Determination of Dividend Policy in Agricultural Plantation Business Companies

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Abstract

This study aims to analyze the effect of profitability, liquidity, leverage, and interest rates on dividend policy in Agricultural Plantation companies listed on the Indonesia Stock Exchange during the 2020–2024 period. The study was conducted on Agricultural Plantation companies listed on the Indonesia Stock Exchange. The sampling method used was a nonprobability sample with a purposive sampling technique, obtaining 26 Agricultural Plantation companies as research samples with a total of 130 data observations. In this study, the hypothesis was tested in three stages: the coefficient of determination (R^2), simultaneous testing (F Test), and partial testing (T Test). Based on the results of the analysis, the following conclusions were obtained: 1) Profitability has a positive and significant effect on dividend policy; 2) Liquidity has a positive but insignificant effect on dividend policy; 3) Leverage has a negative but insignificant effect on dividend policy; 4) Interest rates have a positive and significant effect on dividend policy. In general, this study concludes that the dividend policy of Agricultural Plantation companies is more sensitive to profitability and macroeconomic pressures (interest rates) than other internal variables such as liquidity and leverage. This finding reinforces the literature that dividend policy is multifactorial and dependent on industry context.

Keywords: *Dividend Policy, Leverage, Liquidity, Profitability, Interest Rates*

INTRODUCTION

Companies have the intention to maximize the profits obtained to improve the welfare of their owners or shareholders through investment decisions, financing decisions, and dividend policies made by financial experts (Giriati, 2016; Mougoué & Mukherjee, 1994; Ozturkkal, 2015; Sundaram & Inkpen, 2004; Thamrin et al., 2017). Companies require sufficient funds to carry out their operational activities. These funds can be obtained through

investment activities (Mason, 2006). Companies can benefit from meeting industrial funding needs through investment.

Investors who invest their funds in stocks naturally have goals and motivations, namely to obtain returns, which can take the form of capital gains and dividends. Capital gains are profits earned by investors when they resell their shares at a higher price than the purchase price. Dividends, on the other hand, are a portion of

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profits distributed by a company to shareholders as a reward or compensation for their ownership and investment in shares (Sutrisno 2012: 100).

Investors generally desire a relatively stable dividend distribution because dividend stability can increase investor confidence in the company, thereby reducing uncertainty for investors when investing their funds (Amyas et al., 2014). Companies can determine the percentage of dividends distributed to shareholders. An increase in dividends distributed to shareholders signals to the market and investors about the company's condition or ability to generate income.

In accordance with the general function of financial management, the goal of dividend distribution is to maximize shareholder welfare. Furthermore, dividends also demonstrate a company's liquidity, meet shareholders' need for real income, and serve as a communication tool between managers and shareholders (Tika Ayu, 2015: 19). Investors, for their part, mostly desire dividends that consistently increase over time. Meanwhile, a high dividend policy will reduce retained earnings, thus reducing the opportunity for internal funding.

Dividend distribution isn't limited to companies with improving performance; companies experiencing declining performance also continue to pay dividends to their shareholders. Companies with increasing profitability will pay larger dividends than those with declining profitability. Liquidity is a key concern for investors, as dividend distribution is dominated by cash dividends, requiring companies to maintain available cash or a certain level of liquidity. A company's debt composition is one factor that determines the amount of dividends distributed.

A company's dividend policy is one of the most important decisions made by decision-makers in a company (Booth & Zhou, 2017). According to Ekayanti et al. (2012), dividend policy is the decision to determine the amount of income to be distributed to shareholders and the portion to be retained as retained earnings. The amount of dividends distributed by a company depends on the company's policy. Therefore, dividend policy requires management consideration due to the differing interests of various parties within the company.

When investing their capital, investors carefully consider which company to invest their money in. Therefore, investors need financial statements to assess future profits and the company's further development, which helps determine its financial condition. Dividend policy is an integral part of corporate financing decisions. It is the choice of whether the company's year-end profits will be distributed to shareholders as dividends or retained to increase capital for future investment financing (Hoang et al., 2020).

Research by Rochmah and Ardianto (2020) found that profitability has a significant negative effect on dividend policy, and vice versa. The phenomenon of increasing profitability and decreasing dividend distributions can be explained by the fact that when profitability increases, management sees this as an investment opportunity.

Many studies have been conducted on the determinants of dividend policy, but the results remain inconsistent. A company's profitability is considered a key factor in determining dividend policy (Baker et al., 2001). Profitability is defined as a company's ability to generate profits relative to sales, total assets, and equity (Santoso and Priatinah, 2016). Specifically, liquidity reflects the availability of funds to meet all maturing debts. Research by Patra et al. (2012); and Sharma & Bakshi (2019) indicates that company liquidity has a positive effect on dividend policy, but Mai (2020) states that liquidity has no effect.

Leverage is used to measure a company's ability to repay its debts, both long-term and short-term. According to Fabozzi & Drake (2009), the leverage ratio is a type of financial ratio used to assess the extent of financial risk a company has taken. Research by Yusof & Ismail (2016) found that leverage has a negative effect on dividend policy, but Hartono et al. (2021) found a different result, indicating a positive effect.

From a macroeconomic perspective, rising interest rates increase a company's capital expenditures or costs, thus depriving the company of opportunities to increase revenue, which in turn leads to decreased dividend payments (Tandelilin, 2010:343). According to Sunarto and Andi (2003), interest rates influence the amount of dividend distribution. Jeong's (2011) research concluded that interest rates have a significant negative impact on dividend policy when not regulated by the government and a significant positive impact when regulated by the government.

As we know, Indonesia is a tropical country, so the agricultural industry plays a vital role in supporting the national economy. Sustainable agriculture is necessary to meet the needs of current and future generations while ensuring the provision of benefits, environmental sustainability, and social and economic equity. The Food and Agriculture Organization (FAO) promotes Sufficiency of Food and Agriculture for helping countries around the world achieve zero hunger and the Sustainable Development Goals. This is deemed necessary due to the projected global food crisis.

Indonesia is one of the countries currently actively promoting and expanding its economic development across all sectors. In the program to accelerate and expand Indonesia's economic development, outlined in the Masterplan for the Acceleration and Expansion of Economic Development (MP3EI), agriculture is a key program within the plantation subsector, with palm oil being one of its primary economic development activities.

Palm oil is one of Indonesia's primary plantation commodities. It's the primary raw material for cooking oil, so a sustainable supply will maintain stable cooking oil prices. This is crucial because, first, cooking oil is one of the nine staple foods needed by the Indonesian people, making it affordable. Second, it's a non-oil and gas commodity. Third, its production and processing contribute to community well-being. Furthermore, it plays a role in increasing Regional Original Income (PAD), creating jobs, and boosting the economy, providing domestic raw materials and foreign exchange.

Indonesia's agricultural sector is a key economic resource for the people, serving not only as a source of food but also as a source of foreign exchange. Agriculture contributes to development as an economic activity, a livelihood, and a means of environmental preservation, making it central to the country's development (World Bank, 2008).

Dividend policy is influenced by various fundamental aspects of a company. Most companies have a strong tendency to increase dividend distributions when profitability increases (Budiarso, 2019). Companies with good liquidity and high profitability are more likely to maintain performance, maintain business continuity, and encourage dividend distribution (Hakeem & Bambalee, 2016). Leverage is also a key determinant of dividend policy in plantation

companies. Previous research has yielded contradictory findings, with Wulandari et al. (2022) and Modjaningrat (2021) documenting a negative effect of leverage on dividend policy, while Nasution & Ramadhan (2020) and Agustina & Andayani (2016) found a positive effect. The level of profitability (ROA) is a crucial indicator that represents a plantation company's capacity to distribute dividends. A study by Juniarmita (2020) found a positive relationship between profitability and dividend decisions, while Dewi & Kartadjumena (2020) found a negative effect.

From the researcher's perspective, there is little research related to dividend policy in agriculture, particularly in the plantation industry. Therefore, the subjects of this study are companies with a primary business in plantation agriculture listed on the Indonesia Stock Exchange.

LITERATURE REVIEW

The Bird-In-The-Hand Theory

Gordon (1959) and Lintner (1956) proposed that dividend policy theory has led investors to prefer dividends, especially cash dividends, over capital gains. Investors prefer cash over having to speculate on future capital gains. "Shareholders are risk averse and prefer to receive dividend payments (cash dividends) over capital gains" (Gordon, 1959 and Lintner, 1956). Shareholders perceive dividend payments as more solid than capital gains. Current dividend payments alleviate investor uncertainty. Profits in the form of cash dividends offer more certainty, but capital gains carry risk (Gordon, 1959). Investors prefer receiving income in the form of dividend distributions rather than waiting for speculative capital gains in the future. Investors perceive that current dividends carry less risk than capital gains. future gains even though they have the prospect of higher returns.

Signaling Theory

Signaling theory refers to management's belief that paying higher dividends will increase stock prices (Easterbrook, 1984). Investors, on the other hand, associate dividend payments with planned changes in investment policy by companies that offer good future prospects. Regarding dividends as a signal to investors, investors will believe the signal if management sends a clear and accurate message that is credible. A dividend increase signals to investors that management has a positive outlook for future earnings. Investors perceive this dividend increase as a signal of the company's good prospects.

The Signaling Theory proposed by Bhattacharya (1979) explains that dividends are used to communicate a company's profitability to outside investors because they have asymmetric information. Dividends can also serve as indicators of a company's performance. Companies with good performance will pay dividends as evidence of their performance. Therefore, dividends are considered a signaling tool to distinguish between good and bad companies.

Good company performance will send a positive signal to investors regarding capital market investments. This signal will attract investors to invest by purchasing the company's shares. This positive signal means that if the company distributes high dividends, the company's market price will increase, and vice versa. This occurs because dividend distribution can influence investor uncertainty (Hemastuti & Hermanto, 2014:5).

Agency Theory

Agency theory refers to the conflict of interest between managers and shareholders (Jensen and Meckling, 1976). Investors expect higher dividend payments and profitable investment returns, while managers often delay dividend distributions to pay off debt before making further investments. Lower debt will affect interest payments on debt or investments that could generate returns in the form of income for the company. This conflict of interest will lead to agency costs. Agency costs can be minimized with a monitoring system that balances interests. Cash dividend policy is one management monitoring system for investors.

Agency theory provides arguments for the activities and actions between principals and agents (Mahadwartha & Ismiyanti, 2008). In agency theory, principals and agents are assumed to be rational economic individuals motivated solely by their own self-interest. This creates a conflict of interest due to differences in their desire to maximize utility (Nasution, 2019; Putra et al., 2018). This creates costs, namely agency costs.

Dividend Policy

According to Martono & Harjito (2010: 253), dividend policy is a decision regarding whether the profits obtained by the company will be distributed to shareholders in the form of dividends or will be retained to increase capital to finance future investments. The dividend distribution policy is determined in the General Meeting of Shareholders (GMS) which is held annually. According to Sutrisno (2012: 266), dividend policy for management is deciding when the profits obtained by the organization for a period will be distributed equally or divided partly for dividends and partly divided into retained earnings.

$$\text{Dividend Payout Ratio} = \frac{\text{Dividend}}{\text{Earning After Tax}}$$

Profitability

Profitability is a measure of how profitable a company is, both in relation to assets, sales, and equity (Fakhrudin, 2008: 154). According to Sutrisno (2012: 222), profit is the result of management policy. Profit ratios indicate the level of profit achieved by a company; the higher the profit, the better the management used in managing the company. Dividend payments depend on the company's net profit, so if the company earns more profit, the ability to pay dividends will be easier. Profitability reflects the end result of all financial policies and operational decisions (Brigham & Houston, 2013: 146). According to Sutrisno (2012: 222), profitability ratios can be measured using GPM, NPM, ROA, ROE, ROI, and EPS. This study uses ROA (Return on Assets) as a proxy for profitability.

$$\text{ROA} = \frac{\text{Net profit after tax}}{\text{Total Assets}} \times 100\%$$

Liquidity

If a company can immediately pay its short-term debts, it can be said to be liquid (Irawati, 2006: 27). However, if the company is unable to pay, it can be said to be illiquid. Liquidity ratios are used to measure the level of security of short-term creditors and to measure whether the company's operations will not be disrupted if these short-term obligations are immediately collected (Sutrisno, 2012: 215); which means the company is also able to pay dividends. According to Sutrisno (2012: 216), liquidity ratios can be measured using the current ratio, quick ratio, and cash ratio. This study uses the current ratio as a representation of liquidity.

The current ratio is formulated by using debt as a divisor of assets as follows:

$$\text{Current Ratio} = \frac{\text{Current Assets}}{\text{Current Debt}}$$

Leverage

Leverage can be described as a company's use of assets and other sources of funds that have fixed costs to increase potential shareholder profits (Sartono, 2008: 257). According to Sutrisno (2012: 217), the leverage ratio can indicate the debt required by the company. A higher level of company leverage indicates a higher amount of debt used, so the financial risk faced by the company increases with greater leverage (Irawati, 2006). According to Prihantoro (2003), this ratio can reflect whether the company can meet all its obligations or not. DER can be formulated by dividing the amount of debt by equity. The formula is:

$$\text{DER} = \frac{\text{Total Debt}}{\text{Own Capital}}$$

Interest Rate Level

The BI interest rate will affect commercial bank interest rates. If the BI interest rate rises, commercial bank interest rates will also rise. The BI interest rate influences companies' plans to meet capital needs, either by issuing securities or bonds. Low interest rates will result in lower borrowing costs because borrowers (companies) are charged less interest. Low interest rates will encourage investment and economic activity, resulting in higher stock prices. Interest is a cost; the higher the interest rate, the lower the company's profits tend to be, other things being equal. The interest rate represents the rate of payment on a loan or other investment, above the repayment agreement, expressed as an annual percentage (Dornbusch et al., 2008: 43). Interest rates influence individual decisions regarding whether to spend more money or keep it in savings.

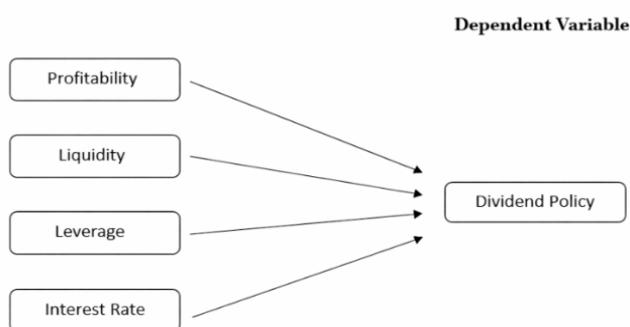Based on the presentation above, the research hypothesis is as follows:

Figure 1. Conceptual Model

H1: Profitability has a positive and significant influence on dividend policy.

H2: Liquidity has a positive and significant influence on dividend policy.

H3: Leverage has a negative and significant influence on dividend policy.

H4: Interest rates have a negative and significant influence on dividend policy.

METHODOLOGY

This research is quantitative. It was conducted on agricultural plantation companies listed on the Indonesia Stock Exchange. The agribusiness sector was selected based on its importance in supporting national food security and its contribution to the Indonesian economy. Furthermore, the agribusiness sector has interesting capital structure and profit sharing policies to study within the context of corporate finance theory. The observation period for this study was five years, from 2020 to 2024.

The population in this study includes all companies with the main business field of Agriculture Plantation listed on the Indonesia Stock Exchange during the period 2020 to 2024. The selection of this population is based on the availability of annual financial reports and the completeness of the data needed to calculate the research variables.

The sampling method used is a non-probability sample with technique purposive sampling. Retrieval sample purposive is a technique sampling used by researchers with consideration and criteria certain Which taken into account (Arikunto, 2005). Research This use criteria as following:

1. Companies with field business main Agriculture Plantation (Agriculture Plantation) which publishes annual report during period study that is 2020-2024.
2. Companies with field business Agriculture Plantation which has distribute dividend cash during period study that is 2020-2024.

Sample data obtained after exclude all companies that do not include report finance annual that has been audited and affected companies suspend or its shares stopped while by BEI in range time 2020 to 2024. Based on criteria Of these, 26 companies were obtained Agricultural Plantation as sample study with a total of 130 data observations.

Mark test static calculation statistics considered significant if is at outside the critical area (where H0 is rejected), and is not significant if it is outside the critical area (where H0 is accepted) (Ghozali & Ratmono, 2017). In this study, the hypothesis was tested in three stages: the coefficient of determination (R^2), simultaneous testing (F), and simultaneous testing (T).

RESULTS AND DISCUSSION

Descriptive Analysis

Before further analysis was carried out, descriptive statistics were used to provide a general overview of each variable studied.

Table 1 Descriptive Analysis Results

	ROA	LNCR	LNDER	LNIR	DPR
Mean	0.0643	0.5417	-0.2228	1,5319	0.1975
Med	0.0572	0.3730	-0.1071	1.4469	0.1640
Max	0.1682	2.2190	1.1676	1,8083	0.6852
Min	-0.0108	-1.0307	-3.4066	1.2585	0.0000
Std. Dev.	0.0503	0.6974	0.9628	0.2160	0.2043
Skewness	0.4914	0.9419	-1.0222	0.1760	0.7725
Kurtosis	2.3503	3.5465	4.0304	1.3644	2.6751

Profitability has an average value of 0.0643, with a range of -0.0108 to 0.1682. This figure indicates that the ability of Agricultural Plantation companies to generate profits relative to

their total assets is relatively moderate, but there is considerable variation between companies. The maximum value of 16.82% indicates that some companies are very efficient in managing their assets, while the minimum negative value indicates that some companies faced losses during the study period. The less extreme variation in ROA (Std. Dev. 0.0503) indicates that most companies are in a close profitability range, but still shows a performance gap between superior and less profitable companies. From a dividend policy perspective, companies with higher profitability generally have a greater capacity to distribute dividends.

Liquidity, represented by CR, has an average value of 0.5417 with a fairly wide variation (Std. Dev. 0.6974). The range of values from -1.0307 to 2.2191 indicates that the liquidity conditions among Agricultural Plantation companies are highly heterogeneous. The presence of a negative minimum value after logarithmic transformation indicates companies experiencing low liquidity and even potentially having difficulty meeting short-term obligations. Conversely, a high maximum value indicates companies with very large current asset reserves, likely due to a business model that requires high working capital. This difference in liquidity levels has important implications for dividend policy, such as companies with strong liquidity tend to be able to pay more stable dividends. Companies with weak liquidity tend to retain cash for operations, thus tending to distribute small or no dividends at all.

leverage variable (DER) has an average of -0.2228, indicating that many companies have relatively low debt-to-equity ratios before logarithmic transformation. A minimum value of -3.4066 indicates a company that is very conservative in its use of debt. Conversely, a maximum value of 1.1676 indicates a company that relies quite aggressively on debt financing. The large degree of variation in leverage (Std. Dev. 0.9628) indicates that Agricultural Plantation has a very diverse funding strategy. This could be due to differences in asset structure, scale of operations, or degree of dependence on external funding. Theoretically, high leverage can reduce a company's ability to pay dividends due to the high interest expense that must be settled. Conversely, low leverage provides greater room for distributing dividends. This heterogeneity in leverage is an important determinant in predicting dividend policy.

The interest rate (IR) variable has an average value of 1.5319 with a low standard deviation (0.2160). The range of values between 1.2585 and 1.8083 indicates that interest rates fluctuated but remained stable during 2020-2024.

With small variations in the data, the effect of interest rates on DPR is likely to be consistent across the sample. The DPR has an average value of 0.1975, indicating that in general, Agricultural Plantation companies only distribute around 19.75% of their net income to shareholders. This indicates a tendency for Agricultural Plantation companies to allocate profits for reinvestment, expansion, or maintaining the availability of funds for long operational cycles. The DPR value range between 0 and 0.6852 indicates that there are companies that do not distribute dividends at all throughout the observation period and there are also companies that distribute high dividends, up to 68.52% of profits. The standard deviation is almost as large as the average (0.2043) reflecting a large variation in dividend policies between conservative companies and companies that are very aggressive in distributing dividends. This shows that the dividend policy of the agribusiness sector is not uniform and is greatly influenced by

internal company conditions such as profitability, liquidity, leverage, and macro conditions such as interest rates.

Regression Model Estimation

Panel data regression analysis was conducted to determine the effect of profitability (ROA), liquidity (CR), leverage (DER), and interest rates (IR) on dividend policy (DPR) in an Agricultural Plantation company. Three models were used to obtain the most accurate estimates: the Common Effect Model (CEM), the Fixed Effect Model (FEM), and the Random Effect Model (REM).

CEM Test

The Common Effect Model assumes that all firms behave identically, regardless of individual differences. The CEM regression results are shown in Table 2 below:

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.253427	0.125102	-2.025759	0.0450
ROA	1.550358	0.374830	4.136167	0.0001
LNCR	0.029505	0.029452	1.001781	0.3185
LNDER	-0.002282	0.022331	-0.102200	0.9188
LNIR	0.220549	0.077628	2.841097	0.0053

Root MSE	0.178813	R-squared	0.228787
Mean dependent var	0.207103	Adjusted R-squared	0.202864
SD dependent var	0.204442	SE of regression	0.182531
Akaike info criterion	-0.524305	Sum squared residual	3.964795
Schwarz criterion	-0.410584	Log likelihood	37.50692
Hannan-Quinn criter.	-0.478109	F-statistic	8.825602
Durbin-Watson stat	1.233349	Prob(F-statistic)	0.000003

Based on the test results in Table 2, the panel data regression equation was obtained, namely as follows:
DPR=-0.2534+1.5504(ROA)+0.0295(CR)-0.0023(DER)+0.2205(IR)
A constant value of -0.2534 indicates that without any contribution from the independent variables, the dividend payout rate is negative, indicating that the DPR is highly dependent on the company's financial condition. This reflects that without adequate financial performance, the company lacks the capacity to pay dividends.

The ROA variable has a positive coefficient of 1.5504 and is significant at the 1% level (p = 0.0001). This indicates that companies with high profitability tend to have a greater ability to distribute dividends. This supports the bird-in-the-hand theory that investors value dividends more than real earnings.

The CR variable has a positive but insignificant coefficient (p = 0.3185). This means that a company's liquidity level is not a primary consideration in determining dividend size. This aligns with the characteristics of the agribusiness sector, which tends to hold cash for operational needs and long-term production cycles, so cash is not always allocated for dividends.

The DER variable was also insignificant (p = 0.9188), indicating that the debt financing structure does not affect dividend policy. Agricultural plantation companies generally have moderate leverage, so debt burden is not a limiting factor.

The IR variable has a significant positive effect (p = 0.0053). Increasing interest rates encourage companies to pay higher dividends to maintain investment attractiveness compared to fixed-income instruments.

The R-squared value of 0.2288 indicates that this model is only able to explain about 22.88% of the variation in the DPR. Prob(F-statistic) = 0.000003 indicates a simultaneous significant model, but the Durbin-Watson value of 1.23 indicates the potential for mild autocorrelation.

FEM Test
The Fixed Effect Model considers differences in characteristics between companies that remain constant throughout the study period, such as managerial structure, agribusiness operating cycles, or internal policies. The FEM estimation results are presented in Table 3 below:

Table 3. FEM Test Results

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.264768	0.118235	-2.239349	0.0275
ROA	1.554957	0.526768	2.951885	0.0040
LNCR	0.015743	0.033162	0.474715	0.6361
LNDER	-0.041896	0.036641	-1.143416	0.2558
LNIR	0.226825	0.070392	3.222298	0.0017

Effects Specification			
Cross-section fixed (dummy variables)			

Root MSE	0.134332	R-squared	0.564752
Mean dependent var	0.207103	Adjusted R-squared	0.430473
SD dependent var	0.204442	SE of regression	0.154286
Akaike info criterion	-0.693127	Sum squared residual	2.237605
Schwarz criterion	-0.010801	Log likelihood	72.97389
Hannan-Quinn criter.	-0.415950	F-statistic	4.205818
Durbin-Watson stat	2.184124	Prob(F-statistic)	0.000000

Based on the test results in Table 3, the panel data regression equation was obtained, namely as follows:
DPR= -0.2648+1.5550(ROA)+0.0157 (CR)-0.0419 (DER)+0.2268 (IR)

The constant value of -0.2648 indicates that the DPR base without independent variables remains at a negative level, consistent with the CEM model. The ROA coefficient remains positive and significant (p = 0.0040), confirming that profitability is the most powerful factor influencing dividend policy. High profitability reflects good fundamental performance, allowing a company to distribute larger dividends.

The CR variable remains insignificant (p = 0.6361). This result indicates that although liquidity is important in company operations, it is not the primary basis for dividend payment decisions. The DER variable is also insignificant (p = 0.2558). This confirms that leverage is not a determinant of dividend policy for Agricultural Plantation. The IR variable remains significantly positive (p = 0.0017). Investors tend to compare dividend yields with interest rates. When interest rates rise, companies are encouraged to increase dividends to maintain investment attractiveness.

In terms of the model, FEM has an R-squared of 0.5647, significantly higher than CEM, indicating that FEM is able to explain more than half of the variation in DPR among companies. Durbin-Watson = 2.18 indicates no autocorrelation.

REM Test
The Random Effects Model assumes that differences in firm characteristics are random and uncorrelated with the independent variables. The REM estimation results are shown in Table 4 below:

Table 4. REM Test Results

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.267123	0.112871	-2.366620	0.0196
ROA	1.503781	0.416610	3.609568	0.0004
LNCR	0.020651	0.029356	0.703471	0.4831
LNDER	-0.011887	0.024963	-0.476198	0.6348
LNIR	0.230620	0.067339	3.424731	0.0008

Effects Specification			
		Elementary School	Rho
Random cross-section		0.098228	0.2884
Idiosyncratic random		0.154286	0.7116

Weighted Statistics			
Root MSE	0.151819	R-squared	0.212341
Mean dependent var	0.119950	Adjusted R-squared	0.185865
SD dependent var	0.171340	SE of regression	0.154976
Sum squared residual	2.858082	F-statistic	8.020131
Durbin-Watson stat	1.708224	Prob(F-statistic)	0.000009

Based on the test results in Table 4, the panel data regression equation was obtained, namely as follows:
DPR= -0.2671+1.5038(ROA)+0.0207 (CR)-0.0119 (DER)+0.2306(IR)
The ROA coefficient remains significantly positive (p = 0.0004), indicating that profitability consistently contributes positively to dividend policy across all models. This means that profitability is a

fundamental factor in the dividend policy of Agricultural Plantation companies.

The CR variable is insignificant (p = 0.4831), confirming that liquidity is not a determinant of dividends in Agricultural Plantation companies. The DER variable is also insignificant (p = 0.6348), indicating that the company's debt ratio is not a factor influencing dividend distribution. The IR variable remains positive and significant (p = 0.0008). This indicates that increasing interest rates provide an incentive for companies to distribute higher dividends to maintain investor appeal.

weighted R-squared value of 0.2123 indicates that the model's overall explanatory power is lower than that of FEM. The Durbin-Watson value of 1.70 indicates no significant autocorrelation, although this value is slightly lower than that of FEM.

Panel Data Regression Model Selection
Chow Test
The Chow test is used for test election between the Common Effect model and the Fixed Effect model in Panel data analysis. Specifically, this test aims to determine whether there are significant differences between individuals (companies) that must be accounted for in the model. The results of the Chow test are shown in Table 5:

Table 5. Chow Test Results

Effects Test	Statistics	df	Prob.
Cross-section F	2.902315	(25.94)	0.0001
Cross-section Chi-square	70.933952	25	0.0000

These results indicate that there are significant and non-negligible differences in characteristics between Agricultural Plantation companies. Thus, Fixed Effect Model (FEM) is more appropriate to use than Common Effect Model (CEM). The Chow test confirms that the panel data structure has strong fixed effects, reflecting inter-firm heterogeneity such as operational strategies, internal management policies, and different business risks.

The test results show a probability value for the F statistic of 0.0001 and a Chi-square of 0.0000. Because both probability values are smaller than the 5% significance level, the null hypothesis (H_0) stating that the Common Effect Model is more appropriate is rejected. Therefore, there are statistically significant differences in individual effects between companies, so the more appropriate model to use at this stage is the Fixed Effect Model.

Hausman test

The Hausman test is used to select the best model between the Fixed Effect Model (FEM) and the Random Effect Model (REM). Based on the results of the Hausman test, Table 6 is as follows:

Table 6 Hausman Test Results

Test Summary	Chi-Sq. Statistic	Chi-Sq. df	Prob.
Random cross-section	4.750414	4	0.3139

The Hausman test results indicate that the REM model is more appropriate than the FEM model. This indicates that differences in

characteristics between agricultural plantation companies are random and uncorrelated with independent variables such as ROA, liquidity, leverage, and interest rates.

Thus, based on the Hausman Test, the Random Effect Model (REM) is considered more efficient and consistent to use for estimation.

The Hausman test results yield a Chi-square value of 4.7504 with a probability of 0.3139. Since the probability value is greater than 0.05, the null hypothesis (H_0) cannot be rejected. This means there is insufficient evidence that the individual company effect is correlated with the independent variable. Thus, the Random Effect Model is considered more appropriate to use than the Fixed Effect Model. Economically, these results indicate that differences in characteristics between Agricultural Plantation companies are random and not tied to financial variables such as profitability, liquidity, leverage, and interest rates.

Lagrange Multiplier Test

The LM (Breusch–Pagan) test was conducted to determine whether the Random Effect Model (REM) was better than the Common Effect Model (CEM).

Table 7. Lagrange Test Results Multiplier

	Hypothesis Test		
	Cross-section	Time	Both
Breusch-Pagan	15.63436	2.171713	17.80607
	(0.0001)	(0.1406)	(0.0000)

This result show that there is an effect random in company panel data Agricultural Plantation. Meaning, characteristics companies that do not observed own influence to the model so that the Random Effect Model (REM) is more worthy used compared to the Common Effect Model (CEM).

The LM test results show that mark the probability in the Breusch–Pagan statistic for the cross-section is 0.0001, and probability for testing the combined value (both) is 0.0000. Because both are less than the 5% significance level, the null hypothesis (H_0) is rejected. Thus, there is a significant random effect in the model, making the Random Effects Model more appropriate than the Common Effects Model. This result is consistent with the previous Hausman Test, which also leads to the selection of REM as a more efficient and consistent model.

Based on the results of the three tests, it can be concluded that the most appropriate panel regression model used in this study is the Random Effect Model (REM). The Chow Test shows that the model with individual effects is more appropriate than the model without effects, the Hausman Test indicates that the effects are random, and the LM Test confirms that the random effects are statistically significant in influencing the model. Thus, all test results support each other that REM is the most appropriate model to use to analyze the effect of profitability, liquidity, leverage, and interest rates on dividend policy in Agricultural Plantation companies during the study period.

Classical Assumptions
Normality Test

The normality test aims to determine whether the residuals from the REM model are normally distributed. The test is performed using the Jarque–Bera statistic, which is displayed along with a histogram of standardized residuals.
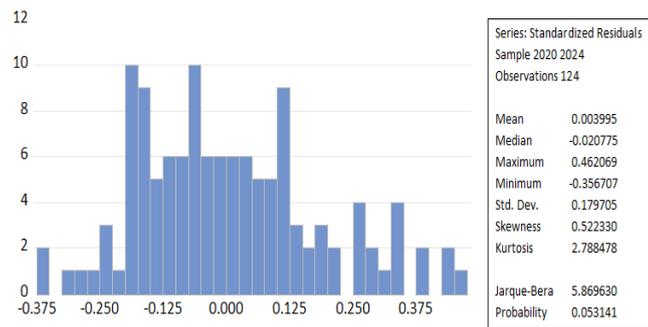

Figure 1 Normality Test Results

Based on output EViews, the Jarque -Bera value is 5.8696 with a probability value of 0.0531. This probability value is greater than 0.05, so the residual normally distributed. Visually, the residual histogram shows a distribution shape that is close to a bell (bell-shaped), with a skewness value of 0.5223 indicating a small skew to the right and a kurtosis of 2.7885 which is close to the normal kurtosis value of 3. This condition indicates that the deviation of the residual distribution from normality is relatively small and still within reasonable limits for regression analysis. Thus, it can be concluded that the residuals of the REM model are normally distributed, so that the assumption of normality in the regression model has been met.

Multicollinearity Test

multicollinearity test determines whether there is a strong linear relationship between the independent variables in the model. If there is high multicollinearity, the regression coefficients will become unstable and difficult to interpret.

Table 8. Multicollinearity Test Results

Variable	Coefficient Variance	Uncentered VIF	Centered VIF
C	0.012740	22.53320	NA
ROA	0.173564	2.660774	1.236531
LNCR	0.000862	1.792338	1.332050
LNDER	0.000623	1.498910	1.439285
LNIR	0.004535	20.15134	1.102145

Testing is done using Variance Inflation Factor (VIF). Based on output EViews, the centered VIF values for each independent variable are as follows: ROA of 1.2365, CR of 1.3321, DER of 1.4393, and IR of 1.1021. All VIF values are well below the critical limit of 10, and are even in the low category because they are around 1-1.5.

This low VIF value indicates that there is no strong linear correlation between the independent variables in the model. In other words, changes in one independent variable are not predominantly explained by the combination of the other independent variables. This is important for the resulting regression coefficients to be stable and interpretable economically. Based on these results, it can be concluded that there is no multicollinearity problem in the REM model, thus meeting the multicollinearity-free assumption.

Heteroscedasticity Test

The heteroscedasticity test is performed to determine whether the residual variance is constant (homoscedastic) or varies (heteroscedastic) across observations. The test is performed using the Glejser test, which regresses the absolute value of the residual against the independent variables.

Table 9. Heteroscedasticity Test Results

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.106789	0.069193	-1.543352	0.1254
ROA	0.619608	0.207315	2.988735	0.0034
LNCR	-0.014153	0.016290	-0.868846	0.3867
LNDER	0.006181	0.012351	0.500444	0.6177
LNIR	0.141868	0.042935	3.304234	0.0013

Glejser test results show that ROA variable has mark probability of 0.0034 and the IR variable has mark probability of 0.0013, both more small of 0.05, while CR and DER have mark the probabilities are 0.3867 and 0.6177 respectively which are higher big of 0.05. Significant probability values on ROA and IR indicate that mark absolute residual is influenced by both variables said, so that there is indication heteroscedasticity in the initial REM model.

For overcome problem heteroscedasticity and obtain a more accurate estimator. efficient, regression Then estimated repeat use Generalized Least Squares (GLS) method with EGLS Panel approach (Period SUR) as in table 10 below:

Table 10. GLS SUR Hetroscedasticity Estimates

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.209743	0.122305	-1.714920	0.0890
ROA	1.320550	0.386394	3.417629	0.0009
LNCR	0.051488	0.027833	1.849907	0.0668
LNDER	-0.007893	0.023284	-0.338968	0.7352
LNIR	0.186425	0.077473	2.406323	0.0177

Weighted Statistics			
Root MSE	0.986131	R-squared	0.225924
Mean dependent var	0.889248	Adjusted R-squared	0.199905
SD dependent var	1.121714	SE of regression	1.006635
Sum squared residual	120.5843	F-statistic	8.682928

| Durbin-Watson stat | 1.880708 | Prob(F-statistic) | 0.000003 |

This GLS SUR estimate produce standard error that has been corrected to heteroscedasticity, with The Prob(F-statistic) value is 0.000003 and the Durbin-Watson value is 1.8807, which shows that the model remains significant in a way simultaneously and have more residuals stable. By correcting through GLS SUR estimation, the heteroscedasticity problem in the model has been minimized. Therefore, it can be stated that the final model used in the hypothesis testing has practically met the homoscedasticity assumption.

Autocorrelation Test

The autocorrelation test aims to determine whether there is a correlation between residuals from one period and residuals from another period. High autocorrelation can lead to inefficient regression coefficient estimates. The autocorrelation test is performed by examining the Durbin-Watson (DW) value in the REM model.

Table 11. Autocorrelation Test Results

Autocorrelation Test	
Durbin-Watson stat	1,7082

Based on the EViews output, the Durbin-Watson statistic for the REM (weighted) model is 1.7082. This value is around 2, which is generally interpreted as indicating the absence of serious autocorrelation in the model. A DW value between 1.5 and 2.5 is generally considered safe enough to indicate that the residuals are independent. Therefore, it can be concluded that the REM model does not contain autocorrelation, thus meeting the assumption of residual independence.

Hypothesis Testing

Hypothesis testing is conducted to determine the extent of the model's ability to explain variations in dividend policy, whether the independent variables jointly influence dividend policy, and how each variable influences partially.

Coefficient of Determination (R²)

The coefficient of determination (R²) is used to measure how much of the variation in the dependent variable can be explained by the independent variables in the model. Based on the REM output, the R² value is 0.2123 and the adjusted R² is 0.1859. This means that approximately 21.23% of the variation in DPR in the Agricultural Plantation company during the study period can be explained by variations in profitability, liquidity, leverage, and interest rates included in the model, while the remaining approximately 78.77% is explained by other factors outside the model, such as company growth policy, ownership structure, company size, profit stability, and other managerial considerations outside this study.

The adjusted R^2 value, which is not significantly different from R^2, indicates that the addition of independent variables to the model is still relevant and does not cause overfitting symptoms. Although the R^2 value [is] moderate, this is quite normal in financial research using cross-period company data, as dividend policy decisions are generally influenced by many non-financial factors and internal policies that are difficult to observe. Therefore, the REM model is considered to have sufficient explanatory power for use in further analysis.

Simultaneous Test (F Test)

The F-test is used to determine whether all independent variables in the model simultaneously have a significant effect on the DPR. Based on the REM estimation result, the F-statistic value is 8.0201 with a probability (Prob F-statistic) of 0.000009. This probability value is much smaller than the 5% significance level (0.05), so the null hypothesis (H_0) which states that all regression coefficients are simultaneously equal to zero is rejected.

These results indicate that profitability, liquidity, leverage, and interest rates collectively have a significant influence on the dividend policy of Agricultural Plantation. Economically, these findings demonstrate that management's decision to determine the amount of dividends to be paid does not depend solely on a single financial aspect, but rather is the result of the interaction of several financial indicators and macroeconomic conditions (in this case, interest rates). Therefore, the panel regression model used is suitable for explaining the relationship between the independent variables and the DPR simultaneously.

Partial Test (t-Test)

The t-test is used to determine the effect of each independent variable on DPR separately by controlling for other variables in the model. Based on the REM estimation results, the regression coefficients and probability values (p-values) are as follows: constant -0.2671 (p = 0.0196), ROA of 1.5038 (p = 0.0004), CR of 0.0207 (p = 0.4831), DER of -0.0119 (p = 0.6348), and IR of 0.2306 (p = 0.0008).

The profitability variable (ROA) has a positive coefficient of 1.5038 and is significant at the 1% level (p = 0.0004 < 0.01). This indicates that every one-unit increase in ROA will increase DPR by 1.5038, assuming other variables remain constant. Economically, this means that the higher the ability of an Agricultural Plantation company to generate profits from assets, the greater the company's opportunity to distribute dividends to shareholders. This result is consistent with signaling and bird-in-the-hand theories, where high profits serve as a positive signal to investors and encourage companies to maintain their reputation through dividend payments.

The liquidity variable (CR) has a positive coefficient of 0.0207, but is not statistically significant (p = 0.4831 > 0.05). This means that, partially, the company's liquidity level is not proven to have a significant effect on dividend policy. Economically, this result can be interpreted as meaning that even though the company has the ability to meet short-term obligations, this is not necessarily the primary basis for determining the dividend amount. Agricultural Plantation companies tend to retain cash for working capital needs and long production cycles, so liquidity is more directed towards maintaining operational continuity than for dividend payments.

Leverage variable (DER) shows a negative coefficient of -0.0119, but it is also insignificant (p = 0.6348 > 0.05). This indicates that the debt level of the Agricultural Plantation company does not have a significant impact on the DPR. From an economic perspective, these results indicate that the debt financing structure in the agribusiness sector remains at a relatively safe level, so that interest expenses and debt repayment obligations are not large enough to suppress the company's ability to distribute dividends. In other words, management does not consider the level of leverage a primary factor in determining dividend policy.

The interest rate (IR) variable has a positive coefficient of 0.2306 and is significant at the 1% level (p = 0.0008 < 0.01). This

indicates that an increase in interest rates will increase the DPR. Economically, this result can be explained by the fact that when the benchmark interest rate increases, interest-based investment instruments (such as deposits and bonds) become more attractive to investors. To remain competitive, Agricultural Plantation companies are encouraged to offer attractive returns by increasing dividends to maintain the demand for their shares. Thus, interest rates act as an external factor that encourages companies to adjust their dividend policies.

Meanwhile, the constant of -0.2671 indicates that under extreme conditions, when all independent variables are zero, the DPR tends to be very low, even approaching zero. This constant is more technical and serves as the intercept of the regression line, but it still demonstrates that without adequate financial performance and interest rate conditions, companies lack the capacity to pay dividends.

Discussion

The Influence of Profitability on Dividend Policy
The results of the study indicate that profitability (ROA) has a positive and significant effect on dividend policy, with a coefficient of 1.5038 and a probability value of 0.0004 (<0.05). This indicates that the ability of Agricultural Plantation companies to generate profits is the main determinant influencing dividend distribution decisions. This finding empirically supports hypothesis H1.

Empirically, the results of this study align with numerous previous studies, such as those by Suharli (2006); Pasaribu et al. (2014); Sandy et al. (2015); and Sarumpaet & Suhardi (2019), which state that profitability has a positive effect on dividends. In the agribusiness context, profitability reflects a company's success in managing assets to generate profits, despite the sector being risky and capital-intensive. Companies with a high ROA have the flexibility to distribute dividends without hindering working capital requirements for the production cycle.

The Effect of Liquidity on Dividend Policy
The results showed that liquidity (CR) had a positive but insignificant effect on dividend policy, with a coefficient of 0.0207 and a p-value of 0.4831 (>0.05). Therefore, the second hypothesis (H2) was rejected, as liquidity had no significant effect.

However, the results of this study actually show the insignificance of liquidity. This finding aligns with research by Lanawati et al. (2015) and Pasaribu et al. (2014), which states that liquidity is not a primary factor in dividend policy. Instead, companies consider profitability and macroeconomic conditions such as interest rates more, as demonstrated by the findings of this research model.

The Effect of Leverage on Dividend Policy
The results show that leverage (DER) has a negative coefficient of -0.0119 but is not significant (p = 0.6348 > 0.05). The negative direction of the coefficient is still in line with the predictions of financial theory, but statistically there is insufficient evidence to state that changes in leverage partially affect the Dividend Payout Ratio (DPR) in the Agricultural Plantation companies in the sample. Thus, hypothesis H3, which states that leverage has a negative and significant effect on dividend policy, is rejected.

Empirically, these findings align with a cross-country study by Akpadaka et al. (2024), which reported that the relationship between leverage and dividend payout is not universal. According to the study, the effect of leverage can vary across countries and

sectors, and can even shift from negative to insignificant due to differences in industry structure and institutional environment. Other studies in emerging markets have also found that leverage tends to be negatively correlated with dividend policy; for example, Jabbouri's (2016) study in emerging markets in the MENA (Middle East and North Africa) region showed that companies with higher leverage tend to pay lower dividends.

The Effect of Interest Rates on Dividend Policy
The results show that the interest rate (LNIR) has a positive and significant effect on dividend policy, with a coefficient of 0.2306 and a p-value of 0.0008 (<0.05). This means that when the benchmark interest rate increases, the agricultural plantation companies in the sample tend to increase their Dividend Payout Ratio. This result is inconsistent with the fourth hypothesis (H4), which states that interest rates have a negative and significant effect.

This finding aligns with certain studies, such as those by Ait-Sahalia & Lesmel (2024), which found that under certain conditions, rising interest rates can actually increase a company's incentive to distribute dividends because the present value of retained earnings becomes lower due to the increased discount rate. Therefore, dividend payments can be a value-optimal action for shareholders.

CONCLUSION

Based on the analysis results, the following conclusions were obtained: 1) Profitability has a positive and significant effect on dividend policy; 2) Liquidity has a positive but insignificant effect on dividend policy; 3) Leverage has a negative but insignificant effect on dividend policy; 4) Interest rates have a positive and significant effect on dividend policy.

In general, this study concludes that the dividend policy of Agricultural Plantation companies is more sensitive to profitability and macroeconomic pressures (interest rates) than other internal variables such as liquidity and leverage. This finding reinforces the literature that dividend policy is multifactorial and depends on the industry context.

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