

Investment opportunities, free cash flow, and dividend payout among consistent dividend payers: Evidence from Indonesia's energy sector

Gabriella Merij. R Bubala

Corresponding author:

gabriellabubala@gmail.com

Sam Ratulangi University
Indonesia

Herman Karamoy

Sam Ratulangi University
Indonesia

Christian Datu

Sam Ratulangi University
Indonesia

Received 2 September 2026

Revised 25 September 2026

Accepted 26 September 2026

Published online 30 September
2026

DOI: 10.58784/cfabr.505

ABSTRACT

The energy sector is a capital-intensive and cyclical industry in which firms face a persistent tension between funding expansion and maintaining dividend payments to preserve investor confidence, yet most prior evidence on the determinants of dividend policy has been drawn from property, real estate, banking, or general non-financial samples rather than from energy firms specifically, and reported findings on these determinants remain inconsistent. This study addresses that gap by examining the effects of the Investment Opportunity Set (IOS), Free Cash Flow (FCF), and Asset Growth on dividend policy among energy-sector companies listed on the Indonesia Stock Exchange (IDX) during the 2020–2024 period. Dividend policy is measured using the Dividend Payout Ratio (DPR). Using purposive sampling, a balanced panel of 13 companies (65 firm-year observations) was analysed through panel-data regression; based on the Chow and Hausman tests, the Fixed Effect Model was selected. The results show that, partially, IOS, FCF, and Asset Growth each have no significant effect on dividend policy. Jointly, the three variables explain only a modest share of the variation in dividend policy (Adjusted $R^2 = 16.23\%$), indicating that dividend policy in the energy sector is shaped mainly by factors outside the model, such as profitability, leverage, firm size, and liquidity. These findings suggest that energy-sector firms tend to maintain stable dividend payouts to preserve investor confidence rather than adjusting dividends in response to period-specific investment opportunities, free cash flow, or asset growth, and they offer practical implications for management and investors regarding the limited explanatory power of these three conventional determinants in this sector.

Keywords: asset growth; dividend payout ratio; dividend policy; energy sector; free cash flow; investment opportunity set

JEL Classification: G32; G35

©2026 Gabriella Merij. R Bubala, Herman Karamoy, Christian Datu



This work is licensed under a [Creative Commons Attribution 4.0 International License](https://creativecommons.org/licenses/by/4.0/).

1. Introduction

Dividend policy is one of the most important financial decisions a company makes, as it determines the proportion of net income distributed to shareholders as dividends versus the portion retained to finance future operations and growth. For investors, dividends represent a return on investment, while for management, the decision to distribute or retain earnings reflects a balancing of the interests of shareholders and the firm's growth needs. Dividend policy is commonly measured through the Dividend Payout Ratio (DPR), which captures the share of net income paid out as dividends.

From the perspective of agency theory, dividend policy can serve as a mechanism to reduce conflicts of interest between managers (agents) and shareholders (principals), since distributing dividends limits the free cash under managerial control. Several firm-specific factors are theorized to shape dividend policy, including the Investment Opportunity Set (IOS), Free Cash Flow (FCF), and Asset Growth. IOS reflects a firm's potential investment opportunities: firms with high IOS tend to retain more earnings to finance investment projects, reducing funds available for dividends. FCF represents the cash available after operating needs and fixed-asset investment are met; firms with high FCF have greater capacity to pay dividends. Asset Growth indicates the rate of asset expansion, which typically absorbs earnings that would otherwise be distributed.

The energy sector is a relevant context for studying dividend policy because it is capital-intensive and cyclical, so firms face a persistent tension between funding expansion and maintaining dividend payments to preserve investor confidence. Prior studies on the determinants of dividend policy report inconsistent findings: for example, Laksonowati et al. (2026) and Indrayati et al. (2021) find that IOS has a effect on dividend policy,

whereas Kartolo and Sugiyanto (2022) and Yunita and Subardjo (2023) finds no effect; Soeiswanto et al. (2024) and Sumartana and Dewi (2024) find a positive effect of FCF on dividend policy, while Laksonowati et al. (2026) find no effect; Uqba and Hindasah (2025) and Maharani and Huda (2026) report a significant effect of Asset Growth on dividend policy, while Wijaya and Yuniarwati (2023) and Indrayati et al. (2021) report a significant effect. These conflicting results constitute a research gap that motivates further testing. Most of the studies above draw on property and real estate, banking, or general non-financial samples; this study contributes by testing the same three relationships in the energy sector, a capital-intensive, cyclical industry not directly covered by that prior evidence, over the post-2020 (pandemic-affected) 2020–2024 window, using a balanced panel design. Accordingly, this study analyzes the partial effects of IOS, FCF, and Asset Growth on the dividend policy of energy-sector firms listed on the IDX during 2020–2024.

2. Literature review

Agency theory

Agency Theory was developed by Jensen and Meckling (1976) to explain the contractual relationship between management as the agent and the company's owners as the principal. The principal grants the agent the authority to carry out activities on their behalf. The principal always seeks information about the company's activities, particularly regarding how management manages the funds that have been invested (Purba, 2023:24). In this situation, the dividend policy serves as a mechanism to balance the interests of both parties. By distributing profits in the form of dividends, a company can reduce the amount of funds managed by management, thereby limiting the potential for misuse of funds for unprofitable investments or

projects that are not in line with shareholders' wishes (Rachmawati., 2025). Within this framework, IOS, FCF, and Asset Growth condition how much cash a firm distributes versus retains.

Dividend policy

A dividend policy involves determining whether the profits earned by a company at the end of the year will be distributed to shareholders in the form of dividends or retained to increase capital for the purpose of financing future investments; thus, the dividend policy is an integral part of a company's financing decisions (Irma et al., 2021). An effective dividend policy should take into account the company's funding needs for growth while also providing benefits to investors. Shareholders typically expect stable or steadily increasing dividends each year, but the company must still consider its funding needs to support future investments (Rachmawati, 2025)

Investment Opportunity Set and Dividend Policy

Mahirun, and Ahliansyah (2023) states that the Investment Opportunity Set represents an investment option for the future and reflects growth in assets and equity. Under agency theory, firms with high IOS tend to retain more earnings to finance investment projects, leaving fewer funds for dividends, so higher IOS is associated with a lower dividend payout (Yunita and Subardjo, 2023). Empirically, Laksonowati et al. (2026) and Indrayati et al. (2021) find a positive effect of IOS on dividend policy, while Kartolo and Sugiyanto (2022) find no effect. Based on this reasoning, the first hypothesis is proposed:

H₁: The Investment Opportunity Set has a significant effect on Dividend Policy

Free Cash Flow and Dividend Policy

FCF is the cash available after a firm meets its operating needs and invests in fixed assets. Under agency theory, distributing dividends from FCF reduces the funds managers might use outside shareholders' interests; The higher a company's free cash flow, the more dividends will be distributed to shareholders. Conversely, the lower a company's free cash flow, the fewer dividends will be distributed to shareholders because the company's profits are used to finance its assets (Yunita and Subardjo, 2023). Kartolo and Sugiyanto (2022) find a positive effect of FCF on dividend policy, whereas Laksonowati et al. (2026) find no effect. Based on this reasoning, the second hypothesis is proposed:

H₂: Free Cash Flow has a significant effect on Dividend Policy

Asset Growth and Dividend Policy

Asset Growth describes the rate of growth in assets used for operations; high asset growth signals expansion requiring substantial funding. Under agency theory, firms with high asset growth tend to pay lower dividends because earnings are allocated to support expansion (Wijaya & Yuniarwati, 2023). Uqba and Hindasah (2025) find a significant negative effect, while Oktaviatin et al. (2024) find a significant positive effect. Based on this reasoning, the third hypothesis is proposed:

H₃: Asset Growth has a significant effect on Dividend Policy

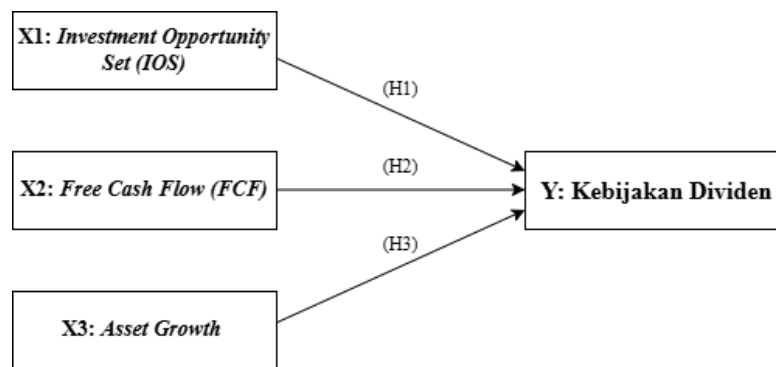


Figure 1. Conceptual framework

3. Research method

This study uses a quantitative approach with secondary data drawn from the audited annual financial statements of energy-sector companies listed on the IDX during 2020–2024. This study employs a nonprobability sampling approach, in which the selection of the sample does not

provide equal chances for every element or member of the population to be selected for the sample (Sugiyono, 2023). The sample was selected using purposive sampling based on the criteria summarized in Table 1, yielding 13 companies over five years (65 firm-year observations).

Table 1. Sample selection procedure

No	Criteria	Total
1	Energy-sector companies listed on the IDX during 2020–2024.	89
2	Companies that did not present complete financial statements during 2020–2024.	(24)
3	Companies that did not consistently distribute dividends during 2020–2024.	(52)
	Number of sample companies	13
	Total observations (13 companies × 5 years)	65

Source: Processed data (2026)

The sampling criteria in Table 1 restrict the population to firms that consistently distributed dividends throughout 2020–2024. This restriction was adopted because the study's objective is to explain variation in the intensity of payout (the DPR) among firms with an active, ongoing dividend policy, which is conceptually distinct from the decision of whether to pay a dividend at all, a decision governed by different considerations such as life-cycle stage or solvency constraints. This design choice narrows external

validity: the findings describe the determinants of payout intensity among established dividend-paying energy firms and should not be generalized to firms that pay no dividend or that pay irregularly. Notably, even within this restricted sample, the dependent variable retains a negative minimum value (DPR = −0.211136 in Table 3), reflecting occasional payouts despite reported losses.

The operationalization and measurement of each variable are summarized in Table 2.

Table 2. Variable operationalization and measurement

Variable	Symbol	Measurement
Dividend Policy (dependent)	Y (DPR)	Dividend Payout Ratio = dividend per share / earnings per share
Investment Opportunity Set	X ₁ (IOS)	Market-to-book value of equity (MVE/BVE)
Free Cash Flow	X ₂ (FCF)	(Operating cash flow – capital expenditure) / total assets
Asset Growth	X ₃	(Total assets _t – Total assets _{t-1}) / Total assets _{t-1}

Source: Processed data (2026)

Data were analyzed using panel-data regression with EViews 12.0. Model specification followed the Chow test (Common vs Fixed Effect) and the Hausman test (Random vs Fixed Effect). Because normality on panel data is commonly assessed through multicollinearity and heteroscedasticity tests (Napitupulu et al., 2021), these classical assumption tests were applied. Hypotheses were tested via the individual significance test (t-test) at the 5% significance level (Anwar & Nursan, 2025), the overall significance of the model was assessed using the F-test, serial correlation was assessed using the Durbin–Watson statistic, and the coefficient of

determination (Adjusted R²) was used to gauge explanatory power. The regression model is:

$$Y_{it} = \alpha + \beta_1 X_{1it} + \beta_2 X_{2it} + \beta_3 X_{3it} + e_{it}$$

where Y = dividend policy (DPR), X₁ = IOS, X₂ = FCF, X₃ = Asset Growth, α = constant, β_1 – β_3 = regression coefficients, e = error term, i = company, and t = time/period

4. Result and discussion

Descriptive statistics

Descriptive statistics for the four variables across 65 firm-year observations are presented in Table 3.

Table 3. Descriptive statistics

Variable	Minimum	Maximum	Mean	Std. Deviation
IOS (X ₁)	0.237825	22.30158	1.866645	3.681329
FCF (X ₂)	–0.298082	0.642870	0.142712	0.169413
Asset Growth (X ₃)	–0.258684	0.771481	0.134045	0.230926
Dividend Policy (Y, DPR)	–0.211136	1.969810	0.450647	0.320508

IOS shows the widest dispersion (SD 3.68 > mean 1.87), indicating substantial differences in investment opportunities across energy firms. FCF and Asset Growth have negative minimum values, reflecting firms with negative free cash flow or shrinking assets in certain periods,

while the dividend payout ratio averages 0.4506 with a negative minimum, indicating that some firms continued paying dividends despite net losses.

Panel-model selection and classical assumption tests

The results of the panel-model specification and classical assumption tests are summarized in Table 4. The Chow test (cross-section Chi-square $p = 0.0079 < 0.05$) favored the Fixed Effect Model over the Common Effect Model, and the Hausman test (cross-section Chi-square $p = 0.0439 < 0.05$) favored the Fixed Effect Model over the Random Effect Model; the Fixed Effect Model was therefore selected.

It is not necessary to proceed to the Lagrange Multiplier (LM) test, since the LM test is used to choose between CEM and REM (Anwar and Nursan 2025:34). All inter-variable correlations are below 0.85 (IOS–FCF 0.258; IOS–Asset Growth 0.157; FCF–Asset Growth 0.484), indicating no multicollinearity, and the heteroscedasticity test yields significance values above 0.05 for all variables (IOS 0.2954; FCF 0.5587; Asset Growth 0.9761), indicating no heteroscedasticity.

Table 4. Panel-model selection and classical assumption tests

Test / variable	Statistic	d.f.	Prob.	Decision
Panel A. Panel-model selection				
Chow test: Cross-section F	2.097628	(12, 49)	0.0346	—
Chow test: Cross-section Chi-square	26.946412	12	0.0079	FEM preferred over CEM
Hausman test: Cross-section random	8.104999	3	0.0439	FEM preferred over REM
Panel B. Multicollinearity (correlation between independent variables)				
IOS–FCF	0.257801	—	—	< 0.85; no multicollinearity
IOS–Asset Growth	0.156556	—	—	< 0.85; no multicollinearity
FCF–Asset Growth	0.483865	—	—	< 0.85; no multicollinearity
Panel C. Heteroscedasticity (Glejser test)				
IOS (X_1)	−1.057610	—	0.2954	> 0.05; no heteroscedasticity
FCF (X_2)	−0.588850	—	0.5587	> 0.05; no heteroscedasticity
Asset Growth (X_3)	−0.030074	—	0.9761	> 0.05; no heteroscedasticity

Panel regression (fixed effect model) and hypothesis testing

The results of the Fixed Effect Model regression and the individual significance test (t-test) are presented in Table 5.

Table 5. Fixed effect model regression and t-test results

Variable	Coefficient (β)	t-statistic	Sig.	Conclusion
Constant (C)	0.5385	—	—	—
IOS (X_1)	-0.0148	-1.196917	0.2371	H ₁ rejected
FCF (X_2)	-0.3704	-1.071231	0.2893	H ₂ rejected
Asset Growth (X_3)	-0.0553	-0.271486	0.7872	H ₃ rejected

Dependent variable: Dividend Policy (DPR). t-table ($df = 65 - 4 = 61$) = 1.998341.

Based on Table 5, the regression equation is $Y = 0.5385 - 0.0148 \text{ IOS} - 0.3704 \text{ FCF} - 0.0553 \text{ Asset Growth} + e$. All three independent variables have t-statistics below the t-table value (1.998341) and significance values above

0.05, so H₁, H₂, and H₃ are all rejected—IOS, FCF, and Asset Growth have no significant partial effect on dividend policy. The coefficient of determination is presented in Table 6.

Table 6. Coefficient of determination

Measure	Value
R-squared	0.358631 (35.86%)
Adjusted R-squared	0.162293 (16.23%)
F-statistic	1.826603
Prob(F-statistic)	0.057534
Durbin–Watson stat	1.824633

The Adjusted R² of 0.1623 indicates that IOS, FCF, and Asset Growth jointly explain only 16.23% of the variation in dividend policy, while the remaining 83.77% is explained by other factors outside the model. The overall model, including the firm fixed effects, is jointly significant only at the 10% level and not at the conventional 5% level ($F = 1.8266$; $\text{Prob}(F\text{-statistic}) = 0.0575$), consistent with the low explanatory power of the three time-varying predictors individually. The Durbin–Watson statistic of 1.8246, close to the benchmark value of 2, indicates no material first-order autocorrelation in the residuals. Because the Fixed Effect Model estimates a distinct intercept for each of the 13 energy-sector firms in the panel (cross-section fixed effects, absorbed into the model but not reported individually),

the modest joint significance of the model ($\text{Prob}(F\text{-statistic}) = 0.0575$) together with the non-significant coefficients on X_1 – X_3 suggests that most of the model's limited explanatory power derives from these firm-specific effects rather than from the three explanatory variables.

Discussion

Investment Opportunity Set

IOS has no significant effect on dividend policy (H₁ rejected), indicating that the magnitude of a firm's future investment opportunities is not the basis for determining dividends. Energy-sector firms tend to maintain stable dividend payments to preserve investor confidence, even when their investment opportunities differ. IOS reflects a firm's investment opportunity or potential rather than a

realized investment decision (Mahirun, and Ahliansyah, 2023), which may explain why its period-specific value does not translate into an observable change in payout. The finding agrees with Kartolo and Sugiyanto (2022) but differs from Laksonowati et al. (2026) and Indrayati et al. (2021), who report a significant effect. Those studies draw on property and real estate and banking firms, respectively, and the former model's profitability as a mediator; differences in sector structure and model specification are therefore a more plausible source of divergence than a failure of the underlying theory.

Free Cash Flow

FCF has no significant effect on dividend policy ($\beta = -0.3704$; $p = 0.2893$), so H_2 is rejected. The coefficient is also negative, opposite to the sign implied by the free cash flow hypothesis. The estimate is not significant and should not be over-interpreted, but the sign is compatible with energy firms using surplus cash first for operations, capital expenditure, debt repayment, and liquidity buffers, and only then for payout, particularly in a capital-intensive industry whose cash flows are strongly procyclical. The result also need not contradict agency theory: Jensen (1986) argues that the agency cost of free cash flow is most severe in firms with few profitable investment opportunities, so an unconditional test that pools high-IOS and low-IOS firms can mask a relationship that holds only for the latter. The interaction between FCF and IOS was not examined here and is a natural extension. The finding is consistent with Laksonowati et al. (2026) but contrasts with Soeiswanto et al. (2024), whose sample consists of food and beverage firms, and with Sumartana and Dewi (2024), who report a positive effect. Sectors with comparatively stable earnings and cash flows may allow payout to track free cash flow more closely than energy firms, where cash flows are volatile and dividends are smoothed against them.

Asset Growth

Asset Growth has no significant effect on dividend policy ($\beta = -0.0553$; $p = 0.7872$), so H_3 is rejected. The coefficient is negative, but its t-statistic is only -0.27 , indicating virtually no detectable relationship. In capital-intensive energy firms, asset expansion typically follows multi-year project cycles and may be financed through debt, prior-year cash, or partner funding, so its timing is weakly coupled to the current year's payout decision. Asset growth also takes negative values in the sample (minimum -25.9%), which may reflect asset write-downs or disposals rather than a deliberate retention policy. The result is consistent with Indrayati et al. (2021) but differs from Uqba and Hindasah (2025) and Oktaviatin et al. (2024), who report significant effects of opposite signs. Because the direction of the effect is itself disputed in prior studies, the null result here is better read as evidence that asset growth is not a reliable determinant of payout in this sector than as support for either side of that dispute.

5. Conclusion

Panel-data analysis of energy-sector firms listed on the IDX during 2020–2024 shows that investment opportunity set (IOS), free cash flow (FCF), and asset growth have no significant effect on dividend policy, with an Adjusted R^2 of only 16.23%. Firms appear to prioritize a stable, predictable payout to preserve investor confidence, while directing free cash flow toward operations, investment, debt repayment, and liquidity. Management should therefore not expect short-run changes in these three variables to drive dividend decisions, and investors should not read dividends as a direct signal of a given year's investment opportunities, free cash flow, or asset growth. Other indicators, such as profitability and liquidity, are likely to be more informative.

These findings should be generalized with caution. The study covers a single sector, a small balanced panel (13 firms; 65 observations), and three independent variables, and it includes only firms that paid dividends consistently, which excludes non-payers and irregular payers. The extreme maximum IOS value, driven by one firm's stock split in 2022–2023, was not corrected, and the Fixed Effect Model was estimated without robust standard errors. Future research could relax the sample criterion using a Tobit or Heckman model, apply winsorizing or log-transformation to IOS, and report heteroscedasticity- and cross-sectional-dependence-robust standard errors. It could also add profitability, leverage, firm size, liquidity, and managerial ownership, extend the observation period, and examine other sectors.

References

- Anwar, & Nursan, M. (2025). *Buku ajar analisis regresi data panel dengan aplikasi EViews*. Pustaka Bangsa.
- Indrayati, I., Rachmat, B., & Slamet, S. (2021). Assets growth, earnings persistence, investment opportunity set and earnings management on dividend policy and firm value (Study at bank companies in Indonesia). *Journal of Southwest Jiaotong University*, 56(2), 220-234.
<https://doi.org/10.35741/issn.0258-2724.56.2.18>.
- Irma, Puspitasari, D., Rachmawati, D. W., Husnatarina, F., Suriani, Evi, T., Santoso, A., Anas, M., Muliadi, S., & Sari, D. C. (2021). *Manajemen keuangan*. Nuta Media.
- Kartolo, R., & Sugiyanto (2022). Pengaruh free cash flow dan investment opportunity set terhadap dividen policy dengan debt policy sebagai variabel mediassi. *Realible Accounting Journal*, 2(1), 18-35.
<https://doi.org/10.36352/raj.v2i1.421>.
- Laksonowati, R. T., Efendi, B., & Akbar, M. A. M. (2026). The mediating role of profitability in the relationship between free cash flow, investment opportunity set, and dividend policy: Empirical evidence from property and real estate companies listed on the Indonesia Stock Exchange. *MAGISMA: Journal of Economics and Business*, 14(1), 151-165.
<https://journals.ubpd.ac.id/index.php/magisma/article/view/22>.
- Maharani, A. G., & Huda, S. (2026). Pengaruh sales growth dan asset growth terhadap kebijakan dividen pada sektor kesehatan. *Jurnal Ilmiah Wahana Pendidikan*, 12(2. D), 33-44.
<https://jurnal.peneliti.net/index.php/JIWP/article/view/13777>
- Mahirun, & Ahliansyah, M. R. (2023). Optimalisasi investment opportunity set (IOS) melalui peningkatan profitabilitas. *Entrepreneur: Jurnal Bisnis Manajemen dan Kewirausahaan*, 4(2), 1–13.
<https://doi.org/10.31949/entrepreneur.v4i2.5179>
- Napitupulu, R. B., Simanjuntak, T. P., Hutabarat, L., Damanik, H., Harianja, H., Sirait, R. T. M., & Lumban Tobing, C. E. R. (2021). *Penelitian bisnis: Teknik dan analisa data dengan SPSS, STATA, EViews*. Madenatera.
- Oktaviatin, N. L., Wiharno, H., & Purnama, D. (2024). Struktur kepemilikan, kebijakan hutang dan pertumbuhan aset terhadap kebijakan dividen. *Jurnal Riset Keuangan dan Akuntansi*, 10(2), 95-112.
<https://journal.uniku.ac.id/index.php/jrka/article/view/10895>.

- Purba, R. B. (2023). *Teori akuntansi: Sebuah pemahaman untuk mendukung penelitian bidang akuntansi*. CV. Merdeka Kreasi Group.
- Rachmawati, W. (2025). *Manajemen keuangan*. Universitas Semarang Press
- Soeiswanto, C., Karamoy, H., & Weku, P. (2024). Pengaruh free cash flow, profitabilitas, dan likuiditas terhadap kebijakan dividen pada perusahaan food and beverage yang terdaftar di BEI periode 2019-2022. *Going Concern: Jurnal Riset Akuntansi*, 19(2), 133–142. <https://ejournal.unsrat.ac.id/v3/index.php/gc/article/view/55378>
- Sugiyono. (2023). *Metode penelitian kuantitatif, kualitatif, dan R&D*. Alfabeta.
- Sumartana, I. G. A., & Dewi, S. K. S. (2024). The influence of free cash flow, profitability and growth opportunity on dividend policy. *International Journal of Management Research and Economics*, 2(3), 486-508. <https://jurnal.itbsemarang.ac.id/index.php/Ijmre/article/view/2152>
- Uqba, L. A., & Hindasah, L. (2025). Pengaruh profitabilitas, likuiditas leverage, assets growth, ukuran perusahaan dan kepemilikan institusional terhadap kebijakan dividen pada perusahaan non-keuangan yang terdaftar di Bursa Efek Indonesia tahun 2019-2023. *Jurnal Maneksi (Management Ekonomi Dan Akuntansi)*, 14(1), 257-269. <https://ejournal-polnam.ac.id/index.php/JurnalManeksi/article/view/2939>
- Wijaya, C. C., & Yuniarwati. (2023). Pengaruh collateral asset, asset growth, leverage, dan profitability terhadap dividend policy. *Jurnal Paradigma Akuntansi*, 5(2), 733-743. <https://journal.untar.ac.id/index.php/jpa/article/view/23532>
- Yunita, E. V., & Subardjo, A. (2023). Pengaruh profitabilitas, free cash flow, likuiditas, dan investment opportunity set terhadap kebijakan dividen. *Jurnal ilmiah akuntansi dan keuangan (jiaku)*, 2(1), 80-96. <https://ejournal.stiesia.ac.id/jiaku/article/view/5809>