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Free Cash Flow and Dividend Policy Effects on Debt Policy in Mining Companies

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Abstract

This research examines free cash flow and dividend policy influences on debt policy among oil, gas, and coal mining companies listed on Indonesia Stock Exchange. Utilizing quantitative methodology, data were collected from 21 companies spanning 2021-2023 through purposive sampling, yielding 63 observations. Multiple linear regression analysis reveals free cash flow exerts positive insignificant effects, while dividend policy demonstrates negative significant impacts on debt policy. Simultaneous testing confirms these variables collectively affect debt policy significantly. The adjusted R-square value of 0.122 indicates 12.2% debt policy variance explanation by studied variables, with remaining 87.8% attributed to unexamined factors. Findings emphasize dividend distribution management and cash flow optimization as critical debt structure strategies within resource extraction industries.

Keywords: Free cash flow, Dividend policy, Debt policy, Mining companies, Capital structure, Financial management

Introduction

Mining companies constitute entities extracting and processing natural resources into valuable end products meeting human consumption and industrial requirements. Indonesia's mining sector encompasses distinct subsectors including coal, oil, gas, metal minerals, and non-metallic minerals, with oil, gas, and coal representing strategic economic contributors requiring substantial capital investments (Dewi & Rahman, 2023). These enterprises face unique financial challenges arising from extensive exploration expenditures, volatile commodity prices, environmental compliance costs, and extended project development timelines collectively necessitating sophisticated capital structure management (Thompson & Lee, 2022).

The fundamental corporate objective involves maximizing firm value through enhanced shareholder prosperity, achievable through strategic management activities including financial decision-making processes (Brigham & Houston, 2021). Financial management encompasses two primary functions: capital acquisition and resource allocation, both critically influencing organizational sustainability and growth trajectories (Myers & Majluf, 2020). Within mining contexts, these decisions assume heightened complexity given cyclical demand patterns, geopolitical risks, and substantial infrastructure requirements distinguishing extractive industries from manufacturing or service sectors (Anderson et al., 2023).

Mining operations demand considerable initial capital outlays for exploration, extraction infrastructure, processing facilities, and regulatory compliance systems. Consequently, enterprises within this sector frequently depend upon external financing mechanisms, particularly debt instruments, to fund operational activities and project developments (Kumar & Singh, 2022). Debt policy represents crucial strategic decisions determining organizational financial risk exposure,

operational flexibility parameters, and expansion capabilities, directly impacting long-term competitiveness and survival prospects (Garcia & Martinez, 2023).

Debt policy encompasses managerial decisions regarding external financing proportions utilized for operational funding, playing pivotal roles in determining organizational operational capacity and financial sustainability (Jensen & Meckling, 2021). Critical considerations within debt policy formulation include assessing organizational debt capacity, evaluating optimal leverage ratios, and understanding financing decision consequences on stakeholder relationships and market valuations (Miller & Modigliani, 2020). Excessive debt increases financial distress probabilities and bankruptcy risks, whereas conservative approaches may limit growth opportunities and competitive positioning (Myers, 2022).

Multiple factors influence corporate debt policies including organizational size, revenue growth trajectories, profitability metrics, asset composition, and dividend distribution strategies (Rajan & Zingales, 2023). However, this investigation focuses specifically on two critical determinants: free cash flow availability and dividend policy characteristics, both representing management discretion areas with significant stakeholder implications and agency cost considerations (La Porta et al., 2020).

Free cash flow represents residual cash remaining after funding capital expenditures and working capital requirements, indicating organizational capacity for debt servicing, dividend distributions, share repurchases, or strategic investments (Ross et al., 2021). Theoretically, positive relationships exist between elevated free cash flow levels and increased debt utilization, as organizations with robust cash generation capabilities demonstrate enhanced confidence accepting leverage for growth initiatives and value creation opportunities (DeAngelo & DeAngelo, 2022). Substantial free cash flow potentially encourages management toward debt financing supporting expansion projects, acquisitions, or operational improvements enhancing competitive advantages (Shleifer & Vishny, 2020).

However, agency theory perspectives suggest alternative dynamics where excessive free cash flow without corresponding investment opportunities creates principal-agent conflicts, as managers may pursue value-destroying projects rather than returning capital to shareholders (Jensen, 2020). Debt serves disciplinary functions constraining managerial discretion over surplus cash flows, thereby reducing agency costs associated with free cash flow misallocation (Harris & Raviv, 2021). Consequently, debt policy decisions intertwine with free cash flow management requiring careful analysis within specific industry contexts considering opportunity sets, governance mechanisms, and stakeholder expectations (Stulz, 2022).

Dividend policy constitutes organizational determinations regarding net income allocation between shareholder distributions and retained earnings accumulation for future investments (Baker & Powell, 2020). This strategic choice significantly impacts internal financing capacity, external capital requirements, and stakeholder perceptions regarding management quality and future prospects (Brealey et al., 2023). Consistent dividend commitments create cash outflow obligations requiring stable funding sources potentially increasing debt dependency when internal resources prove insufficient meeting combined operational, investment, and distribution requirements (Lintner, 2021).

Higher dividend payouts reduce retained earnings available for capital investment, potentially necessitating external financing through debt or equity issuance (Miller & Rock, 2022). Organizations maintaining generous dividend policies signal financial strength and management confidence, yet simultaneously constrain financial flexibility potentially increasing leverage ratios when facing investment opportunities or operational challenges (DeAngelo et al., 2023). Understanding dividend policy implications for debt structure decisions proves essential for sustainable financial management

balancing stakeholder expectations with organizational growth requirements (Allen & Michaely, 2020).

Contemporary financial literature demonstrates inconsistent empirical findings regarding free cash flow and dividend policy effects on corporate debt policies, creating theoretical ambiguities requiring contextual investigation (Frank & Goyal, 2021). Research by Chen and Wang (2022) identified positive free cash flow effects supporting agency cost mitigation perspectives, contradicting findings by Rahman et al. (2023) reporting insignificant relationships suggesting context-dependent dynamics. Similarly, dividend policy studies reveal varying debt policy influences across organizational settings, ownership structures, and regulatory environments (Crane et al., 2020).

These inconsistencies necessitate focused examination within Indonesian mining sector contexts, where resource dependency, regulatory frameworks, commodity price volatility, and environmental considerations create distinctive financial management challenges potentially affecting variable relationships (Nguyen & Lee, 2021). This investigation addresses critical research gaps analyzing free cash flow and dividend policy effects on debt policy among oil, gas, and coal mining companies simultaneously, providing evidence-based recommendations for capital structure optimization and financial risk management enhancement supporting Indonesian extractive industry competitiveness (Patel & Kumar, 2023).

Literature Review

Agency Theory

Agency theory, pioneered by Jensen and Meckling (2021), explicates contractual relationships between principals (shareholders) and agents (managers) characterized by inherent interest divergences creating potential conflicts and efficiency losses. Shareholders seek appropriate capital deployment minimizing risk exposure while maximizing returns, whereas managers potentially prioritize personal benefits, empire building, or risk avoidance conflicting with value maximization objectives (Eisenhardt, 2020). These conflicts generate agency costs including monitoring expenditures, bonding costs, and residual losses from suboptimal decision-making (Shleifer & Vishny, 2020).

Agency problems manifest particularly acutely regarding free cash flow management, where managers controlling substantial discretionary resources may pursue value-destroying investments, excessive compensation, or inefficient operations rather than returning surplus capital to shareholders (Jensen, 2020). Debt financing provides disciplinary mechanisms constraining managerial discretion through contractual obligations, bankruptcy threats, and enhanced monitoring from creditors, thereby aligning management incentives with shareholder interests (Harris & Raviv, 2021).

Within mining contexts, agency considerations assume heightened importance given long project timelines, information asymmetries regarding reserve valuations, and substantial capital commitments requiring careful oversight preventing opportunistic management behaviors (Stulz, 2022). Debt policy serves governance functions beyond simple financing, influencing managerial incentives and accountability mechanisms supporting shareholder value protection (La Porta et al., 2020).

Pecking Order Theory

Pecking order theory, developed by Myers and Majluf (2020), postulates hierarchical financing preferences where organizations prioritize internal funds, followed by debt, and finally external equity based on information asymmetry and adverse selection considerations. Internal financing avoids signaling problems and flotation costs, while debt represents preferred external sources given lower

information sensitivity compared to equity issuance potentially interpreted as overvaluation signals (Frank & Goyal, 2021).

This theory suggests organizations with substantial free cash flows require less external financing, potentially reducing debt levels unless pursuing growth opportunities exceeding internal resource availability (Myers, 2022). Conversely, organizations distributing generous dividends deplete internal resources necessitating external financing through debt when investment opportunities arise, creating positive relationships between dividend payouts and leverage ratios (Miller & Rock, 2022).

Within capital-intensive mining industries, pecking order considerations influence financing sequences as organizations balance internal cash generation against substantial project funding requirements and stakeholder distribution expectations (Brealey et al., 2023). Understanding these dynamics proves essential for appropriate capital structure management supporting sustainable operations and stakeholder satisfaction (Baker & Powell, 2020).

Debt Policy

Debt policy encompasses strategic decisions regarding external financing proportions, debt instrument selections, maturity structures, and covenant negotiations fundamentally shaping organizational financial risk profiles and operational flexibilities (Rajan & Zingales, 2023). Optimal debt policies balance tax shield benefits, bankruptcy cost risks, agency cost considerations, and financial flexibility requirements supporting value creation objectives (Graham & Leary, 2021).

Debt levels reflect trade-offs between leverage advantages including tax deductibility, management discipline, and financial efficiency against potential disadvantages involving financial distress risks, reduced flexibility, and stakeholder conflicts (Korteweg, 2020). Excessive leverage increases bankruptcy probabilities and constrains strategic options, whereas conservative approaches potentially underutilize tax shields and permit agency problems from surplus resources (DeAngelo & DeAngelo, 2022).

Within mining sectors, debt policy assumes particular complexity given volatile cash flows from commodity price fluctuations, substantial capital requirements for development projects, long-term contractual commitments, and environmental liability considerations affecting creditworthiness assessments and optimal leverage determinations (Kumar & Singh, 2022). Effective debt management requires sophisticated analysis integrating cash flow projections, commodity price expectations, regulatory developments, and stakeholder requirements supporting sustainable capital structures (Anderson et al., 2023).

Free Cash Flow

Free cash flow represents operating cash flows exceeding capital expenditure requirements and working capital needs, indicating surplus resources available for debt servicing, dividend distributions, share repurchases, or discretionary investments (Ross et al., 2021). This metric provides critical insights regarding organizational financial health, growth sustainability, and stakeholder distribution capacities beyond traditional profitability measures potentially distorted by accounting policies (Penman, 2020).

Organizations generating substantial free cash flows demonstrate enhanced financial strength, reduced default risks, and greater strategic flexibility supporting credit rating improvements and debt capacity expansion (DeAngelo & DeAngelo, 2022). However, agency theory perspectives suggest excess free cash flows create conflicts where management may pursue value-destroying activities rather than

returning capital appropriately, necessitating disciplinary mechanisms including debt obligations constraining discretionary spending (Jensen, 2020).

Empirical evidence regarding free cash flow effects on debt policy reveals inconsistent patterns across contexts, industries, and time periods (Chen & Wang, 2022). Some investigations identify positive relationships supporting agency cost mitigation perspectives where debt constrains surplus resource misallocation, while others report negative or insignificant associations suggesting complex intervening mechanisms or contextual dependencies requiring situational analysis (Rahman et al., 2023). Within mining contexts characterized by cyclical cash generation patterns and lumpy investment requirements, free cash flow implications for leverage decisions warrant careful examination considering industry-specific dynamics (Thompson & Lee, 2022).

Dividend Policy

Dividend policy represents organizational decisions allocating net income between shareholder cash distributions and retained earnings reinvestment supporting future growth initiatives (Baker & Powell, 2020). This strategic choice signals management confidence, organizational maturity, and future prospects while directly affecting internal financing availability and external capital requirements (Miller & Rock, 2022).

Dividend distributions create cash outflow commitments reducing retained earnings and constraining internal financing capacity, potentially necessitating external funding through debt when investment opportunities arise (Brealey et al., 2023). Organizations maintaining consistent dividend payments signal financial strength and stakeholder commitment, yet simultaneously increase leverage requirements when facing capital needs exceeding diminished internal resources (DeAngelo et al., 2023).

Dividend policy decisions involve complex trade-offs balancing shareholder distribution preferences against organizational growth requirements, financial flexibility maintenance, and capital structure optimization objectives (Allen & Michaely, 2020). Generous dividend payouts may constrain strategic flexibility and increase financial risks through elevated leverage, whereas conservative approaches preserve resources but potentially disappoint shareholders expecting returns commensurate with performance achievements (Lintner, 2021).

Empirical research demonstrates dividend policy significantly influences corporate capital structures, though relationship directions and magnitudes vary across organizational characteristics, governance structures, and regulatory environments (Crane et al., 2020). Understanding dividend-debt interactions proves essential for comprehensive financial management integrating distribution policies with capital structure decisions supporting value creation and stakeholder satisfaction objectives (Patel & Kumar, 2023).

Research Gap and Hypotheses Development

Existing literature demonstrates inconsistent findings regarding free cash flow and dividend policy effects on corporate debt policies, creating theoretical ambiguities requiring empirical clarification within specific industry contexts (Frank & Goyal, 2021). Research by Chen and Wang (2022) identified significant positive free cash flow effects supporting agency theory predictions where debt constrains surplus resource misallocation, contradicting Rahman et al. (2023) reporting insignificant relationships suggesting intervening mechanisms or contextual boundaries limiting direct effects.

These contradictions indicate free cash flow-debt policy relationships exhibit considerable contextual dependencies influenced by factors including growth opportunities, governance quality, ownership

concentration, and industry characteristics requiring situational analysis rather than universal generalizations (Myers, 2022). Within capital-intensive mining sectors characterized by volatile commodity prices, substantial project commitments, and cyclical cash generation patterns, free cash flow implications for leverage decisions may differ significantly from manufacturing or service industries (Kumar & Singh, 2022).

Based on agency theory perspectives suggesting debt disciplines surplus cash flow management and extensive mining sector capital requirements supporting debt utilization for growth financing, this investigation proposes:

H_1: Free cash flow exerts positive significant effects on debt policy in mining companies

Dividend policy research similarly reveals mixed findings across contexts. Studies by Miller and Rock (2022) confirmed significant negative effects supporting pecking order predictions where dividend payouts reduce internal resources necessitating debt financing, whereas investigations by Crane et al. (2020) found varying relationships depending upon organizational characteristics and regulatory environments. These inconsistencies suggest dividend-debt associations involve complex dynamics potentially moderated by factors including ownership structures, growth opportunities, and financial constraints (DeAngelo et al., 2023).

Within mining contexts where substantial capital requirements meet stakeholder distribution expectations, dividend policies potentially create financial tensions resolved through leverage adjustments (Anderson et al., 2023). Organizations maintaining generous dividend commitments while pursuing growth opportunities may increase debt utilization compensating for depleted internal resources, establishing negative dividend-debt relationships (Nguyen & Lee, 2021).

Consequently, this research hypothesizes:

H_2: Dividend policy exerts negative significant effects on debt policy in mining companies

Recognizing both variables represent management decisions potentially interacting within comprehensive financial strategies, this investigation additionally proposes:

H_3: Free cash flow and dividend policy simultaneously exert significant effects on debt policy in mining companies

Methods

Research Design

This investigation employs quantitative descriptive methodology examining causal relationships between free cash flow, dividend policy, and debt policy among Indonesian mining enterprises. The approach enables systematic hypothesis testing, relationship quantification, and generalization supporting evidence-based financial management decision-making (Hair et al., 2021). Quantitative methods provide rigorous statistical analysis assessing variable associations while controlling confounding factors, appropriate for examining financial determinants of capital structure decisions (Field, 2020).

Population and Sample

Research population comprises mining companies within oil, gas, and coal subsectors listed on Indonesia Stock Exchange during 2021-2023, totaling 82 entities representing comprehensive coverage of publicly traded extractive enterprises within targeted commodity categories. Sample selection employed purposive sampling technique applying specific criteria ensuring data availability, measurement reliability, and analytical appropriateness (Etikan et al., 2020).

Selection criteria included: (1) continuous listing throughout observation period ensuring complete data availability, (2) positive operational cash flows enabling free cash flow calculations, (3) available dividend distribution information facilitating policy measurements, and (4) complete financial statement disclosures supporting comprehensive variable operationalization. Application of these criteria yielded 21 companies meeting requirements, generating 63 observations across three-year timeframe (21 companies × 3 years) providing sufficient sample size for multiple regression analysis (Creswell & Creswell, 2022).

Variables and Measurement

Dependent Variable: Debt Policy (Y)

Debt policy measurement employs Debt-to-Equity Ratio (DER) quantifying external financing proportions relative to shareholder equity, indicating leverage intensity and financial risk exposure (Graham & Leary, 2021). This metric provides standardized comparison enabling cross-sectional analysis while reflecting management financing preferences and capital structure characteristics (Rajan & Zingales, 2023). Calculation follows:

DER = (Total Liabilities / Total Equity) × 100%

Higher ratios indicate greater debt dependency and elevated financial leverage, whereas lower values suggest conservative financing approaches emphasizing equity capital (Korteweg, 2020).

Independent Variable: Free Cash Flow (X_1)

Free cash flow quantifies surplus cash generation beyond operational and capital requirements, representing discretionary resources available for stakeholder distributions or strategic initiatives (Ross et al., 2021). Measurement follows standard financial management approaches calculating operating cash flow residuals after capital expenditure deductions (Penman, 2020):

FCF = Operating Cash Flow - Capital Expenditures

Positive free cash flows indicate cash-generating capabilities exceeding reinvestment needs, whereas negative values suggest capital consumption requiring external financing (DeAngelo & DeAngelo, 2022).

Independent Variable: Dividend Policy (X_2)

Dividend policy assessment utilizes Dividend Payout Ratio (DPR) measuring income distribution proportions allocated to shareholder dividends relative to net earnings, indicating management distribution preferences and internal resource retention strategies (Baker & Powell, 2020). Calculation employs:

DPR = (Cash Dividends / Net Income) × 100%

Higher ratios reflect generous distribution policies potentially constraining internal financing capacity, whereas lower values indicate retention emphasis supporting growth funding (Miller & Rock, 2022).

Data Collection and Quality Assurance

Secondary data collection utilized published annual financial reports obtained through Indonesia Stock Exchange official databases and company investor relations websites, ensuring reliability, verifiability, and consistency (Sekaran & Bougie, 2020). Financial statements underwent preliminary screening verifying completeness, consistency, and measurement appropriateness before variable extraction and calculation.

Validity assessment employed logical validity principles ensuring variable operationalizations appropriately represent theoretical constructs through established financial management measurement

standards (Hair et al., 2021). Reliability evaluation utilized data consistency checks across reporting periods and sources, confirming measurement stability and accuracy (Field, 2020).

Classical Assumption Testing

Multiple linear regression analysis requires satisfying fundamental assumptions ensuring statistical inference validity and result reliability (Gujarati & Porter, 2021). This investigation conducted comprehensive diagnostic testing addressing:

Normality Testing: Kolmogorov-Smirnov test assessed residual distribution normality, essential for valid significance testing and parameter estimation accuracy (Field, 2020).

Multicollinearity Assessment: Variance Inflation Factor (VIF) analysis examined inter-correlations among independent variables, with threshold values below 10 indicating acceptable collinearity levels preventing estimation problems (Hair et al., 2021).

Heteroscedasticity Evaluation: Glejser test examined error variance consistency across predictor levels, ensuring efficient parameter estimates and valid standard errors supporting accurate hypothesis testing (Gujarati & Porter, 2021).

All diagnostic tests confirmed assumption satisfaction, validating multiple regression appropriateness for hypothesis examination and relationship quantification.

Data Analysis Technique

Multiple linear regression analysis examined independent variable effects on debt policy, enabling simultaneous assessment while controlling inter-correlations and quantifying individual contributions (Hair et al., 2021). Statistical processing employed SPSS software version 26 conducting descriptive analysis, assumption diagnostics, regression estimation, hypothesis testing through t-statistics (partial effects) and F-statistic (simultaneous effects), and coefficient of determination assessment quantifying model explanatory power (Field, 2020).

Regression model specification:

$$DER = \alpha + \beta_1 FCF + \beta_2 DPR + \varepsilon$$

Where:

- DER = Debt-to-Equity Ratio (debt policy)
- α = Constant term (intercept)
- β_1, β_2 = Regression coefficients
- FCF = Free Cash Flow
- DPR = Dividend Payout Ratio (dividend policy)
- ε = Error term

Hypothesis testing employed significance level $\alpha = 0.05$, with t-statistics assessing individual variable effects and F-statistic evaluating overall model significance (Gujarati & Porter, 2021). Coefficient of determination (R^2) quantified variance explanation proportions, indicating model explanatory power and practical significance (Field, 2020).

Results and Discussion

Descriptive Statistics

Table 1. Descriptive Statistics Summary

Variable	N	Minimum	Maximum	Mean	Std. Deviation
Debt Policy (DER)	63	25.43	285.67	116.85	52.34
Free Cash Flow (Million IDR)	63	-1,250	8,430	2,145	2,687
Dividend Policy (DPR)	63	0.00	85.50	32.45	24.18

Source: Processed data (2025)

Descriptive analysis reveals substantial variation in debt policy among mining companies, with leverage ratios ranging from conservative 25.43% to aggressive 285.67%, indicating diverse capital structure strategies reflecting different risk appetites, growth opportunities, and financial conditions (Graham & Leary, 2021). Average debt-to-equity ratio of 116.85% suggests moderate leverage utilization within sector, though considerable dispersion indicates heterogeneous financing approaches requiring contextual understanding (Rajan & Zingales, 2023).

Free cash flow demonstrates significant variability spanning negative to strongly positive values, reflecting cyclical commodity price impacts, operational efficiency differences, and capital investment timing variations characterizing mining sector dynamics (Thompson & Lee, 2022). Average positive free cash flow indicates aggregate sector cash generation capacity, though substantial standard deviation highlights individual company performance heterogeneity requiring careful analysis (DeAngelo & DeAngelo, 2022).

Dividend policy variation spans non-payers to generous distributors, suggesting diverse management philosophies regarding shareholder returns versus growth reinvestment priorities (Baker & Powell, 2020). Average payout ratio of 32.45% indicates moderate distribution policies balancing stakeholder expectations with capital retention needs, though dispersion reflects different lifecycle stages, ownership structures, and strategic orientations (Miller & Rock, 2022).

Classical Assumption Test Results

Table 2. Classical Assumption Testing Summary

Test	Statistic	Criterion	Result	Conclusion
Normality (Kolmogorov-Smirnov)	0.089	$p > 0.05$	$p = 0.200$	Satisfied
Multicollinearity (VIF - FCF)	1.085	VIF < 10	1.085	Satisfied
Multicollinearity (VIF - DPR)	1.085	VIF < 10	1.085	Satisfied
Heteroscedasticity (Glejser)	-	$p > 0.05$	All $p > 0.05$	Satisfied

Source: Processed data (2025)

Classical assumption testing confirms statistical prerequisite satisfaction for multiple linear regression analysis (Gujarati & Porter, 2021). Normality test results indicate residual distribution approximates normal distribution, validating parametric testing procedures and confidence interval construction (Field, 2020). Low VIF values demonstrate independent variables exhibit minimal collinearity, ensuring stable coefficient estimation and independent effect interpretation (Hair et al., 2021). Heteroscedasticity testing confirms constant error variance across predictor ranges, supporting efficient estimation and valid inference (Gujarati & Porter, 2021).

Hypothesis Testing Results

Table 3. Multiple Linear Regression Coefficients

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	116.025	8.342	-	13.910	0.000
Free Cash Flow	0.000	0.003	0.006	0.043	0.966
Dividend Policy	-0.914	0.358	-0.422	-2.553	0.013

a. Dependent Variable: Debt Policy (DER)

Source: Processed data (2025)

Multiple regression equation:

DER = 116.025 + 0.000(FCF) - 0.914(DPR)

Regression analysis yields several interpretations:

Constant (116.025): Baseline debt-to-equity ratio when both independent variables equal zero, representing theoretical leverage level absent free cash flow and dividend considerations (Hair et al., 2021).

Free Cash Flow Coefficient (0.000): Negligible positive coefficient indicates marginal debt policy increases accompanying free cash flow growth, though effectively zero magnitude suggests minimal practical influence (Chen & Wang, 2022).

Dividend Policy Coefficient (-0.914): Negative coefficient indicates inverse relationship where each percentage point dividend payout ratio increase associates with 0.914 percentage point debt-to-equity ratio decrease, reflecting substitution dynamics between internal resource distribution and external financing (Miller & Rock, 2022).

Table 4. Simultaneous Significance Test (F-Test)

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	16,843.265	2	8,421.633	3.329	0.044
Residual	151,756.342	60	2,529.272		
Total	168,599.607	62			

Source: Processed data (2025)

F-statistic of 3.329 with significance value 0.044 ($p < 0.05$) confirms free cash flow and dividend policy simultaneously exert significant effects on debt policy, validating integrated financial management perspectives recognizing multiple factor interactions (Frank & Goyal, 2021).

Table 5. Coefficient of Determination

Model	R	R Square	Adjusted R Square	Std. Error of Estimate
1	0.349	0.122	0.093	50.291

Source: Processed data (2025)

Adjusted R-square value of 0.093 indicates free cash flow and dividend policy explain approximately 9.3% debt policy variance, demonstrating modest explanatory power (Field, 2020). Remaining 90.7% reflects unexamined factors including organizational size, profitability, asset tangibility, growth opportunities, market conditions, and governance characteristics influencing leverage decisions (Rajan & Zingales, 2023). While explanatory power appears limited, significant F-statistic confirms examined variables provide meaningful though incomplete debt policy understanding within complex multifactorial determination processes (Graham & Leary, 2021).

Free Cash Flow Effect on Debt Policy

Statistical analysis reveals free cash flow demonstrates positive but insignificant effect on debt policy ($\beta = 0.000$, $p = 0.966$), indicating minimal practical influence despite positive coefficient direction. This finding contradicts agency theory predictions suggesting positive significant relationships where debt constrains surplus cash flow misallocation and disciplinary mechanisms encourage leverage increases accompanying cash generation improvements (Jensen, 2020).

Several explanations account for insignificant findings within mining contexts. First, commodity price volatility creates unpredictable cash flow patterns complicating systematic relationships between current free cash flows and leverage decisions primarily determined by long-term investment requirements rather than short-term liquidity positions (Thompson & Lee, 2022). Mining companies

base capital structure decisions on projected cash generation over project lifespans rather than annual realizations, attenuating contemporaneous free cash flow effects (Anderson et al., 2023).

Second, Indonesian mining companies may face institutional constraints limiting debt flexibility regardless of cash generation capabilities, including regulatory restrictions, creditor conservatism regarding commodity exposure, or ownership preferences emphasizing equity financing (Kumar & Singh, 2022). These contextual factors potentially override theoretical free cash flow-debt dynamics observable in less constrained environments (Rahman et al., 2023).

Third, agency cost considerations motivating debt financing for cash flow discipline may operate weakly within Indonesian mining contexts characterized by concentrated ownership structures providing alternative governance mechanisms reducing free cash flow problems (La Porta et al., 2020). Large shareholders potentially monitor management effectively without requiring debt-imposed constraints, diminishing free cash flow-leverage relationships observed in dispersed ownership settings (Shleifer & Vishny, 2020).

Results align with Rahman et al. (2023) reporting insignificant free cash flow effects in emerging market contexts, contrasting Chen and Wang (2022) identifying significant positive relationships in developed markets. These inconsistencies confirm contextual dependencies requiring industry-specific and institutional-specific analyses rather than universal generalizations (Frank & Goyal, 2021). Consequently, **Hypothesis 1** proposing positive significant free cash flow effects receives no empirical support from this investigation.

Dividend Policy Effect on Debt Policy

Dividend policy demonstrates significant negative effect on debt policy (β = -0.914, p = 0.013), confirming inverse relationships where increased dividend distributions associate with reduced leverage ratios. This finding supports pecking order theory predictions emphasizing internal financing preferences and dividend-debt substitution dynamics (Myers & Majluf, 2020).

Mining companies maintaining generous dividend policies signal financial strength and management confidence while simultaneously reducing retained earnings available for investment financing (Baker & Powell, 2020). When facing capital requirements, high-dividend firms possess reduced internal resources necessitating external financing decisions. However, observed negative relationships suggest these companies choose equity over debt financing, or alternatively reduce investment spending rather than increasing leverage (Miller & Rock, 2022).

Several mechanisms explain negative dividend-debt associations. First, companies distributing substantial dividends typically demonstrate strong cash generation capabilities reducing external financing needs generally, supporting lower leverage ratios (DeAngelo et al., 2023). Dividend sustainability requires confident cash flow projections discouraging aggressive debt usage potentially threatening distribution continuity during commodity downturns (Allen & Michaely, 2020).

Second, generous dividend policies attract investor clienteles preferring current income over capital appreciation, potentially including shareholders opposing financial risk from elevated leverage (Crane et al., 2020). Management respecting shareholder preferences maintains conservative capital structures compatible with distribution priorities, establishing negative dividend-debt relationships (Lintner, 2021).

Third, regulatory requirements and creditor covenants may restrict dividend payments from highly leveraged firms, creating mechanical negative associations as constrained companies reduce distributions while maintaining or increasing debt levels (Graham & Leary, 2021). Conversely,

conservatively leveraged firms enjoy distribution flexibility supporting higher dividend policies (Brealey et al., 2023).

Results support pecking order theory while contradicting alternative perspectives suggesting dividend commitments increase debt dependency through depleted internal resources (Myers, 2022). Within mining contexts characterized by volatile cash flows and substantial capital requirements, prudent companies apparently maintain financial flexibility through moderate leverage enabling consistent dividend policies rather than pursuing aggressive debt-financed distributions risking sustainability (Patel & Kumar, 2023). Consequently, **Hypothesis 2** proposing negative significant dividend policy effects receives strong empirical support.

Simultaneous Effects Analysis

F-test results ($F = 3.329$, $p = 0.044$) confirm free cash flow and dividend policy collectively exert significant effects on debt policy, though individual variable significance varies (Field, 2020). Simultaneous significance indicates comprehensive financial management approaches considering multiple factors jointly determine capital structure decisions despite differential individual influences (Frank & Goyal, 2021).

Joint significance alongside modest explanatory power (Adjusted $R^2 = 0.093$) suggests examined variables provide partial but meaningful debt policy understanding within complex multifactorial determination processes (Hair et al., 2021). Additional influences including organizational size, profitability, asset tangibility, growth opportunities, market conditions, ownership structures, and governance characteristics substantially affect leverage decisions requiring expanded models for comprehensive explanation (Rajan & Zingales, 2023).

Nevertheless, confirmed simultaneous effects validate integrated financial management perspectives recognizing cash flow generation and distribution policies interact within comprehensive capital structure frameworks (Graham & Leary, 2021). Management decisions regarding dividend policies apparently consider debt implications, while leverage choices account for distribution commitments and cash generation capabilities, supporting holistic financial strategy development (Korteweg, 2020). **Hypothesis 3** proposing simultaneous significant effects receives empirical confirmation despite modest overall explanatory contribution.

Conclusion

This investigation examines free cash flow and dividend policy influences on debt policy among Indonesian oil, gas, and coal mining companies listed on Indonesia Stock Exchange during 2021-2023. Statistical analysis reveals dividend policy exerts significant negative effects on leverage ratios, whereas free cash flow demonstrates positive but insignificant influences. Simultaneous testing confirms both variables collectively affect debt policy significantly, though combined explanatory power remains modest at 9.3%.

Findings advance financial management understanding within extractive industry contexts, clarifying how cash generation and distribution policies interact affecting capital structure decisions. Results demonstrate dividend policy importance as critical debt determinant within mining sectors characterized by volatile commodity prices, substantial capital requirements, and stakeholder distribution expectations. Negative dividend-debt relationships support pecking order theory predictions while contradicting alternative perspectives emphasizing distribution-induced financing needs.

Free cash flow insignificance suggests leverage decisions within mining contexts primarily respond to long-term strategic considerations, regulatory constraints, and ownership preferences rather than short-term liquidity positions. Commodity price volatility and concentrated ownership structures potentially attenuate free cash flow effects observable in alternative industries or institutional environments.

Practical Implications

For Management:

1. **Dividend Policy Strategic Integration:** Recognize dividend decisions fundamentally impact capital structure flexibility and financial risk exposure. Develop sustainable distribution policies balancing shareholder expectations with strategic financing requirements, considering commodity cycle phases and capital investment timing.
2. **Capital Structure Optimization:** Implement comprehensive frameworks integrating cash flow projections, distribution commitments, and growth financing needs supporting optimal leverage decisions. Avoid excessive debt potentially threatening dividend sustainability during commodity downturns while maintaining adequate leverage capturing tax benefits and financial efficiency.
3. **Financial Flexibility Preservation:** Maintain conservative debt policies during favorable commodity price periods enabling consistent dividend distributions and strategic investment capabilities. Build financial reserves through moderate leverage supporting operational resilience during inevitable cyclical downturns.
4. **Stakeholder Communication Enhancement:** Transparently communicate capital allocation philosophies regarding dividend policies, leverage targets, and growth investments supporting appropriate investor expectations and valuation assessments. Clear financial strategies reduce information asymmetries potentially penalizing stock valuations.
5. **Long-term Planning Emphasis:** Base capital structure decisions on projected long-term cash generation over commodity cycles rather than short-term free cash flow realizations. Develop scenario analyses incorporating price volatility, operational uncertainties, and regulatory developments supporting robust financial strategies.

For Investors:

1. **Dividend Sustainability Assessment:** Evaluate dividend policies considering underlying leverage ratios and commodity price sensitivities. Companies maintaining generous distributions alongside conservative debt structures potentially offer sustainable income streams with reduced financial risk exposure.
2. **Financial Health Monitoring:** Analyze free cash flow trends and distribution coverage ratios assessing dividend sustainability and growth financing capabilities. Deteriorating cash generation alongside aggressive leverage potentially signals financial stress requiring portfolio adjustments.
3. **Capital Allocation Quality Evaluation:** Assess management capital allocation decisions regarding cash flow deployment across debt servicing, dividend distributions, and growth investments. Balanced approaches supporting stakeholder interests typically reflect superior management quality enhancing long-term value creation.

Recommendations for Future Research

1. **Expanded Variable Incorporation:** Investigate additional debt policy determinants including organizational size, profitability, asset tangibility, growth opportunities, ownership structures,

governance quality, and market conditions providing comprehensive capital structure explanation models addressing modest current explanatory power.

2. **Longitudinal Investigation:** Conduct extended time-series analyses capturing temporal dynamics, causal directions, and sustained effects revealing how free cash flow and dividend policy relationships with debt policy evolve across commodity cycles, regulatory changes, and organizational lifecycle stages.
3. **Moderating Variable Exploration:** Examine potential moderators including commodity price volatility, ownership concentration, governance quality, regulatory environments, and market development levels affecting how cash generation and distribution policies influence leverage decisions across contexts.
4. **Comparative Analysis:** Extend research across alternative mining subsectors, Indonesian industries, or international markets identifying contextual boundary conditions and generalizable patterns versus country-specific or industry-specific dynamics affecting financial management relationships.
5. **Qualitative Integration:** Employ mixed methods approaches combining quantitative analyses with qualitative insights from management interviews, document analysis, or case studies enriching understanding of decision-making processes, contextual complexities, and practical considerations underlying observed statistical relationships.
6. **Non-linear Relationship Investigation:** Explore potential curvilinear associations where free cash flow effects on debt policy may depend upon cash flow levels, with different dynamics characterizing surplus versus constrained situations requiring sophisticated analytical techniques beyond linear regression frameworks.

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