Navigating Stock Price Volatility in the Energy Sector: How Financial Flexibility Transmits Through Leverage and Profitability

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Abstract

The aims of this paper are to investigate the influence of Financial Flexibility on the Volatility of Stock Return (VOR) and analyze the dual-mediating roles of Financial Leverage (FIL) and Profitability (PRF) on energy companies in the IDX (Indonesia Stock Exchange). Companies in this sector have experienced excessive volatility and dynamic return fluctuations; it is important to identify the internal factors determined by financial managers. This quantitative explanatory research utilized purposive sampling to select 52 energy companies registered on the IDX during the period of year 2021 to 2025. The data were analyzed applying Structural Model Equations with two equations. The results show that FIF has no direct impact on VOR. However, FIF negatively influences FIL, and FIL positively influences VOR. In addition, FIF has a positive influence on PRF, and PRF has a negative influence on VOR. Furthermore, both FIL and PRF serve as full mediation roles bridging the relationship between FIF and VOR. These evidences suggest strategic reference for Energy Company's management to mitigate equity risks through effective debt and profit capacity decisions.

Keywords: Energy Sector; Financial Flexibility; Financial Leverage; Profitability; Volatility of Return

I. INTRODUCTION

Volatility of return (VOR) is the level of dispersion or variability of a company's stock returns around the average value over a specific period. It reflects the degree of uncertainty and investment risk faced by the market and shareholders (Ahmed & Hla, 2019; Najmudin et al., 2026). At the firm level, volatility captures the sensitivity of equity prices to the dissemination of financial information with return fluctuations serving as a manifestation of investor assessment regarding the entity's capital structure, financial risk exposure, and operational efficiency (Vo & Mazur, 2023). Higher volatility indicates unstable cash flow expectations and heightened systematic and specific risks. Therefore, this volatility provides as a vital benchmark for evaluating a company's fundamental resilience and financial internal factors in the face of economic uncertainty (Wu et al., 2024).

The exigency of examining and managing volatility stems from the destructive consequences it poses to corporate sustainability. Excessive fluctuations in stock price directly drive up the cost of equity and the cost of debt, as investors and creditors demand significantly higher returns to compensate for the risks they bear (Chang et al., 2025; Najmudin et al., 2024). In addition, greater volatility could obscure a company's intrinsic value, exacerbate information asymmetry, and heighten the risk of financial distress that potentially leading to bankruptcy, specifically for companies with very higher debt ratios (Daruwala et al., 2025). As a result, these adverse effects constrain the ability of management to raise external fund for long-term investment opportunities.

Volatility among energy companies on both international stock exchanges and the Indonesian Stock Exchange exhibits highly dynamic and extreme returns. In international

equity markets, stocks of energy companies consistently record exceptionally higher return variance and persistent volatility patterns compared to other industrial sectors (Salisu et al., 2024). This phenomenon of fluctuate price turbulence is also evident in the IDX where the return movements of energy issuers within the Energy Sector Index (IDXENERGY) display a very wider and asymmetric dispersion of price. It was marked by drastic price surges in one period followed by sharp corrections in the subsequent period (Kusmini & Wibowo, 2025; Nabila et al., 2026). The greater value of return variability underscores that energy companies on the IDX operate within a high-risk market environment where daily return movements have failed to demonstrate returns stability trends over recent annual cycles (Tri Wahyudi & Rahmawati, 2025).

Understanding volatility systematically remains a central focus in modern corporate finance study due to its dynamic impact on capital allocation efficiency and the estimation of fundamental corporate risk (Siddiqui et al., 2024). Although financial risk analysis has advanced significantly, the volatility of energy sector firms presents unique empirical challenges driven by intense external uncertainty, global commodity price fluctuations, and energy transition disruptions that trigger cash flow uncertainty (Tri Wahyudi & Rahmawati, 2025). Further study on volatility is essential, given the inconsistent findings of previous studies regarding how capital structure policies and profitability performance could mediate the influence of an internal financial flexibility (Bahri et al., 2025; Uyun, 2025). Hence, a deeper addressing of the interrelationships between these variables is important for clarifying risk transmission process in an energy sector highly vulnerable to macroeconomic change (Muharam et al., 2021).

A main factors in managing volatility is financial flexibility which is a firm's dynamic ability to mobilize internal financial resources (cash flexibility) and optimize unused borrowing capacity (debt flexibility) to efficiently respond to unexpected financial burdens and capitalize on promising investment opportunities (Ma et al., 2025; Nguyen & Dang, 2023). Financial flexibility has been shown to exert a negative influence on volatility that means a higher level of corporate flexibility was associated with lower return fluctuations. According to Precautionary Demand Theory and Pecking Order Theory, liquid cash reserves and sufficient remaining debt capacity serve as a financial buffer that protects the firm against external liquidity shocks and mitigates reliance on high-cost external financing during periods of market uncertainty (Bahri et al., 2025). The presence of this buffer alleviates investor concerns regarding financial distress and bankruptcy risks that could reduce uncertainty surrounding future cash flows. Based on Real Options Theory, this financial flexibility affords management the strategic choice to execute value-added investments without the threat of financing constraints. It could deliver a good signal to the market player, stabilizes investor expectations, and significantly dampens volatility (Elryanti & Satrio, 2025).

Although theoretical frameworks predict that financial flexibility negatively influences volatility by acting as an internal financial buffer, previous empirical findings suggest a research gap characterized by contradictory results. Another result suggests that excessive financial flexibility could potentially increase extreme risks and volatility. Greater cash reserves and higher debt capacity can trigger agency problems and over-investment decisions that could heightening the risk of stock price crashes and stock price variability (Arslan-Ayaydin et al., 2014). An empirical finding reveals that the influence of financial flexibility on stock price stability is conditional or indirect. For example, its effectiveness heavily dependent on the severity of macroeconomic crises and corporate governance structures (Ferrando et al., 2017; Rapp et al., 2014). These inconsistent evidences underscore the importance of re-examining this relationship by incorporating mediating variables such as financial leverage (FIL) and company profitability (PRF) to comprehensively clarify the transmission process.

To address the research gap regarding the inconsistency of relationship between financial flexibility and return volatility, this paper proposes a scientific contribution by developing an empirical research model that combine a dual-mediating model. The model employs two variables (FIL and PRF) as mediators bridging the direct influence path from financial flexibility (FIF) to return volatility (VOR). FIL is proportion of debt used in a firm's capital structure to finance assets that is indicator for degree of financial risk (Choi & Richardson, 2016). PRF is the firm's efficiency in generating net profit from managed equity capital that provides a reflection of financial effectiveness (Fama & French, 2015). Combining both variables elucidates an internal delivery pathway that are the availability of FIF (Marchica & Mura, 2010) enables management to curb spikes in FIL and maintain stable PRF (Ferrando et al., 2017) that could decrease VOR in the equity market.

The reason that FIL may work as a mediator is supported by an integration of findings suggesting that FIF contributes negatively on FIL and FIL contributes positively on VOR. Grounded in Pecking Order Theory and the precautionary motive, management prioritizing FIF deliberately maintain lower debt levels to preserve spare debt capacity. This decision is adopted to avoid the burden of fixed interest obligations, mitigate the risk of financial distress, and ensure the availability of funding capacity to achieve sudden investment needs or market shocks (Denis & McKeon, 2012; Marchica & Mura, 2010). According to Trade-Off Theory and the leverage effect argumentation, increasing the part of debt in the capital composition amplifies a fixed financial obligations of company. It could directly increase the variance of equity returns in response to changes in asset value. Higher debt loads heighten earnings sensitivity and investor perceptions of bankruptcy risk that makes market reactions to new information become more volatile (Choi & Richardson, 2016; Christie, 1982; Winata & Ekadjaja, 2025).

To build the framework that PRF could position as a mediator variable, there must be empirical evidences contain the impact of FIF on PRF and the effect of PRF on VOR. The Resource-Based View (RBV) and Real Options Theory reveal that greater internal liquidity and reserve debt capacity enables management to allocate fund for investment projects without the constraints associated with costly and slow external financing. This flexibility also shields corporate operations from cash flow volatility and economic disruptions. It could enhance asset efficiency and equity effectiveness that strengthens profitability (Cao et al., 2026; Wu et al., 2025). The reason indicates that FIF generates a positive influence on PRF. The following evidences indicate that PRF has a negative effect on VOR. According to Signaling Theory, higher PRF informs to market participants that a company possesses sound financial fundamentals and prospects for stable future cash flow growth. Greater earnings performance mitigates information asymmetry and lowers investor perceptions of bankruptcy risk. It makes market expectations become more predictable and helps to stabilize price fluctuations and reduce VOR (Fithriyana et al., 2025; Pástor & Pietro, 2003).

This research aims to empirically analyze the influence of FIF on VOR and investigate the dual-mediation mechanism of FIL and PRF in this relationship in energy sector companies. This research attempts to expand the internal delivery pathways clarifying how FIF influence capital structure choices and profit generation efficiency to stabilize VOR in equity exchange. Achieving these purposes is expected to solve the research gap regarding inconsistencies in previous empirical studies and to provide strategic guidance for energy sector corporate on mitigating financial risks in stock markets.

II. METHOD

Population and Sample. This paper utilizes a quantitative explanatory research observing on a population of companies in energy sector and registered on the IDX. The purposive sampling method was employed according to the following criteria: 1). Companies

continuously classified under the energy sector on the IDX throughout the 2021–2025 observation period, and 2). Availability of complete financial and annual report data required for the study. Consequently, 52 (fifty-two) companies met these selection criteria and were sampled over the observation period.

Definition and Measurement of Variables. VOR represents the degree of fluctuation, dispersion, or variability of a company's daily or monthly stock returns relative to their mean over a specific observation period, reflecting market risk and the level of investment uncertainty (Costa et al., 2024). Operationally, VOR is defined as the annualized standard deviation of monthly equity returns each company over a one-year observation period. The formula is:

$$\mathrm{VOR_{it}} = \sqrt{\frac{\sum_{m-1}^{N}(R_{i,m} - \bar{R}_i)^2}{N-1}}\ X\ \sqrt{K}$$

Where:

$\mathrm{VOR_{it}}$ = Annualized return volatility of stock i in year t

$R_{i,m}$ = Return of stock i in month m

$\bar{R}_i$ = Average monthly stock return over the observation period

N = Number of observation months (if calculated on an annual basis, N = 12)

$\sqrt{K}$ = Annualizing factor; for monthly data, this is 12

$$R_{i,m} = \ln\left(\frac{P_{i,m}}{P_{i,m-1}}\right)$$

Where:

$P_{i,m}$ = Closing stock price at the end of month m

$P_{i,m-1}$ = Closing stock price at the end of the previous month (m-1)

FIF is a company's capacity and adaptive ability to quickly and at low cost mobilize and restructure its financial resources (either through internal cash reserves or external debt absorption capacity) to respond to unexpected cash flow shocks, minimize financial risks, and execute high-value investment opportunities (Teng et al., 2021). Operationally, FIF is a combination of cash flexibility (CF) and debt flexibility (DF). The formula is expressed as follows:

FIF = CF + DF

Where:

CF = Cash & Cash Equivalents / Total Assets

DF = 1 – (Debt / Total Assets)

FIL refers to the extent to which a company utilizes interest-bearing obligations (liability) within its capital proportion relative to equity to finance its operating assets. The preference on debt creates a fixed financial load that could amplify potential returns and could simultaneously increase the level of company risk (Mansour et al., 2023). FIL indicates the grade of liability in capital structure of a company. It was proxied by the DER (Debt to Equity Ratio). The formula is expressed as follows:

FIL = Total Debt / Total Equity

PRF measures financial performance effectiveness and management efficiency in utilizing shareholders' equity to create net earnings after tax over a specific period (Tutcu et al., 2024). PRF indicates a company's ability to generate earnings for shareholders. It was measured by Return on Equity. The formula is expressed as follows:

PRF = Net Earnings after Tax / Total Equity

Analysis Tool. According to the research model, there is one independent variable (FIF), two mediator variables (FIL and PRF), and one dependent variable (VOR). The structural equations worked to examine the causal connection among the variables are expressed as follow:

Mediation Equation 1 : $FIL_{it} = \alpha_1 + \beta_1 FIF_{it} + \varepsilon_{1,it}$
Mediation Equation 2 : $PRF_{it} = \alpha_2 + \beta_2 FIF_{it} + \varepsilon_{2,it}$
Main Equation (VOR) : $VOR_{it} = \alpha_3 + \beta_3 FIF_{it} + \beta_4 FIL_{it} + \beta_5 PRF_{it} + \varepsilon_{3,it}$

Notation Key:
VOR_{it} : Volatility of Stock Return of company i in year t
FIF_{it} : Financial Flexibility of company i in year t
FIL_{it} : Financial Leverage of company i in year t
PRF_{it} : Profitability of company i in year t
Symbol α_i : Constant (intercept)
Symbol β_i : Path/regression coefficients
Symbol ε_i : Error term

The estimate equations applied within the Structural Equation Model framework are expressed as follow:

$FIL = \gamma_{11} FIF + \zeta_1$
$PRF = \gamma_{21} FIF + \zeta_2$
$VOR = \gamma_{31} FIF + \beta_{31} FIL + \beta_{32} PRF + \zeta_3$

Where: Symbol γ (gamma) is the coefficient for direct relationship from FIF to the dependent variable, β (beta) is the coefficient for the relationship from FIL and PRF to VOR, and ζ (zeta) indicates the error term.

Analysis Steps. The data analysis process in this paper utilizes PLS Structural Equation to test the structural relationships among FIF, FIL, PRF, and VOR. This approach was applied due to its effectiveness in examining complex models containing multiple mediator variables and does not require all statistical assumptions (Hair et al., 2019). The evaluation in was applied in two steps consisting of the outer model (measurements) and inner (structural) model.

III. RESULTS AND DISCUSSIONS

A. Result

This paper observes on stock issuers registered on the IDX that classified within the energy sector. The initial sample consists of 91 firms from issuers continuously listed during the research period. After screening for data completeness, the final sample is 52 companies. The observation period covers a five-year spanning from 2021 to 2025. The data are annual basis taken from published financial reports. Stock price data used to compute the volatility variable were obtained on a monthly frequency.

Before examining the hypothesis, the descriptive statistical data was analyzed to profile the research data. The variables analyzed include VOR, FIF, FIL, and PRF. Table 1 reports a descriptive statistics summary: the minimum, maximum, and mean values, the degree of data dispersion (standard deviation), and the distribution characteristics (kurtosis and skewness) for each variable.

The mean VOR value is 0.188 with a standard deviation value of 0.261. The value of skewness (7.069) exhibits extreme right-skewness. It means that the majority of firms indicates lower to moderate VOR and there is a smaller sub-group displays very higher VOR (reaching a maximum of 2.772). A historical return volatility of 0.188 was generally considered moderate level for an emerging equity market. The mean FIF value is 0.603 with wider data range spanning from -4.877 to 2.438. The minus skewness (-4.675) informs the

outlier representing companies with lower FIF. The higher negative value indicates conditions of financial distress.

Table 1. Descriptive Statistical Data

Variable	Mean	Min	Max	Stdev	Kurt	Skew
VOR	0.188	0.000	2.772	0.261	64.354	7.069
FIF	0.603	-4.877	2.438	0.672	32.005	-4.675
FIL	1.219	-4.942	3.255	2.145	16.740	3.116
PRF	0.165	-2.761	3.669	0.467	24.200	-0.057

Source: Processed data

The mean FIL value is 1.219. A higher standard deviation (2.145) and a maximum value (3.255) indicate the companies with higher debt ratio. The negative minimum value (-4.942) likely reflects capital deficiency (negative equity resulting from accumulated losses). A commonly accepted rule of thumb among investors is a maximum debt to equity ratio of 1.0 to 2.0. The average of 1.219 is reasonable that shows the debt exceeds equity. The maximum value of 3.255 indicates there is a sample has higher risk. The mean PRF value at 16.5% is good level. The data distribution for PRF is higher symmetrical with a skewness of -0.057. The kurtosis value is very higher (24.200) indicating that the majority of sample are concentrated around the mean. ROE levels was attractive by investors ranging from above 12% to 15%.

In the analysis, the model assessment for measurement encompasses the validity of convergent and discriminant, the Cronbach's alpha, and the reliability of composite. According to outer model testing, all variables of VOR, FIF, FIL, and PRF exhibit an outer loading value of 1.000. The measurement indicators for each variable are statistically valid due to this research uses a single-item construct for each variable. The value of AVE > 0.50 that meets the convergent validity criteria. The measurement model was proven valid and suitable for proceeding to the next analysis.

Table 2. Cross Loading Result

	FIF	FIL	PRF	VOR
FIF	**1.000**			
FIL	-0.489	**1.000**		
PRF	0.092	-0.326	**1.000**	
VOR	-0.093	0.193	-0.152	**1.000**

Source: Processed data

According to the data in Table 2, the testing of cross-loading presents the indicators for all variable exhibit a loading value of 1 (one) on their respective constructs. It was significantly greater than the cross-loading values of these indicators on other construct. This demonstrates that each financial ratio used in this study is clearly distinguishable from the other variables, with no measurement overlap. Based on this evaluation, it could be stated that the variables in this research meet the requirements for the validity of discriminant.

Following the convergent validity test, the next stage in the outer model evaluation is the construct reliability test. The criteria of reliable variable if value of Cronbach's alpha and reliability of composite more than 0.70 as a threshold. The result of test indicates that each research variable exhibits more than 1 (one). Since all values significantly exceed the minimum threshold of 0.70, it can be concluded that all constructs in this study demonstrate a perfect level of reliability and consistency.

The evaluation for inner model begins by examining coefficient of determination (R^2), which measures the extent to which the variation in the endogenous variable could be explained by its predictor. According to Table 3, FIF explains 24.0% of the variance in FIL and the remaining 76.0% might be explained by external variables of the study. It indicates that the explanatory power falls within the weak-to-moderate range. The PRF had R^2 value of 0.008 and R^2 adjusted value of 0.005. The predictor variables in the model explain only 0.8% of the variance in PRF and the outside variables of this study explain 99.2%. It demonstrates very weak predictive capability regarding PRF.

Table 3. Result of determination coefficients

Variables	R-square	R-square Adjusted
FIL	0.240	0.237
PRF	0.008	0.005
VOR	0.046	0.035

Source: Processed data

VOR as primary dependent variable had R^2 value of 0.046 and R^2 adjusted value of 0.035. The FIF, FIL, and PRF variables collectively explain 4.6% of the variance in VOR. The majority of the variance (95.4%) might be explained by factors outside the research. Lower R^2 values for financial and stock market variables are normal in empirical finance studies. It could be stock prices and volatility in stock markets are affected by information flows and complex external dynamics.

Mediation testing was employed to test the roles of FIL and PRF in mediating the relationship between FIF and VOR. To calculate the Sobel value, the first step is to calculate the standard error of the indirect coefficient.

Calculation of mediation path 1: FIF > FIL > VOR

$S_{ab} = \sqrt{b^2 \, x \, S_a^2 + a^2 \, x \, S_b^2}$

S_{ab} = 0.043338

The values of ab and z are calculated::

ab = -0.489 x 0.157

= -0.076773

Z = ab / S_{ab} = -1.7715 (p = 0.0765)

Calculation for mediation path 2: FIF > PRF > VOR

S_{ab} = 0.005692

ab = 0.092 x -0.100

ab = -0.0092

Z = ab / S_{ab} = -1.6752 (p = 0.0939)

This study employs a 10% significance level because in empirical research within the fields of finance and capital markets—areas characterized by significant external dynamics—the use of a 10% alpha (with a Z-score threshold > 1.645) is common practice. Applying this threshold, both FIL (Z = 1.7715) and PRF (Z = 1.6752) meet the criteria for significant mediating variables.

There are four categories of mediation: full mediation, complementary partial mediation, competitive partial mediation, and no mediation. The first is significant in the indirect effect (a.b) and not significant in the direct effect (c'). The second is significant in both the indirect and direct effects, and share the same coefficient sign (either positive or both negative). The third is significant in both the indirect and direct effects, but have opposite coefficient signs. The fourth is not significant in the indirect effect, regardless of the result of the direct effect.

According to the analysis of this study, a classification of full mediation was determined. This conclusion is grounded in two primary conditions aligned with the criteria from Preacher and Hayes (2004, 2008). This approach serves as the primary standard for

evaluating mediation effects in PLS-SEM, superseding the Baron & Kenny stepwise approach and the Sobel Test. This method focuses on the direct statistical testing of the product of indirect path coefficients using a non-parametric bootstrapping resampling technique.

Direct Effect Hypothesis. Hypothesis testing for the direct effect is conducted to assess the significance of the connection among variables by examining the Original Sample coefficients (beta) and the P-Value derived from the bootstrapping results. The decision-making criterion employs a 10% significance level. A hypothesis is accepted when the probability value is less than 10%. It is rejected when the P-value ≥ 10%.

Table 4. Output Bootstrapping from Direct Effect

Variables Relation	*Original Sample*	*Standard Deviation*	*P Value*
FIF → FIL	-0.489	0.142	0.001
FIF → PRF	0.092	0.030	0.002
FIF → VOR	-0.007	0.069	0.918
FIL → VOR	0.157	0.076	0.038
PRF → VOR	-0.100	1.995	0.046

Source: Processed data

The following is an interpretation based on the SEM-PLS output presented in Table 4. This interpretation is accompanied by a decision regarding the hypothesis proposed for each variable relationship.

1. Effect of FIF on FIL: The path coefficient = -0.489 and a P-value = 0.001. The P-value < 0.10 indicates that FIF negatively influences on FIL. An increase in corporate FIF significantly reduces the company's reliance on debt (Hypothesis 2 accepted).
2. Effect of FIF on PRF: The path coefficient = 0.092 and a P-value = 0.002. It suggests that FIF positively contributes to PRF. The availability of FIF facilitates the execution of profitable investment opportunities, thereby enhancing PRF (Hypothesis 5 accepted).
3. Effect of FIF on VOR: The path coefficient = -0.007 and a P-value = 0.918. It means that FIF has no effect on VOR. Changes in FIF do not directly impact the VOR in the capital market (Hypothesis 1 rejected).
4. Effect of FIL on VOR: The path coefficient = 0.157 and a P-value = 0.038. It indicates that FIL has a positive effect on VOR. High levels of debt usage increase investors' perception of financial risk, thereby heightening VOR (Hypothesis 3 accepted).
5. Effect of PRF on VOR: The path coefficient = -0.100 and a P-value = 0.046. It means that PRF negatively contributes to VOR. A company's ability to generate high profits can provide a positive signal that dampens stock return fluctuations (Hypothesis 6 accepted).

Hypothesis Regarding Indirect Effects. Testing for indirect effects was conducted to assess the ability of the FIL and PRF variables to mediate the relationship between FIF and VOR. This evaluation employed the Sobel Test, with the decision criterion being that the mediation hypothesis is accepted if the calculated Z-value exceeds 1.645 (at a 10% significance level). The analysis output of indirect effect is reported in Table 5.

Path FIF → FIL → VOR (H4). Testing the first mediation path yielded a coefficient a of -0.489 (Sa = 0.142) and a coefficient b of 0.157 (Sb = 0.076). The calculated Z-value obtained from the Sobel Test calculation was 1.7715. At a significance level of 10% with a Z-table threshold of 1.645 suggests that FIL could mediate significantly the influence of FIF on VOR (H4 Accepted).

Table 5. Result of Sobel Test

Coefficient a	Coefficient b	S_a	S_b	$Z\text{-}_{Stat}$	Hypothesis
-0.489	0.157	0.142	0.076	1.7715	H4 accepted
0.092	-0.100	0.030	0.050	1.6752	H7 accepted

Source: Processed data

Path FIF → PRF → VOR (H7). Testing the second mediation path yielded a coefficient a of 0.092 (Sa = 0.030) and a coefficient b of -0.100 (Sb = 0.050). The calculated Z-value obtained from the Sobel Test was 1.6752. These results demonstrate that PRF significantly mediates the effect of FIF on VOR at a 90% confidence level (H7 Accepted).

Total Effect. Total effect analysis was conducted to calculate the cumulative impact of both indirect and direct effects of FIF on VOR with the mediators of FIL and PRF. Table 6 presents the details regarding the comparison and calculation of the total effect between variables.

Table 6. Total Indirect and Direct Effects

Effect of Variable	Result
FIF → VOR (Direct Effect)	-0.086
FIF → FIL → VOR (Indirect Effect 1)	-0,077
Total Effect 1	-0.163
FIF → PRF → VOR (Indirect Effect 2)	-0.009
Total Effect 2	-0.095

Source: Processed data

According to the data in Table 6, the accumulated total effect among the variables could be explained as follow. The value for direct effect of FIF on VOR is -0.086. When FIF was mediated by FIL, there is an additional indirect effect of -0.077. The accumulated total effect of FIF on VOR through the FIL path is -0.163. These results inform that FIL cumulatively reinforces the negative impact of FIF on VOR. It means that if a one-unit decrease in FIF leads to a 0.163 unit increase in VOR through the mechanism of reduced FIL.

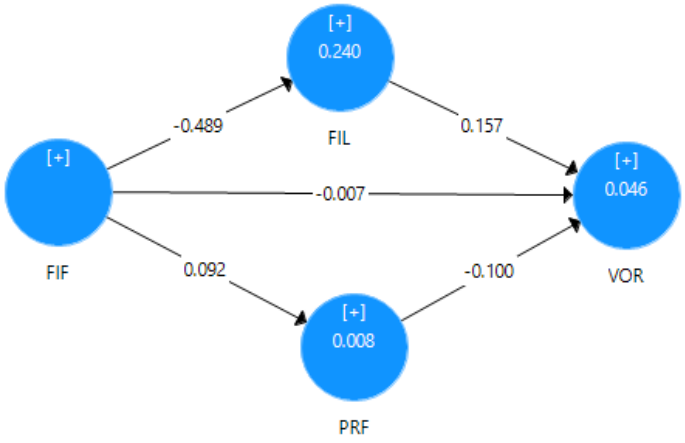

Figure 1. Data processing output.

The value of indirect effect for FIF on VOR combined with the value of direct effect through PRF (-0.009) generates in a total effect of -0.095. It means an increase in FIF channeled through the PRF path contributes to a 0.095 unit decrease in VOR. The negative accumulated total effect indicates that increasing FIF whether directly or when mediated by FIL and PRF consistently provides to suppress fluctuations or the volatility level.

According to Figure 1 and Table 4, the three regression equations could be expressed as follows:

Equation 1 (VOR Model):

VOR = -0.007 FIF + 0.157 FIL − 0.100 PRF

Equation 2 (Mediation Model 1 – FIL):

FIL = -0.489 FIF

Equation 3 (Mediation Model 2 – PRF):

PRF = 0.092 FIF

The equations suggest that VOR is directly affected by FIL and PRF. FIL is directly influenced only by FIF, and PRF is directly influenced only by FIF. VOR is not directly influenced by FIF.

B. Discussion

The empirical findings related the relationship among FIF, FIL, PRF, and VOR confirms that six hypotheses were accepted (H2 through H7) and one was rejected (H1). This result indicates a dynamic structural relationship in which the effect of FIF on VOR is not direct but rather requires delivery mechanisms including the mediator variables FIL and PRF. The following exposition presents an in-depth analysis of each hypothesis by combining logical reason, relevant theoretical frameworks, and comparisons with results of previous research.

The influence of FIF on VOR. The testing of H_1 indicates that FIF has no direct effect on VOR. This finding confirms that availability of liquidity reserves or internal cash capacity held by a company does not elicit a spontaneous response from market participants regarding the stabilization of stock price fluctuations. FIF is essentially a passive internal resource until management executes it through tangible corporate decisions. Market players do not evaluate the existence of FIF in isolation. They observe how these reserves are utilized to optimize capital structure (FIL) or drive PRF. Without the manifestation of strategic action, higher FIF levels risk being perceived negatively as a form of capital allocation inefficiency or an opportunity cost.

This finding follows to the EMH by Fama (1970). Price movements and VOR in equity markets are more sensitive to information that materially impacts a firm's actual risk profile and cash flows, rather than merely its potential internal reserves. This finding support previous studies by Fahlenbrach et al. (2021) and Benita (2026). They found that indicators of internal flexibility and passive liquidity ratios do not directly influence market fluctuations without the mediation of operational decisions or tangible corporate actions. This finding differs from those of Nguyen and Dang (2023) who argued that higher levels of FIF can directly provide a safety net for investors and it decreases VOR.

The impact of FIF on FIL. The testing of H_2 indicates that FIF has a negative effect on FIL. It confirms that a strong inverse relationship between the availability of internal financial reserves and external debt. Companies with higher FIF level could leverage liquidity and internal cash reserves to fund operations and strategic investments without immediately incurring new debt. This decision is taken to mitigate the risk of default, reduce interest expenses, and preserve borrowing capacity for use during emergencies and business opportunities arise.

This finding follows to the Pecking Order Theory (Myers & Majluf, 1984). It posits a firm would prioritize an internal financing over liability or new share issuance. It was supported by several empirical findings such as Hegde et al. (2022) and Guettala (2026). They suggest that firms with higher FIF level tend to maintain conservative FIL level to minimize bankruptcy costs and preserve long-term financing flexibility. The result is consistent with research of Choi (2025) suggesting that maintaining higher FIF level could drive a significant reduction in FIL to mitigate the impact of market uncertainty.

The impact of FIL on VOR. The statistical analysis of H_3 suggests that FIL has a positively significant effect on VOR. It shows that a company's increasing reliance on external debt financing is directly proportional to the level of stock return risk. The benefit of debt generates a fixed interest obligation that must be payed regardless of the company's earnings. When FIL level rises, market participants perceive a greater potential for vulnerability to cash flow volatility and a higher risk in the company being unable to fulfill the financial obligations. Investor response to this increased financial risk manifests as more sensitive stock price adjustments and amplify uncertainty in stock price.

This finding follows to Trade-off Theory and the Leverage Effect concept. It explains that an increase in the debt ratio magnifies fluctuations in an equity value due to the heightened financial risk component. This result is similar to empirical research suggesting that higher FIL level is information to increase risk of default and significantly drive up VOR (Juniansah & Abdurohim, 2026). The finding is in line with the research from Vuong et al. (2023) who reports that reliance on borrowed fund drives uncertainty in price movements.

The Mediating Role of FIL. The statistical testing for H_4 informs that FIL could mediate entirely the relationship between FIF and VOR. It confirms that the impact of FIF on VOR is fully transmitted through the arranging of FIL level. The full mediation pathway of FIL means that higher FIF availability provides management the flexibility to finance operational assets and expansion without increasing risky FIL level. This reduction in FIL level directly could decrease in fixed interest expenses and the probability of financial difficult. Investors react to this reduction in financial risk by assigning more stable stock prices and reducing VOR.

This finding supports to Pecking Order Theory (Myers & Majluf, 1984). FIF level is directed toward reducing reliance on FIL and it subsequently channels the reduction in stock movement risk. The firms proactively reduce debt capacity by preserving FIF (Lambrinoudakis et al., 2019). Schwert (1989) found a positive causality from FIL to VOR suggesting that increased FIL can heighten fluctuations in stock price. It was reinforced by Ericsson et al. (2016) who stated that change in leverage affects equity volatility.

The impact of FIF on PRF. The testing results for H_5 informs that FIF has a positive influence on PRF. It confirms that FIF directly drives to the management ability to create greater PRF. Companies with higher FIF level are better condition to capitalize on promising business opportunities and make profitable investment decisions. Adequate FIF level could minimize the risk of cash flow instability and prevent underinvestment problems and increase PRF.

This finding supports to Resource-Based View (Barney, 1991) and the concept of Dynamic Capabilities. FIF as a high-value internal resource could strengthens a company's competitiveness and financial performance. This result is similar to empirical finding by Wu et al. (2025). They found that robust FIF level give the adaptability to optimize capital allocation efficiency and to exert positive influence on PRF. It was consistent with finding by Lulaj and Dragusha (2026) suggesting that the higher FIF is the main driver of sustainability and growth of PRF.

The impact of PRF on VOR. The testing result for H_6 presents that PRF has a negative influence on VOR. It confirms that higher PRF level could decrease the return fluctuations and stock price uncertainty. Companies with greater operational efficiency and stable business fundamentals could reduce risk of bankruptcy and future cash flow uncertainty. It makes market participants respond to a perception of lower risk and minimize excessive speculation.

This finding supports Signaling Theory (Ross, 1977; Spence, 1973) suggesting that information of higher PRF achievement could act as a good news reducing information asymmetry between management and investors. It leads investors with assurance regarding fundamental value and makes an equity stability. This result is consistent with recent findings

by Benita (2026) and Juhriah et al. (2025). They conclude that greater PRF level gives as a shock absorber in reducing VOR dynamics. This result is similar to statement of Pástor and Pietro (2003) that sustained PRF performance is related to a reduction in VOR of stock.

The Mediating Role of PRF. The statistical testing for H_7 suggests that PRF could mediates the relationship between FIF and VOR. Although direct effect for FIF on VOR was not significant, but indirect effects for FIF on PRF and PRF on VOR are both significant that means PRF acts as a full mediator variable. The full mediation role of PRF arises when sufficient FIF gives company the flexibility to achieve promising investment opportunities. Investors perceive it as tangible evidence of efficient capital allocation and sound business fundamental that could reduce stock price volatility.

This finding is in line with Resource-Based View (Barney, 1991) and Signaling Theory (Spence, 1973). It states that FIF functions as a high-value internal resource converted into PRF, which is delivered as a good signal to reduce risk in the stock exchange. Greater FIF acts as a strategic resource that enhances a firm's value and PRF (Gamba & Triantis, 2008). Companies that maintain reserve-funding capacity could achieve greater investment capabilities and drive long-term firm performance (Marchica & Mura, 2010).

This result is similar work with evidence from Arslan-Ayaydin et al. (2014) stating that FIF improves capital allocation efficiency and firm performance. Fahlenbrach et al. (2021) conclude that FIF provides as a main pillar in sustaining operations and maintaining performance stability when firms encounter economic turbulence or market uncertainty. Wei and Zhang (2006) report that PRF is negatively related to VOR. Lower ROE gives news about a weakening of the firm's fundamental performance and heightens investor uncertainty that could drive up return volatility.

IV. CONCLUSION

This paper concludes that FIF does not have a direct influence on VOR. This relationship could operates through full mediation with two primary transmission pathways (FIL and PRF). An increase in FIF could decrease in FIL level and drive up PRF. These changes in FIL and PRF effectively reduce VOR in the equity market. These findings confirm that FIF does not elicit an automatic market response and FIF requires strategic decisions in capital structure efficiency and in financial performance optimization to reduce greater VOR. Corporate management could not hold FIF passively with the expectation of stabilizing VOR. It is required to allocate FIF to arrange FIL level within safe limits regarding financial risk and to enhance PRF that could send a good news to market participants. The future research should include current stock exchange dynamics and global economic uncertainty. It should consider external moderation variables such as market sentiment and macroeconomic dynamics and should expand the model by applying non-linear approaches to solve the direct relationship gap.

ACKNOWLEDGEMENT

The authors express gratitude to LPPM Unsoed for providing the grant for this research.

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