risk management policies because companies with high debt levels tend to be more sensitive

Jurnal Akuntansi, Manajemen Dan Ekonomi Islam (JAM-EKIS)
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to changes in external financing costs. **H2: Rejected.**

The Effect of Firm Size on Hedging Decisions

Based on the results of the binary logistic regression analysis in Table 6 (Variables in the Equation), the firm size variable, proxied by the natural logarithm of total assets (FIRMSIZE_C), yields a regression coefficient (B) of 0.000 with a Wald statistic of 3.646 and a significance level of 0.056. Since this significance value is greater than the alpha error level of 0.05 (0.056 > 0.05), it is concluded that firm size does not have a significant partial effect on hedging decisions at the 5% significance level. The odds ratio, Exp(B), of 1.000 confirms that variations in asset scale do not directly alter managerial probability to trade in derivatives markets.

Large-scale firms should be more inclined to hedge because they possess stronger financial capacity to absorb relatively high derivative transaction costs and maintain specialized human capital for complex risk management. However, these empirical results indicate that asset magnitude is no longer the primary driver for derivative execution. Large corporations with massive asset bases often possess broad operational diversification and cross-border subsidiary networks, leading them to utilize Natural Hedging mechanisms (such as internal cash flow matching across currencies) rather than external commercial derivative contracts. Conversely, smaller companies without direct foreign exchange exposures also abstain from hedging. Consequently, asset scale does not independently dictate corporate hedging choices.

The findings of this study are supported by several previous studies that reach consistent conclusions. First, a study by (Putri & Mahfud, 2021) found that firm size has no significant effect on hedging decisions because asset scale does not automatically reflect exchange rate exposure. Second, a study by (Listiana et al., 2022) confirmed that firm size is not a direct determinant of hedging policies, which are driven more by actual international trade intensity. Third, a study by Fajri et al. (2023) demonstrated similar results where asset scale lacks direct explanatory power regarding derivative adoption decisions.

However, the results of this study are inconsistent (contradictory) with several other empirical studies. A study by (Witiastuti et al., 2021) found that firm size has a significant positive effect on hedging decisions because large firms enjoy easier access to international financial markets and lower transaction costs per unit due to economies of scale. Furthermore, a study by (Alghifari et al., 2022) indicates that firm size is a crucial factor in corporate risk management choices, as larger asset capacity provides greater structural flexibility in executing external financial instruments. **H3: Rejected.**

The Role of Firm Size in Moderating the Effect of Profitability on Hedging Decisions

Test results on the interaction effect variable ROA_FIRMSIZE_C confirm that firm size acts as a significant moderator of the effect of profitability on hedging decisions (B = 0.000; Wald= 10.034;Sig.= 0.002 < 0.05). The highly significant p-value (0.002) demonstrates that firm size substantially alters the dynamic relationship between earning capacity and managerial propensity to execute hedging instruments.

From a financial perspective, this interaction phenomenon occurs due to the substitution capacity of financial risk mitigation mechanisms in large-scale companies.

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Corporations with massive asset bases generally possess extensive operational diversification and geographical subsidiary networks. This structural advantage enables large corporations to implement strategies for internally aligning cross-currency cash flows (*internal netting* or *matching*). When these large corporations achieve high profitability, their accumulated internal liquidity and operational diversification are deemed more than sufficient to naturally cushion foreign exchange market shocks (*natural hedging*). Consequently, management at large firms no longer relies heavily on external commercial derivatives despite having abundant profits. This situation reinforces the contingency role of firm size, where asset scale shifts managerial focus from external hedging instruments toward optimizing more efficient internal risk restructuring (Alghifari et al., 2022)

Theoretically, the results of this study support Resource-Based Theory (RBT). Under RBT, large firms possess superior internal resources for risk management compared to small firms, including greater liquidity access, operational flexibility, and internal foreign exchange risk management capabilities. In this context, high profitability in large firms serves as capital to strengthen internal risk mitigation strategies.

The findings of this study are also consistent with the empirical argument put forward by (Alghifari et al., 2022), stating that asset scale plays an important conditional role in modifying the influence of internal financial performance on corporate strategic policies. On the other hand, research by (Listiana et al., 2022) and (Affan et al., 2022) also shows that firm size represents a relevant moderating/control variable in mapping the complexities of corporate hedging choices.

However, the results of this study do not fully align with the view that large companies are always more active in using derivative instruments. Research by (Witiastuti et al., 2021) found that firm size amplifies derivative usage because large firms have broader access to international derivatives markets as well as better financing capabilities to fund large-scale hedging contracts. **H4: Accepted.**

The Role of Firm Size in Moderating the Effect of Leverage on Hedging Decisions

The results of the test on the second moderating interaction effect on variable DER_FIRMSIZE_C show that firm size does not possess the statistical power to moderate the effect of leverage on hedging decisions (B = 0.000; Wald = 0.971; Sig.= 0.324 > 0.05). This failure of moderation indicates that the insignificant impact of debt burden (DER_C) applies uniformly and consistently across firm size categories, regardless of variations in total asset scale managed by the corporation.

These empirical findings provide an analytical explanation that debt structure and operational scale are two dimensions of financial decision-making that operate independently in determining corporate risk management. Across various company size categories both small and large firms the assessment of debt-related risk is not conditioned by asset scale, but is instead based on debt contract maturities and the dominant currency of those obligations. When direct leverage exposure is not shown to drive derivative actions, the intervention of firm size loses its structural relevance as a conditioning variable.

In this study, firm size failed to serve as a moderating variable because the sample firms' debt was not directly linked to high-risk foreign currency-denominated

liabilities.Conceptually, both large and small companies evaluate hedging needs based on liability sensitivity to exchange rate fluctuations. Therefore, when leverage is not a primary driver of derivative usage, firm size lacks the structural power to alter the direction or significance of that relationship. These findings reinforce empirical evidence from (Affan & Prasetiono, 2022) who argued that firm size does not moderate the relationship between leverage and hedging decisions when foreign exchange exposure from debt obligations is relatively low or hedged through internal contractual mechanisms. **H5: Rejected.**

CONCLUSION

Based on the analysis and hypothesis testing, several main conclusions can be drawn: (1) Profitability (ROA) has a negative and significant effect on hedging decisions, as higher internal profits provide a liquidity buffer that reduces reliance on external derivatives; (2) Leverage (DER) has no significant effect, indicating that debt level is not a primary driver of hedging; (3) Firm size alone does not significantly affect hedging decisions; (4) Firm size significantly moderates the effect of profitability on hedging decisions by strengthening internal natural hedging capacity; (5) Firm size does not moderate the effect of leverage on hedging decisions; and (6) Simultaneously, profitability, leverage, firm size, and the moderating interaction terms significantly influence corporate hedging decisions.

The main limitation of this study is its reliance on limited internal financial ratios, yielding an explanatory power of 19.9% (Nagelkerke R Square = 0.199). Additionally, focusing on a specific sector over a short timeframe limits generalizability and omits direct measures of foreign exchange exposure.

Future research is recommended to include additional variables such as foreign exchange exposure, liquidity, and macroeconomic factors while expanding the sample to other export-oriented sectors over a longer observation period. Practically, smaller firms with limited internal hedging options should carefully consider derivative contracts when foreign exchange risks are high, whereas highly profitable firms should continue optimizing internal liquidity while weighing the cost-efficiency of external derivatives.

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