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Correlation Among Dividend Policy and Market Value of Equity In Banking Industry: A Residual Income Approach

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ABSTRACT

This research aims to examine the correlation between dividend payment and the market value of equity of banking firms in the Indonesia Stock Exchange-listed company. The sample includes firms focused on the banking sector period between 2011 to 2020. This study employs the residual income approach based on Ohlson's (1995) valuation model. The models are tested using panel regression analysis. Moreover, additional tests are used to ensure the main results. The finding shows that dividend payment has an insignificant effect on the market value of equity. The analysis states that the use of Ohlson's (1995) model and the firm's book value are statistically significant factors in determining the market value of equity. The study suggests that the dividend irrelevance hypothesis is valid in the case of banking firms on IDX. This paper encourages empirical evidence about the relationship between dividend payment and market value on Indonesia Stock Exchange, more importantly, in the banking firms.

ABSTRAK

Tujuan penelitian ini untuk mengetahui korelasi antara pembayaran dividen dan nilai pasar saham pada perusahaan perbankan di Bursa Efek Indonesia. Sampel penelitian ini berfokus pada perusahaan perbankan selama periode 2011 sampai 2020. Penelitian ini menggunakan pendekatan residual income oleh model valuasi Ohlson's (1995). Model penelitian menggunakan analsis regresi panel. Selanjutnya, pengujian tambahan dilakukan untuk memastikan hasil pengujian utama. Temuan penelitian menunjukan bahwa pembayaran dividen tidak memiliki pengaruh terhadap nilai pasar saham. Hasil analisis menyatakan model Ohlson's (1995) dan nilai buku perusahaan secara statistik berpengaruh terhadap faktor penentu nilai pasar saham. Penelitian ini membuktikan teori ketidakrelevanan dividen berlaku dalam kasus perusahaan perbankan di BEI. Studi ini mendorong bukti empiris mengenai hubungan antara pembayaran dividen dan nilai pasar di BEI, khususnya pada perusahaan bank.

1. Introduction

Dividend policy is one of the topics that is widely researched in the context of corporate finance. Companies operating in certain industries apply the discount dividend model or dividend policy and enact it as an indicator of the company's financial performance. An increase in dividend payments is seen as a positive signal. On the other hand, a decrease in the dividend payout ratio is a negative indicator of the company's future profit prospects; thus, it can impact the increase or decrease in the company's stock price (Sattar et al., 2017; Singh & Tandon, 2019).

The long-term goal of corporate managers is to increase the company's value, which means maximizing shareholders' wealth. According to Fama & French (2001) achieving a company's optimal value can be accomplished by implementing the financial management function - making one financial decision will affect other financial decisions, impacting its market value. Decisions regarding company dividends directly affect the company's market value and other financial decisions (one of which is investment decisions) affect company value (which indirectly) affect company value as an impact on dividend payment decisions (Juhandi et al., 2013).

Research on dividend payout decisions and their impact on the company's market value has been studied extensively by financial experts. In this discussion, the authors divided dividends into two bases when discussing the theme of the correlation between dividend payments and the company's market value. On the one hand, experts believe that company dividends and market value are independent of each other; that is why it is called the irrelevance theory. While on the other hand, the authors suggest that dividend payments are related to the company's market value, known as the relevance theory. These bases are divided into two factions; one argues that the correlation of dividend-market value has a positive value (bird-in-hand theory, signalling theory, agency cost), and the other faction has a negative opinion (tax-related effect hypotheses).

Many of the previous studies have excluded banking companies from the research analysis because banking has several unique characteristics different from other sector companies (A. R. Budagaga, 2020). Istiono & Santosi (2021) stated that dividend policy can have a significant or insignificant effect on firm value. Another study by Shrestha (2020) delivered the results that cash dividends have a significant negative effect on stock prices, while stock dividends positively affect stock prices. Little is known about the impact of dividend payments on market value and the model of explanatory variables from other industries that answer these problems. Therefore this problem also applies to the banking sector in developing countries, in this case, Indonesia.

Research is required to determine the impact of cash dividend payments on the market value of banking companies in Indonesia. The objectives of this research include, first, discovering how dividend payments (excluding residual income) affect the market value of banking. Second, to discover how is the application of dividend policy theory in the banking industry in Indonesia in explaining the relationship between dividend policy and firm value, and third, to examine the impact of cash dividend payments on the company's market value by applying the residual income model approach developed by (Ohlson, 1995).

With the research on dividend policy models, it is hoped to provide an overview of dividend policy behavior, particularly in the banking sector which is still largely unexplored. The novelty of this study contributes to the financial literature in two aspects. First, this study rarely examines the impact of dividend policy on the banking sector in the long term. The financial sector, especially banks, dominates around 37% of the composition of other sectors on the Indonesia Stock Exchange (IDX Composite, 2021). Second, this study examines issues related to dividends using the residual income model (an accounting model) method that is widely accepted among academics in different accounting fields in previous empirical studies using the dividend discounted model (DDM), capital asset pricing model (CAPM), and event studies.

The following section discusses the theory of dividend policy, literature review, and hypothesis development. Furthermore, in the third part, the research method is stated, followed by the results and discussion in the fourth part Finally, the conclusions of this paper are declared in the last section.

2. Literature Review and Hypothesis Development

2.1. Literature Review

Irrelevance Theory

The irrelevance theory, one of the important topics studied by Miller & Modigliani (1961), argued that the company's dividend policy has no role in increasing or decreasing the company's market value. In other words, regardless of how much managers focus on improving the company's dividend policy, there is no particular form of dividend policy that can improve shareholders' wealth; this is known as the dividend irrelevance theory.

The logic behind this theory is that the market value of a firm is fundamentally determined by the present value of the investment's future cash inflows, which are discounted at the required rate of return. In perfect market conditions, investors who do not receive dividends in a certain period can create their dividends by selling shares. Therefore they can gain the same amount as what they will obtain as dividends. This income is not subject to additional taxes or transaction fees and has no impact on the company's value. Based on this argument, the company cannot increase its company's value by implementing a certain dividend policy.

Relevance Theories

Bird-in-hand Theory

This theory suggests that investors prefer income in the form of dividends rather than capital gains because dividends have lower risk than capital gains. This condition occurs because the distribution of dividends is considered to reduce the risk of uncertainty encountered by investors. Bird-in-hand theory was stated by Gordon (1959) and Walter (1963).

Signalling Theory

The important value of the signal theory is that company management tends to have private information about the company's current and future conditions than information held by outsiders (information asymmetry). Managers use dividend information as useful information to the market about the company's current condition and future earnings and growth. This condition is a signal where a higher dividend gives a signal that the company predicts good profits in the future (Miller & Modigliani, 1961).

Agency Theory

One of the irrelevance theory assumptions is that in perfect market conditions, there is no conflict of interest between managers and shareholders (A. Budagaga, 2017). However, in practice, this assumption is highly doubtful. According to agency theory, corporate managers may divert income for personal utility or be recognized as non-profitable profits, which provide separate benefits for corporate managers. As a result, shareholders prefer dividends over profits, and companies with higher dividend payouts will increase their firm value by reducing the funding available to managers.

Tax Preference Theory

Investors prefer stocks when compared to low dividends or no dividends at all. Income on dividends is taxed directly at a higher tax rate than capital gains, and high dividend payouts will increase taxable income to shareholders. According to Black & Scholes (1974) investors will consider the trade-off value between the benefits of high dividend payments or capital gains; therefore, investors tend to opt for companies that have a dividend strategy that meets the personal needs of each investor.

Residual Dividend Theory

In the residual dividend theory, the company decides on a dividend policy after all profitable investments have been fully funded. Thus, the dividends paid are "residual" after all profitable investment prospects have been funded (Wijayanto & Putri, 2018).

2.2. Hypothesis Development

From the description of the previous literature and the theoretical background on dividend policy, Glen et al. (1995) stated that emerging markets have differences in nature and characteristics. Very little is known about dividend behaviour and its impact on the company's market value in developing countries, including Indonesia.

A study by A. R. Budagaga (2020) stated that the dividend payout ratio and dividend yield do not affect the banking market value in MENA emerging markets. The study results consistently refer to the residual dividend theory, which is the core of the irrelevance theory by Miller and Modigliani. Subsequently, a study by A. Budagaga (2017) stated a positive correlation between dividend payments and firm value. These results support agency theory compared to signal theory in companies listed on the Istanbul Stock Exchange. Another study by Shrestha (2020) delivered the results that cash dividends have a significant negative effect on stock prices, while stock dividends positively affect stock prices.

Concerning dividend policy and firm value Istiono & Santosi (2021) stated that dividend policy can have a significant or insignificant effect on firm value. The widely used policy model is residual dividend policy. Furthermore, a study by SI Fahlevi (2019) revealed that dividend policy is irrelevant in increasing the company's market value; this study proves the theory of irrelevance of dividends proposed by Miller & Modigliani (1961).

Another study by (Ainun, 2019) showed that dividend policy, profitability, liquidity, and company size affect stock prices. Research by Phan & Tran (2019) showed that dividend yields mitigate the risk of stock price volatility in the Vietnamese stock market. Then, a literature study conducted by Zainudin et al. (2018) suggested that dividend policy strongly influences stock price volatility in industrial product companies in Malaysia. Almanaseer (2019) stated a negative correlation between stock price volatility, dividend yield, and dividend payout ratio.

Previous empirical studies have eliminated banking companies from the research sample of unique company characteristics and financial statements. Therefore, there is no more in-depth study on dividend policy in the banking sector. In Indonesia, the weight of the corporate sector is dominated by the banking sector, observed from the weight of the banking sector reaching 37% compared to other sectors (IDX Composite, 2021). From the problems described above, the hypothesis for this research is described as follows:

H1: Payment of cash dividends affects the market value of bank companies in Indonesia.

3. Research Methods

This research sample retrieved data from banking sector companies listed on the Indonesia Stock Exchange from 2011 to 2020. The companies have complete financial data and were available throughout the study period. Company data was obtained from valid and trusted sites such as Bloomberg, CEIC, IDX, and the company's annual financial statements. The total population collected was 46 banking companies. The research sample that fulfilled the research criteria was obtained from as many as 25 companies from 2011 to 2020**.**

3.1. Variable Measurement

Dependent Variable

This study uses the market value of equity (market capitalization value) of the bank in the period (t) as the dependent variable, which MVE denotes with the formula for calculating the closing price of shares multiplied by the number of the company's outstanding shares. This measurement is consistent with research by Al-Hares et al. (2012), A. R. Budagaga (2020) and Hand & Landsman (1999).

Main Independent Variable

This study uses 2 variables as proxies for cash dividend decisions, i.e., dividend payout ratio and dividend yield, which DPR and DY denote as the main independent variables outside of the explanatory variables. Then, the explanatory variables in this research model are the book value of shares and abnormal earnings (residual income). DPR is calculated by the formula of dividends per share divided by earnings per share. Meanwhile, dividend Yield is calculated by the formula of dividends per share divided by the price per share. The book value calculation is calculated by the formula for total equity divided by the number of outstanding shares. Abnormal earnings (residual income) are calculated by earning per share minus the level of risk-free assets after being multiplied by the previous year's book value (RI,t = (Xt,t – ((ri * BVt-1))) (A. R. Budagaga, 2020; Kuo, 2015; Lee et al., 2012, 2014). In determining the discount rate, the rate of return on risk-free assets will be

used; this study uses a 10-year government bond as a proxy for the risk-free rate, which follows research conducted by A. R. Budagaga (2020) and Lee et al. (2012) which used the treasury bill rate as a proxy for risk-free assets. Then, the size of the banking company will be included in the control variable, which is measured by total bank assets at the end of each year.

3.2. Research Model

The research model of this study uses regression analysis of panel data using statistical software. This study uses the residual income model (RIM) developed by Ohlson (1995) (also known as the Ohlson equity valuation model). This model states a simple concept, i.e., the company's market value is a function of the book value and future residual income. Ohlson (1995) developed RIM using book value, future earnings, and dividends.

In this study, the residual income model uses the model equation (Ohlson, 1995) which is expanded by the equation model below with the aim of testing the impact of cash dividend payments on the market value of bank companies listed on the IDX. There are 6 (six) equation models formed as follows:

$$\textit{Model of Panel A: } MVE_{i,t} = \alpha + \beta_1 DY_{i,t} + \beta_2 DPR_{i,t} + \varepsilon_{i,t} \quad (1)$$

$$\textit{Model of Panel B: } MVE_{i,t} = \alpha + \beta_1 BV_{i,t} + \beta_2 RI_{i,t} + \beta_3 DPR_{i,t} + \beta_4 Size_{i,t} + \varepsilon_{i,t} \quad (2)$$

$$\textit{Model of Panel C: } MVE_{i,t} = \alpha + \beta_1 BV_{i,t} + \beta_2 RI_{i,t} + \beta_3 DY_{i,t} + \beta_4 Size_{i,t} + \varepsilon_{i,t} \quad (3)$$

$$\textit{Model of Panel D : } SR_{i,t} = \alpha + \beta_1 DY_{i,t} + \beta_2 DPR_{i,t} + \varepsilon_{i,t} \quad (4)$$

$$\textit{Model of Panel E: } SR_{i,t} = \alpha + \beta_1 BV_{i,t} + \beta_2 RI_{i,t} + \beta_3 DPR_{i,t} + \beta_4 Size_{i,t,} + \varepsilon_{i,t\,t} \quad (5)$$

$$\textit{Model of Panel F : } SR_{i,t} = \alpha + \beta_1 BV_{i,t} + \beta_2 RI_{i,t} + \beta_3 DY_{i,t} + \beta_4 Size_{i,t} + \varepsilon_i \quad (6)$$

First, the average of all research variables from 2011 to 2020 was calculated to answer this research. Subsequently, followed by the equation (1) model, the company's market value was regressed with dividend yield and dividend payout ratio to identify the two independent variables and the dependent variable. Then, following the procedure, the equation model was expanded to register explanatory variables and control variables, i.e., Book value, residual income, and company size. Furthermore, a re-regression analysis was conducted to examine the impact of these variables in explaining the correlation between market value and dividend policy.

4. Results and Discussion

The table below summarizes the summary statistics (mean, standard deviation, maximum, minimum, skewness, and kurtosis) for the variables used in this study. The panel data obtained were 25 bank companies that fulfilled the research criteria with 250 observations during the period 2011 to 2020. As seen from the data below, the average dividend pay-out ratio (DPR) is 0.1610, which shows that banks distribute 16% of the company's profits as dividends on average. Meanwhile, the average dividend yield (DY) is 0.013 out of 25 banks.

Table 1. Descriptive Statistics Results

	MVE	SR	BV	RI	DY	DPR	SIZE
Mean	35281475	0.128131	1427.247	270.7902	0.013790	0.161056	199377.1
Median	12031040	0.000000	929.2371	35.23072	0.000000	0.000000	91707.46
Maximum	5.37E+08	4.227273	7562.801	7272.614	0.112318	1.758117	1509271.
Minimum	317879.1	-0.55789	8.658380	-293.1292	0.000000	0.000000	2963.000
Std. Dev.	77340503	0.565829	1556.241	823.7444	0.019149	0.217535	301022.8
Skewness	4.336924	3.697459	1.642643	5.848907	1.839905	2.278225	2.352627
Kurtosis	23.51543	22.06555	5.372303	42.74470	7.445095	13.64563	8.180458
Observations	250	250	250	250	250	250	250

Notes: MVE= Market Value of Equity, SR= Stock Return, BV= Book Value, RI= Residual Income. DPR= Dividend Payout Ratio, DY= Dividend Yield, Size= Total Asset (Company Size).

4.1. Testing of Classical Assumption (*Ohlson Model*)

Gujarati (2009) in the book by Ajija et al. (2011) stated that panel data has another advantage, i.e., it has the implication that classical assumption testing does not have to be performed; thus, panel data does not require testing of classical assumptions such as normality or autocorrelation. The normality test is only performed if the number of observations is less than 30. However, if the number of

observations is more than 30, there is no need for observations because the distribution of the sampling error term is close to normal (Ajija et al., 2011).

According to Tri Basuki (2016), the basic testing of the classical assumption test is a classical assumption test in multiple linear regression with the OLS approach including linearity test, autocorrelation test, heteroscedasticity, multicollinearity test, and normality test. However, not all tests need to be performed in panel data regressionThe discussion section should not merely restate the findings reported in the result section or report additional findings that have not been discussed earlier in the article. The focus should instead be on highlighting the broader implications of the study's findings and relating these back to previous research.

Tabel 2. Summary of classical assumption test results (Ohlson Model)

Classical Assumption	**Panel A**	**Panel B**	**Panel C**
Multicollinearity	Fulfilled (0,791)	Fulfilled (0,112-0,734)	Fulfilled (0,112 - 0,734)
Heteroscedasticity	ARCH-test (0,8856>0,05)	Harvey-test (0,0546-0,6954 > 0,05)	Harvey-test (0,0866 - 0,5755 > 0,05)
Autocorrelation	Breusch-Godfrey-test (0,3431>0,05)	Breusch-Godfrey-test (0,6248 > 0,05)	Breusch-Godfrey-test (0,6199 > 0,05)

In the model of panel A ($MVE_{i,t} = \alpha + \beta_1 DY_{i,t} + \beta_2 DPR_{i,t} + \varepsilon_{i,t}$), the classical assumption test was fulfilled on multicollinearity, heteroscedasticity and autocorrelation tests. The table shows that the results of the multicollinearity test are not greater than 0.8; thus, it can be concluded that there is no multicollinearity. Then, in the heteroscedasticity test, using the ARCH test, the probability value is 0.8856 > 0.05, and it can be concluded that there is no heteroscedasticity. Furthermore, the autocorrelation test performed with the Breusch-Godfrey test obtained a probability value of 0.3431 > 0.05 which means there is no autocorrelation.

In the model of panel B ($MVE_{i,t} = \alpha + \beta_1 BV_{i,t} + \beta_2 RI_{i,t} + \beta_3 DPR_{i,t} + \beta_4 Size_{i,t} + \varepsilon_{i,t}$), the classical assumption test was fulfilled on multicollinearity, heteroscedasticity and autocorrelation tests. The table shows that the results of the multicollinearity test ranged from 0.112 – 0.7234 and were not greater than 0.8; thus, it can be concluded that there is no multicollinearity. Then in the heteroscedasticity test, using the Harvey test, all variables have probability values ranging from 0.0546 – 0.6954 > 0.05, and it can be concluded that there is no heteroscedasticity. Furthermore, the autocorrelation test performed with the Breusch-Godfrey test obtained a probability value of 0.6248 > 0.05 which means that there is no autocorrelation.

In the model of panel C ($MVE_{i,t} = \alpha + \beta_1 BV_{i,t} + \beta_2 RI_{i,t} + \beta_3 DY_{i,t} + \beta_4 Size_{i,t} + \varepsilon_{i,t}$), the classical assumption test was fulfilled on multicollinearity, heteroscedasticity and autocorrelation tests. The table shows that the results of the multicollinearity test ranged from 0.112 to 0.7234 and were not greater than 0.8; thus, it can be concluded that there is no multicollinearity. Then in the heteroscedasticity test, using the Harvey test, all variables have probability values ranging from 0.0866 – 0.5755 > 0.05, and it can be concluded that there is no heteroscedasticity. Furthermore, the autocorrelation test performed with the Breusch-Godfrey test obtained a probability value of 0.6199 > 0.05 which means that there is no autocorrelation.

4.2. Analysis Results of Panel Regression (*Ohlson Model*)

The table 3 below shows the regression results regarding the correlation between dividend policy, market value, and how it affects banking companies, this table describes the appropriate panel model for each model made in this study. From panel data, 250 observations have been collected on banking sector companies listed on the Indonesia Stock Exchange during the 2011-2020 period. Based on the table of regression results of panel data on the 3-panel models created in this study, this study explains how the effect of dividend policy on the market value of equity. Panel A column explains how the effect of cash dividend payments proxied by the DPR and DY variables on the market value of equity (MVE). The correct model of panel A uses a random effect model based on the results of the Lagrange multiplier test. The DPR variable has a positive and significant effect on the prob value. 0.000 is less than 0.05.

Table 3. Regression Results (Ohlson Model)

Model Variables	**Panel Methods**					
	Panel A		**Panel B**		**Panel C**	
Model Effect	*Random Effects*		*Fixed Effects*		*Fixed Effects*	
Dependent Var.	MVE		MVE		MVE	
Independent Variables						
Symbols	**Coefficients**	**Prob.**	**Coefficients**	**Prob.**	**Coefficients**	**Prob.**
Constanta	20363243		-8367933		-7862722	
BV	-	-	-36984.92	0.0000*	-37056.56	0.0000*
RI	-	-	4924.438	0.0077*	4878.279	0.0086*
DPR	1.32E+08	0.0000*	16064387	0.0971	-	-
DY	-4.55E+08	0.1823	-	-	82017698	0.4879
SIZE	-	-	464.0215	0.0000*	469,3671	0.0000*
Lagrange Multiplier	206.7108 (0.0000*)		-		-	
Hausman Test	-		170.518 (0,000*)		171.2202 (0.0000*)	
F-Stat (Prob Fstat)	13.509 (0.0000*)		111.3375 (0.0000*)		110,1155 (0.0000*)	
R^2	9.86%		79.86%		93.31%	
Adjusted R^2	9.13%		79.53%		92.46%	
No. of observations			250			

Notes: MVE= Market Value of Equity, BV= Book Value, RI= Residual Income. DPR= Dividen Payout Ratio, DY= Dividen Yield, Size= Total Asset (Company Size). *p<0.05.

From the test results on the model of Panel A, the DPR variable has a significant positive effect on the market value of equity. Meanwhile, the DY variable does not affect the market value of equity. The market value of the equity is calculated based on the share price and the outstanding amount. Research by Bagiana & Agustina (2021) stated that companies with large market capitalization usually have large sizes both in terms of assets and profits; therefore, the higher market capitalization will increase dividend payments to shareholders. This finding shows that the higher the dividend payout ratio will increase the market value of equity. The large dividend payout ratio will attract investors to buy company shares, thereby increasing the market value of the company's equity. The results of this study are in line with research by Bagiana & Agustina (2021) which stated that market capitalization has a positive effect on dividend policy.

Then, in columns of panel B and panel C with the addition of explanatory variables with a residual income approach based on Ohlson (1995), book value variables, company size to see how it affects the market value of equity. The regression results show that the fixed effect model is the correct model for panel B and panel C based on the results of the Hausman test. The findings in panel B and panel C models show that book value, residual income, and firm size significantly affect the market value of equity. Meanwhile, the variables of dividend payout ratio (DPR) and dividend yield (DY) do not affect the market value of equity.

The regression results in panel B and panel C show that the book value variable significantly affects the market value of equity with a 5% confidence level. The regression coefficient of the book value variable is negative, which means that a decrease in book value will increase the market value of equity. Book value is calculated from the company's equity value divided by the number of shares outstanding. Book value has an important role in seeing the benefits of investment or the value of equity per share (Ibnu, 2021). The decrease in book value impacts the increase in the market value of equity. The company's book value reflects the company's intrinsic value, which is an important consideration for investors (Bagiana & Agustina, 2021). When stock prices fall, it will have an impact on decreasing the market value of equity; thus, it will impact the book value of the company. This shows that the book value is the investment price that must be issued to acquire an asset; therefore, it will affect the market value of the company's equity. Book value is a proxy in calculating future normal income. Projected company income in the future is an attraction for investors to invest, which impacts the market value of equity (SI Fahlevi, 2019).

Furthermore, the residual income variable has similar results to the book value variable with a positive and significant regression coefficient value on the market value of equity. Overall, these results are consistent with the residual income theory. This study indicates that the banking sector companies apply a residual dividend policy. This confirms that the residual income model from Ohlson (1995) can be applied to explain the behavior of the market value of banking companies on

the Indonesia Stock Exchange from the period 2011 to 2020. This finding is in line with the research results by Al-Hares et al. (2012); A. Budagaga (2017); A. R. Budagaga (2020); Hand & Landsman (1999); Istiono & Santosi (2021); and SI Fahlevi (2019).

The firm size variable has a significant positive effect on the market value of equity in Panel B and C models. Firm size is seen from the total assets owned by the company. The greater the company's total assets will increase the interest of investors to buy shares; thus, it affects the share price and increases the market value of equity. These results align with research by Bagiana & Agustina (2021); A. R. Budagaga (2020); and Velicia et al. (2020).

On the other hand, in the models of panels B and C, the dividend policy variable as proxied by the dividend payout ratio (DPR) and dividend yield (DY) variables were found not to affect the market value of equity. The results of the fixed effect model approach (Ohlson, 1995) provide evidence that the dividend payout ratio (DPR) and dividend yield (DY) does not affect the market value of equity. The regression coefficients of each variable dividend payout ratio (DPR) and dividend yield (DY) are positive, which indicates that an increase in the ratio will increase the market value of equity.

SI Fahlevi (2019) stated that dividend policy is irrelevant in increasing the company's market value, but it is investment policy that affects increasing the company's value. Research by Istiono & Santosi (2021) stated that dividend policy could positively or negatively affect firm value. The positive correlation between dividends and stock market value is in line with the findings of previous research by A. Budagaga (2017); Istiono & Santosi (2021); Juhandi et al. (2013); Launtu (2021); Setiawati (2020); and SI Fahlevi (2019).

The coefficient of determination (R2) in the models of Panel A, B, and C, respectively, are 9.86%, 79.86%, and 93.31%, which delivers a description that in panels B and C, the residual income model by (Ohlson, 1995) can explain well market value behaviour of bank companies listed on the IDX during the period 2011-2020.

In addition, this finding is consistent with the model assumption by Ohlson (1995) that information asymmetry does not apply; thus, dividend theory as a signaling device also does not apply (Hand & Landsman, 1999). According to Ohlson (1995) dividends reduce the current book value of equity but do not reduce current earnings; thus, the company's market value is not affected by dividend payments. This research is also consistent with the irrelevance theory of dividends by Miller & Modigliani (1961). Thus, based on this finding, the researchers reject hypothesis 0, which states that the payment of cash dividends does not affect the market value of banking companies on the IDX.

4.3. Analysis and Test Results of Panel Data (Alternative Dependent Variable)

Classical Assumption Testing (Alternative Dependent Variable)

The following table summarizes the classic assumption test on the results of panel data testing with alternative dependent variables, which are presented in the table below:

Table 4. Summary of classical assumption test results (Alternative Dependent Variable)

Classical Assumption	**Panel D**	**Panel E**	**Panel F**
Multicollinearity	Fulfilled (0,791)	Fulfilled (0,1681-0,7345)	Fulfilled (0,112 - 0,7345)
Heteroscedasticity	Breusch-Godfrey-test (0,1291>0,05)	Breusch-Godfrey-test (0,1291>0,05)	Breusch-Godfrey-test (0,5749>0,05)
Autocorrelation	DurbinWatson-test (1,8007 < **1,9618** < 2,1993)	DurbinWatson-test (1,8007 < **2,008** < 2,1993)	DurbinWatson-test (1,8007 < **1,979** < 2,1993)

In the model of panel D ($SR_{i,t} = \alpha + \beta_1 DY_{i,t} + \beta_2 DPR_{i,t} + \varepsilon_{i,t}$), the classical assumption testing was fulfilled in the multicollinearity, heteroscedasticity and autocorrelation tests. The table shows that the results of the multicollinearity test are not greater than 0.8; thus, it can be concluded that there is no multicollinearity. Then in the heteroscedasticity test, using the Breusch-Godfrey test, the probability value is 0.1291 > 0.05, and it can be concluded that there was no heteroscedasticity. Furthermore, in the autocorrelation test performed with the Durbin-Watson test, the DW output value was 1.8007 < 1.9618 < 2.1993, which means that there was no autocorrelation.

In the model of panel E ($SR_{i,t} = \alpha + \beta_1 BV_{i,t} + \beta_2 RI_{i,t} + \beta_3 DPR_{i,t} + \beta_4 Size_{i,t} + \varepsilon_{i,t}$), the classical assumption testing was fulfilled on multicollinearity, heteroscedasticity and autocorrelation tests. The table shows that the results of the multicollinearity test ranged from 0.1681 to 0.7345 and were not greater than 0.8; thus, it can be concluded that there was no multicollinearity. Then in the heteroscedasticity test, using the Breusch-Godfrey test, the probability value was 0.1291 > 0.05, and it can be concluded that there was no heteroscedasticity. Furthermore, in the autocorrelation test performed with the Durbin-Watson test, the DW output value was 1.8007 < 2.008 < 2.1993, which means that there was no autocorrelation.

In the model of panel F ($SR_{i,t} = \alpha + \beta_1 BV_{i,t} + \beta_2 RI_{i,t} + \beta_3 DY_{i,t} + \beta_4 Size_{i,t} + \varepsilon_{i,t}$), the classical assumption testing was fulfilled on multicollinearity, heteroscedasticity and autocorrelation tests. The table shows that the results of the multicollinearity test ranged from 0.112 to 0.7345 and were not greater than 0.8. Thus, it can be concluded that there was no multicollinearity. Then the heteroscedasticity test, using the Breusch-Godfrey test, obtained a probability value of 0.5749 > 0.05, and it can be concluded that there was no heteroscedasticity. Furthermore, in the autocorrelation test performed with the Breusch-Godfrey test, the output value of DW was 1.8007 < 1.979 < 2.1993, which means that there was no autocorrelation.

Analysis Results of Panel Regression (Alternative Dependent Variable)

In this discussion, additional testing is applied to see the effect further by using the alternative dependent variable, i.e., the annual banking stock return. This variable is commonly used in some works of literature to examine the effect of dividend policy on the firm's market value (Black & Scholes, 1974). The following panel data regression results are summarized in the table below.

Table 5. *Regression Results* (*Alternative Dependent Variable*)

Model Variables	**Panel Methods**					
	Panel D		**Panel E**		**Panel F**	
Model Effect	*Common Effect*		*Common Effect*		*Common Effect*	
Dependent Var	SR		SR		SR	
Independent Variables						
Symbols	**Coefficients**	**Prob.**	**Coefficients**	**Prob.**	**Coefficients**	**Prob.**
Constanta	0.1263		0.1252		0.1545	
BV	-		-1.66E-05	0.6446	-8.20E-06	0.8194
RI	-		2.10E-07	0.9966	-1.18E-06	0.9807
DPR	0,6427	0,0169*	0.181666	0.3215	-	
DY	-7.378	0,0158*	-		-1.560.078	0.4307
SIZE	-		-1.40E-08	0.9382	3.58E-08	0.8409
Lagrange Multiplier	2.1090 (0.1464**)		2.4133 (0.1203**)		1.7331 (0.1880**)	
R-squared	2.57%		0.46%		0.31%	
No of observations			250			

Notes: SR=Stock Return, BV= Book Value, RI= Residual Income. DPR= Dividen Payout Ratio, DY= Dividen Yield, Size= Total Aset (Size). *p<0.05, **p>0.05.

As seen from the table of regression results above, model of panels D, E, and F using the dependent variable annual stock returns show results that the common effect method is more suitable for use in this research model, as can be seen from the results of the Lagrange multiplier test statistic which is greater than 0.05. The regression results conclude that the common effect method is better for the model of panels D, E, and F.

The empirical test results in the panel D model are almost similar to the results in the panel A model, where the DPR and DY variables have a significant positive and negative effect on the company's stock returns. These results indicate that dividend policy influences the return on investment in banking companies' shares. The higher the dividend payout ratio (DPR) will increase stock returns. This result is in line with research by Ainun (2019) which indicated that investors favor dividend distribution; thus, it will impact stock prices and the level of profits earned. On the other hand, the dividend yield ratio has a negative direction, where the higher the dividend yield (profit from dividend yields) will reduce the profit level of the stock. This result is in line with research by Almanaseer (2019) and Singh & Tandon (2019) which stated that an increase in dividend yields would reduce the risk of volatility in stock prices. The test results of the panel D model confirm the signaling theory and bird-in-the-hand theory which show that investors respond to dividend policy as a signal

that the company is in good condition. It also shows that investors favor dividend distribution to reduce uncertainty if dividends are not distributed.

Meanwhile, the results of panels E and F with the addition of residual income, book value, and company size variables obtained slightly different results from the panel B and C models. From the regression test results, all variables do not affect the company's annual stock return. In particular, the regression coefficients for the residual income and book value variables deliver similar results to the main dependent variable (equity market value/MVE). However, dividend policy does not affect annual stock returns. This result is consistent with findings by Black & Scholes (1974) and A. R. Budagaga (2020). This result is not in line with research by Margaretha & Firzitya (2015); Singh & Tandon (2019); and Vijayakumar (2010) which showed that dividend policy influences stock prices.

From the alternative analysis of the dependent variable using annual stock returns, it can be concluded that dividend policy has a different effect on firm value and stock returns. However, the core of this research is that banking companies listed on the Indonesia Stock Exchange apply the residual dividend payment model. Overall, this research supports the irrelevance theory of dividends by Miller & Modigliani (1961).

5. Conclusion

This study discusses the impact of dividend payments on the market value of equity in banking sector companies listed on the Indonesia Stock Exchange. This study empirically examines whether dividend payments affect 25 banking companies on the IDX from 2011 to 2020. Empirically, the analysis results show that the residual income model by Ohlson (1995) has a significant positive effect as a determinant of equity market value in banking companies. These results are consistent with the theory of the residual income model and support the behaviour of the market value of banking companies during the 2011-2020 period.

However, the research findings discover that dividend policy does not significantly impact the market value of equity in banking companies on the IDX. These results confirm the dividend irrelevance theory by Miller & Modigliani (1961). Furthermore, banking industry companies may be required to allocate funds to investments rather than paying dividends due to regulations related to liquidity, expansion, operating activities, and regulatory compliance. Then, when all funding needs are met, the remaining funds can be distributed as cash dividends to shareholders. Thus, cash dividends are represented as residual income rather than an active decision variable that impacts firm value.

Research on dividend policy generally eliminates banking institutions because of the structure of balance sheets and financial statements, and accounting methods. Banking sector companies, from empirical results, apply a residual dividend policy in which dividend payments are made based on the remaining funds after all investment needs are funded; this will be problematized for investors to predict future dividend payment decisions. This research can provide information to shareholders about the lack of positive investment opportunities in the future and can negatively impact the value of bank shares

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