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The effect of trade policy uncertainty, free cash flow, investment opportunity set, and liquidity on dividend policy of food and beverage sub-sector companies listed on the Indonesia Stock Exchange, 2022–2025

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ABSTRACT

Shifts in international trade policy may change how firms divide cash between shareholders and retention, yet evidence on this link for emerging-market firms remains scarce. This study examines whether trade policy uncertainty (TPU), free cash flow, the investment opportunity set (IOS), and liquidity are associated with the dividend payout ratio of food and beverage firms listed on the Indonesia Stock Exchange. Drawing on agency, signaling, and pecking-order perspectives, we analyze a balanced panel of 27 regular dividend-paying firms over 2022–2025 (108 firm-year observations) using random-effects regression with standard errors clustered by firm, selected through Chow, Lagrange multiplier, and Hausman tests. IOS is the only variable significantly and positively associated with payout; the association is economically meaningful, equal to about one-third of the standard deviation of payout per standard-deviation increase in IOS, and it also holds in a fixed-effects specification. TPU, free cash flow, and liquidity show no statistically significant association, although the estimates are imprecise and do not rule out sizeable effects, and the model as a whole has low explanatory power. These results indicate that, among regular payers, payout is related more to the market's valuation of growth prospects than to trade policy uncertainty. Because TPU varies only by year, the sample excludes non-payers, and no control variables are included, the findings are associations and should not be generalized to non-paying firms. The study provides a baseline for future research using firm-level exposure to trade policy and broader samples.

Keywords: trade policy uncertainty; free cash flow; investment opportunity set; liquidity; dividend policy
JEL Classification: G35; G32

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1. Introduction

Dividend policy is the decision on how much of a firm's earnings is paid out to shareholders and how much is retained to finance future investment (Lintner, 1956; Miller & Modigliani, 1961). The decision matters because it allocates scarce internal funds between investors and the firm, and because payouts convey information about management's expectations (Bhattacharya,

1979; Miller and Rock, 1985). In this study, dividend policy is measured by the dividend payout ratio (DPR), the proportion of earnings distributed to shareholders.

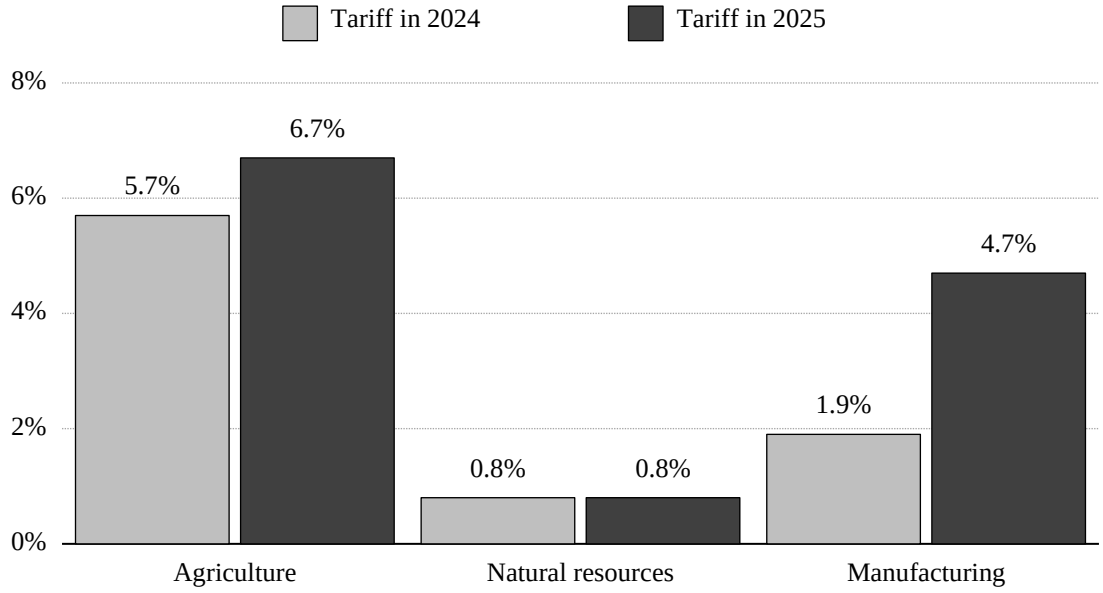


Figure 1. Tariff levels by broad product sector, 2024 and 2025
Source: UNCTAD, redrawn by the authors from the published figure.

The increasing complexity of global economic conditions has made external uncertainty an important consideration in corporate financial decision-making. Rumokoy et al. (2023) highlight the relevance of this issue through their study of geopolitical risk and corporate investment in Australia's metals and mining industry, demonstrating that external shocks can influence how firms allocate their resources. Consistent with this perspective, Rumokoy et al. (2025) show that heightened geopolitical risk (GPR) can affect corporate outcomes in capital markets. Using 2,933 Chinese IPOs from 2010 to 2023, they find that a one-standard-deviation increase in GPR raises IPO underpricing by approximately 14%, indicating that greater geopolitical uncertainty increases investors' risk concerns and influences firms' responses to uncertain market conditions.

From a corporate cash management perspective, Rumokoy et al. (2024) examine whether board networks influence corporate cash holdings in Australia, viewing cash retention as a decision associated with corporate governance. Taken together, these findings suggest that corporate decisions concerning the allocation, retention, and use of financial resources are shaped not only by internal conditions but also by the external environment and the uncertainty firms face. Accordingly, decisions to retain or distribute cash, including through dividend payments, should be considered in relation to both external conditions and firm-specific characteristics.

One form of external uncertainty directly related to corporate activities is trade policy uncertainty (TPU), which refers to uncertainty arising from unpredictable or changing trade policies. Trade policy uncertainty can affect corporate activities through changes in production costs, demand, market access, and trade flows, thereby influencing how

firms manage their financial resources. Lee et al. (2025) examine corporate dividend behavior in China and find that TPU has a negative effect on dividend policy. More broadly, Li et al. (2024) link economic policy uncertainty to corporate cash dividend policies and managers' tendency to hold cash as a precautionary measure, which may potentially create agency conflicts between managers and shareholders.

In addition to external factors, dividend policy is influenced by internal financial conditions, including free cash flow (FCF), investment opportunity set (IOS), and liquidity. FCF represents the cash available after accounting for the firm's operating and investment requirements (Sudarno et al., 2022), indicating that firms with greater FCF have greater financial capacity to distribute cash to shareholders. IOS reflects the firm's investment opportunities and growth prospects, whereas liquidity represents the firm's ability to meet its short-term obligations. These three factors capture important aspects of a firm's internal financial condition that may influence dividend distribution decisions.

Previous empirical findings remain inconsistent. Regarding FCF, Ratih and Surasmi (2025), Mayangsari et al. (2024), and Fitri et al. (2024) report a positive effect on dividend policy. Regarding IOS, Friza (2022) finds a positive effect, whereas Yani and Maharani (2022) and Fitri et al. (2024) report negative effects, while Munawar and Indrawan (2024) find no significant effect. Evidence concerning liquidity is also mixed. Natsir et al. (2023) and Setiawati and Simanungkalit (2025) report significant effects, Tatinting et al. (2025) find a significant negative effect, whereas Wahyuni (2021) finds no significant effect.

Despite these inconsistent findings regarding internal financial factors, empirical research examining the relationship between TPU and dividend policy among Indonesian firms remains limited. Existing studies have also tended to examine external uncertainty and internal financial factors separately and across heterogeneous corporate settings. This creates an opportunity to examine external and internal factors simultaneously in explaining corporate dividend policy. Therefore, this study investigates trade policy uncertainty, free cash flow, investment opportunity set, and liquidity as determinants of dividend policy among food and beverage companies listed on the Indonesia Stock Exchange during 2022–2025. The food and beverage sub-sector is selected because it is characterized by relatively stable consumer demand while remaining exposed to global trade policies and fluctuations in imported raw material prices.

2. Literature review

Theoretical foundations

Agency theory emphasizes the conflict of interest between shareholders (principals) and managers (agents). Agency theory was first introduced by Jensen and Meckling (1976; see also Sudarno et al., 2022, p. 8). When a contractual relationship is established between the principal and the agent to delegate authority for decision-making and action-taking, it is referred to as an agency relationship.

Signals theory are actions taken by company management that provide guidance to investors regarding the company's prospects. Signaling theory was first introduced by Spence (1973; see also Sudarno et al., 2022, p. 5). Signaling theory serves as an indicator related to the company's situation for investors or stakeholders. Both financial and non-financial reports provide information that signals the company's financial condition to investors before they make investment decisions.

Trade policy uncertainty on dividend policy

Trade Policy Uncertainty (TPU) arises from unpredictable changes in tariffs and trade relations. It raises the cost and uncertainty of imported inputs and export demand, and it increases the value of preserving cash and flexibility (Gulen & Ion, 2016; Caldara et al., 2020). Li et al. (2024) report that policy uncertainty is associated with precautionary cash holding and cash dividend policy, and Lee et al. (2025) find a negative association of TPU with dividends in China. Two further channels apply. Financing constraints can make firms cut payouts when uncertainty raises the cost of external funds, and managers who smooth dividends (Lintner, 1956) may resist cutting them, which weakens any association. The sub-sector's relatively stable demand is another reason to expect a modest effect. Because TPU is common to all firms, H1 concerns time variation only. Based on this reasoning, the second hypothesis is formulated as follows:

H_1: Trade policy uncertainty has a negative effect on dividend policy.

Free cash flow on dividend policy

Free Cash Flow (FCF) represents the cash remaining after a company covers its essential operating and investment requirements. In the free cash flow hypothesis, dividends reduce the surplus cash at managers' disposal, so that higher FCF should be associated with higher payouts (Jensen, 1986; Easterbrook, 1984). Maintaining a high level of FCF signals strong financial health and an increased capacity to distribute profits to shareholders (Ratih and Surasmi, 2025). When a firm allocates a portion of its stable free cash flow toward dividends, it demonstrates both sound operational support and direct rewards for investors. This positive linkage is strongly supported by Mayangsari et al. (2024) and Fitri et al. (2024). Thus, the third hypothesis is formulated as follows:

H_2: Free cash flow has a positive effect on dividend policy.

Investment opportunity set on dividend policy

The Investment Opportunity Set (IOS) reflects a firm's growth prospects, expansion potential, and future investment opportunities. A high IOS indicates that the company possesses strong future growth capabilities, which reinforces investor confidence in the firm's sustainable ability to generate earnings and cash flows (Munawar and Indrawan, 2024). This confidence facilitates smoother financial management and supports dividend distribution. Friza (2022) demonstrates that IOS positively affects dividend policy. Thus, the fourth hypothesis is formulated as follows:

H_3: Investment opportunity set has a positive effect on dividend policy.

Liquidity on dividend policy

Liquidity measures a company's ability to fulfill its short-term obligations and liabilities as they fall due (Saptiwi et al., 2022). Firms with more liquid assets have funds available to pay dividends without disrupting operations (Natsir et al., 2023; Setiawati & Simanungkalit, 2025). However, a high current ratio can also reflect inventory or receivables that cannot be distributed, or a buffer held for precaution, and the evidence is mixed (Tatinting et al., 2025; Wahyuni, 2021). Liquidity is closely linked to dividend policy because firms with high liquidity levels have sufficient funds readily available to make dividend payments without compromising daily operations. This finding is reinforced by Setiawati and Simanungkalit (2025) and Natsir et al. (2023). Thus, the fifth hypothesis is formulated as follows:

H_4: Liquidity has a positive effect on dividend policy.

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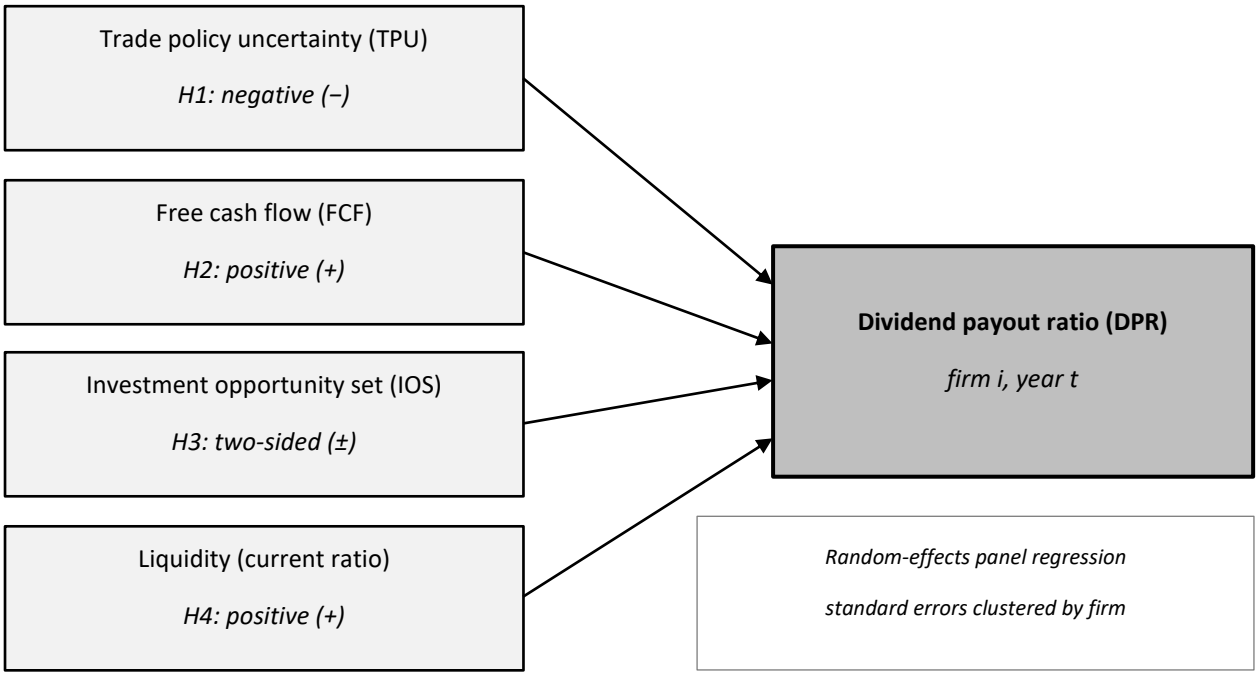


Figure 2. Research framework and predicted signs
Sources: Author illustration

Note. H1–H4 denote hypotheses; signs show predicted relationships. TPU varies by year only; FCF, IOS, and liquidity vary by firm and year.

3. Research method

Research design, population, and data

This study employs a quantitative approach with an associative method, which is a positivist-based approach used to test established hypotheses (Sugiyono, 2023). The population comprises 82 food and beverage sub-sector companies listed on the Indonesia Stock Exchange for the 2022–2025 period. The sample was determined using purposive sampling based on three criteria: listed during the research period, published complete annual financial reports, and possessed complete data regarding FCF, IOS, liquidity, and consistent dividend distribution. Based on these criteria, 27 companies with 108 observations (27 times with four years each) were obtained. Secondary data were sourced from annual financial reports on the official Indonesia Stock Exchange website (www.idx.co.id) and the TPU index from www.policyuncertainty.com, collected using documentation techniques. The TPU value represents the average of the monthly indices within a year, making it uniform for all companies in the same year.

Table 1. Sample selection

Step	Criterion	Number of firms
1	Food and beverage sub-sector firms listed on the IDX, 2022–2025	82
2	Firms that published complete annual reports for 2022–2025	75
3	Firms with complete FCF, IOS, liquidity, and consistent dividend data	27
	Final sample (27 firms × 4 years)	**27 firms; 108 observations**

Source: Authors' calculation from IDX data

Variable definition and model specification

Table 2. Operational definitions

Variable	Definition	Measurement
Dividend Policy (Y)	Decision on profit distribution to investors	DPR = *dividend per share* / *earning per share*
Trade policy uncertainty (X1)	Uncertainty resulting from frequently changing trade policies	Annual average of the TPU index = sum of monthly indices / 12
Free cash flow (X2)	Remaining operating cash after capital expenditures	FCF = operating cash flow - capital expenditures
Investment opportunity set (X3)	Market expectations regarding growth opportunities	MBVE = shares outstanding x stock price / total equity
Liquidity (X4)	Ability to fulfill short-term obligations	*Current ratio* = current assets/current liabilities

The analysis uses panel data regression with the assistance of Stata 18, Model selection is conducted through the Chow test (CEM or FEM), Hausman test (FEM or REM), and Lagrange Multiplier test (CEM or REM). Classical assumption tests include normality, multicollinearity, and heteroskedasticity, while hypothesis testing utilizes the t-test, F-test, and coefficient of determination at a 5% significance level (Ghozali, 2021). The regression model is specified as:

$$Y_{it} = \alpha + \beta_1 X_{1it} + \beta_2 X_{2it} + \beta_3 X_{3it} + \beta_4 X_{4it} + \varepsilon_{it} \quad (1)$$

4. Result and discussion

Descriptive statistics

Table 3 presents the descriptive statistics for all variables. The standard deviations of TPU and IOS are greater than their means, indicating a high dispersion of data. During 2022–2025, companies faced varying trade uncertainties and differing investment opportunities across firms. FCF has a mean greater than its standard deviation despite the presence of negative values, while a mean DPR of 0.5403 with a relatively low standard deviation indicates a fairly stable dividend pattern. The mean current ratio of 2.9143 indicates that most companies are capable of meeting their short-term obligations.

Table 3. Descriptive statistics

Variable	Average	Minimum	Maximum	Std. Deviation
Dividend Policy (DPR)	0.5403	0.1327	1.3879	0.3536
Trade policy uncertainty	194.6842	53.7768	537.8354	201.5836
Free cash flow	24.3962	−28.3026	31.0170	13.5929
Investment opportunity set	0.5383	−1.4095	2.8892	0.9073
Liquidity (*current ratio*)	2.9143	0.7654	14.3136	2.5963

Source: Processed with Stata 18 (2026).

Classical assumption and model selection tests

All classical assumption tests were satisfied. The normality test yields a probability value of 0.399 (> 0.05), indicating that the residuals are normally distributed. The multicollinearity test shows that all VIF values are below 10 with a mean VIF of 1.06, indicating no multicollinearity. The heteroskedasticity test yields a probability of 0.0118 (< 0.05); therefore, the estimation uses clustered standard errors, which correct the standard errors without altering the regression coefficients.

Table 4. Model selection tests

Tests	Probability	Model Choose
Chow	Prob > F = 0.0000	FEM (vs. CEM)
Hausman	Prob > chi2 = 0.3258	REM (vs. FEM)
Lagrange Multiplier	Prob > chibar2 = 0.0000	REM (vs. CEM)

Source: Processed by the researcher (2026). Best model: random effect model (REM).

Regression results

Table 5. Random-effects GLS estimates of DPR (robust standard errors clustered by firm)

Variable	Coefficient	Robust SE	z	p-value	95% CI
TPU	−0.0000855	0.0001319	−0.65	0.517	[−0.0003439, 0.0001730]
FCF	−0.0003299	0.0018855	−0.17	0.861	[−0.0040254, 0.0033656]
IOS	0.1359225	0.0470441	2.89	0.004	[0.0437178, 0.2281273]
Liquidity	0.0093502	0.0177377	0.53	0.598	[−0.0254151, 0.0441154]
Constant	0.4645695	0.0872919	5.32	0.000	[0.2934804, 0.6356585]

Source: Stata 18 output. Notes: N = 108 firm-years; 27 firms; 4 periods per firm. Wald $\chi^2(4) = 8.52$ ($p = 0.0741$). R^2: within 0.0708, between 0.1006, overall 0.0812. $\sigma_u = 0.2306$; $\sigma_e = 0.2570$; $\rho = 0.4459$.

Based on the regression coefficient values in Table 5, the following equation is obtained:

$$\boldsymbol{Y = 0.4645695 - 0.0000855X_1 - 0.0003299X_2 + 0.1359225X_3 + 0.0093502X_4} \quad (2)$$

Only IOS has a partially significant effect (probability of 0.004 < 0.05) with a positive coefficient. The simultaneous test yields a probability of 0.741 (> 0.05) indicating that the four variables collectively do not have a significant effect. The overall R^2 value of 0.0812 indicates that the independent variables explain 8.12% of the variation in dividend policy, while 91.88% is explained by other factors outside the model. Consequently, H3 is accepted, whereas H1, H2, and H4 are rejected.

Hypothesis testing

1. Variable X1 (Trade Policy Uncertainty) has a coefficient value of -0.0000855 and a probability of 0.517. Since the probability value is greater than 0.05, it can be concluded that partially, X1 has no significant effect on the dependent variable.
2. Variable X2 (Free Cash Flow) has a coefficient value of -0.0003299 and a probability value of 0.861. Since the probability value is greater than 0.05, it can be concluded that partially, X2 has no significant effect on the dependent variable.
3. Variable X3 (Investment Opportunity Set) has a coefficient value of 0.1359225 and a probability value of 0.004. Since the probability value is smaller than 0.05, it can be concluded that partially, X3 has a positive and significant effect on the dependent variable.
4. Variable X4 (Liquidity) has a coefficient value of 0.0093502 and a probability value of 0.598. Since the probability value is greater than 0.05, it can be concluded that partially, X4 has no significant effect on the dependent variable.

Discussion

The effect of TPU on dividend policy has no significant impact (probability of 0.517), leading to the rejection of H1. This differs from Lee et al. (2025). The relatively stable demand in this sub-sector allows firms to maintain dividends regardless of trade dynamics, prioritizing internal financial capacity and agency conflict minimization over external uncertainty.

The first concerns payout behaviour. Managers smooth dividends and avoid cuts (Lintner, 1956), and the sample consists of firms that paid in every year. If dividends are sticky while earnings respond to uncertainty, DPR can move in either direction, which would weaken any average association with TPU. The second concerns exposure. The effect of TPU should be stronger for firms with high import dependence, low cash buffers, or high leverage, whereas the sub-sector's stable demand may keep average exposure modest; no exposure variable is available to test this, so the point is a conjecture. The third concerns identification. All firms share the same annual TPU value, so the coefficient rests on four yearly observations and cannot be separated from other aggregate shocks in 2022–2025. Because dividends for a fiscal year are usually decided at the following general meeting, contemporaneous TPU may also be mismatched in timing, which lagged TPU would address.

The effect of FCF on dividend policy is not significant (probability of 0.861) with a negative coefficient, rejecting H2. Contrary to free cash flow theory, firms in this sub-sector likely prioritize cash for operations and growth rather than higher dividends, aligning with managerial cash governance perspectives (Rumokoy et al., 2024).

Three features of the design make this test of H2 weak. First, the agency channel is expected to operate where governance is weak, since dividends then limit the misuse of surplus cash (Easterbrook, 1984; La Porta et al., 2000); no ownership or governance variable is included, so a payout response confined to poorly

governed firms would be averaged out. Second, the sample consists of regular payers, whose payout may already be aligned with their cash generation, leaving little variation for FCF to explain. Third, FCF is not scaled, so it is dominated by firm size and need not capture the surplus relevant to the agency argument; FCF divided by total assets would be the more appropriate test. The studies reporting positive effects differ in sector and period, and whether their results hold once profitability is controlled remains open.

The effect of IOS on dividend policy is positive and significant (coefficient of 0.1359225; probability of 0.004), accepting H3 and aligning with Friza (2022). High investment opportunities reflect growth prospects, and firms balancing these needs with investor interests can still distribute higher dividends, signaling sound cash flows under signaling theory.

Four non-exclusive explanations are consistent with this pattern, and the data cannot discriminate among them. The first is signaling: cash-rich firms with growth prospects may pay dividends to show that the prospects are backed by cash flows (Miller & Rock, 1985; Bhattacharya, 1979). The second is valuation of stable payers: the market-to-book ratio rises with the value that investors place on a firm's expected profitability, and firms that pay regularly may be those that the market regards as profitable and low-risk, so the association may run from stable payout to price and not from growth opportunities to payout (reverse causality). The third is omitted profitability: market-to-book reflects expected profitability as well as growth, and profitability is among the best-established determinants of payout (Fama & French, 2001; DeAngelo et al., 2006; Denis & Osobov, 2008), so the IOS coefficient may be partly a profitability effect. The fourth is the selection of the sample: the retention prediction concerns the choice between paying and retaining, but the sample excludes firms that retained everything, which may be precisely the high-growth firms; among regular payers the remaining variation in IOS may therefore be unrelated to, or even positively related to, payout.

The effect of liquidity on dividend policy is insignificant (probability of 0.598), rejecting H4. High liquidity does not automatically increase dividends due to working capital and financial flexibility needs; liquidity acts more as a signal of financial stability than a primary driver of dividend policy.

A further point is specific to this sample. The mean current ratio is 2.91, so on average firms hold well over two units of current assets for each unit of current liabilities, although some firm-years fall below one (minimum 0.765). If most regular payers are comfortably liquid, liquidity may not be the binding constraint on payout, and variation in the current ratio above a certain level would then convey little about payout capacity. This is a conjecture, and a cash-based measure or a cash-to-assets ratio would be a more direct test of the financial capacity argument. The data do not allow the claim that liquidity acts as a signal of financial stability, and the claim is not made here.

Simultaneously, the four variables show no significant effect (probability of 0.0741). Dividend policy remains a complex decision influenced by external factors, as reflected by the low overall R^2 of 0.0812. Two points follow. First, the four variables together account for a small share of the variation in DPR, so most of the variation is unexplained by this model. Second, the firm effects are large: about 45% of the variance of the composite error is attributable to differences between firms ($\rho = 0.446$), and the between-firm R^2 exceeds the within-firm R^2. This pattern suggests that persistent firm characteristics, such as profitability, size, ownership structure, and an established payout habit, matter more for payout in

this sample than the year-to-year movements in uncertainty, cash flow, and liquidity that the model captures. This is again an interpretation consistent with the established determinants of payout (Lintner, 1956; Fama & French, 2001; DeAngelo et al., 2006), and it cannot be verified until those variables are added to the model. The low R^2 should not be read as evidence that external factors explain the remainder.

5. Conclusion

Among 27 regular dividend-paying food and beverage firms listed on the IDX in 2022–2025, only the investment opportunity set is significantly and positively associated with the dividend payout ratio, whereas trade policy uncertainty, free cash flow, and liquidity show no statistically significant association, and the model explains little of the variation in payout. These results contribute to the dividend literature in two ways. First, the positive IOS association runs against the retention prediction of the pecking-order and growth-options view and is closer to a signaling or valuation interpretation, so it should not be read as a general link between growth opportunities and payout. Second, the absence of a significant TPU association in a design with four annual values suggests that any effect of policy uncertainty on payouts is unlikely to be detected from time variation alone and may require firm-level exposure measures. For investors, higher market valuation of growth goes together with higher payout among regular payers, but given the low explanatory power and the small sample, IOS is not a reliable stand-alone screen. For managers, the results do not justify changing payout policy in response to trade policy uncertainty, and analysts evaluating dividend policy need to distinguish payers from non-payers, which this sample does not cover.

These findings are associations and must be read within several limitations. TPU has only four annual values and cannot be separated from other shocks in the period; only regular payers are included, so the results are subject to selection and cannot be extended to non-payers; no control variables such as profitability, size, leverage, and lagged dividends are included, and the assumption underlying random effects is doubtful; FCF and IOS rely on single proxies with unresolved scaling; inference rests on 27 clusters; and the panel is short and limited to one sub-sector. Future research should construct firm-specific TPU exposure (for example, TPU interacted with import-cost or foreign-sales share) with year effects and lagged TPU, include non-payers using Tobit, two-part, or Heckman models, add controls together with correlated random effects (Mundlak, 1978) or dynamic panel estimators, test alternative FCF and IOS proxies, and apply small-sample or wild-bootstrap corrections for clustered inference (Cameron and Miller, 2015).

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