

## THE EFFECT OF PROFITABILITY, LIQUIDITY AND INVESTMENT OPPORTUNITIES ON DIVIDEND POLICY

Ferdi Septian Gunawan

Wilson R L Tobing

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### ABSTRACT

*The purpose of this study is to test the possibility of firm to pay dividends based on the explanatory variables: and investment opportunity, profitability, liquidity and know the accuracy rate of grouping firms that pay dividends and that do not pay dividends based on these explanatory variables. The population of this study is non-financial firms listed on Indonesia Stock Exchange forming Index of Kompas 100. The sample is taken from the population by stratified random sampling method. Logistic regression model is conducted as method of data analysis. This study concludes two things. Firstly, there is a positive effect of investment opportunity, profitability and liquidity on possibility of firm to pay dividends. Secondly, the accuracy rate of grouping firms into the group of firms paying dividends and firms that do not pay dividends based on the ability of explanatory variables is 87.1%.*

**Keywords:** dividend policy, investment opportunity, liquidity, logistic regression model, profitability

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### INTRODUCTION

Capital market is the place where firms and investors meet with their own purpose. Through initial public offering, firms can get fresh money from investors by issuing and selling stocks to investors. By buying offered stocks, investor can own reputable firms. After passing initial public offering, transactions of stocks, furthermore, are done in a secondary market. In the secondary market, transactions no longer happen between firms and investors. Instead, they happens among investors (Sunariyah, 2011). In the secondary market, two types of investors are available. The first type is investors with short-term orientation focusing on the price change. The second one is investors with long-term orientation focusing on dividend payment (Sugiarto, 2009).

From the point of manager view, firm must limit to pay dividends because it needs to survive (Suharli & Oktorina, 2005) or to finance projects that can create profit in the future (Suharli, 2007). Another perspective comes from the signaling theory. This theory explains firms must deliver the signal to market by paying dividends to differ it from other firms, that do not own growth prospect, paying no dividends (Megginson, 1997).

Based on previous studies, dividend policy is affected not only by investment opportunity (see study result of Marpaung & Hadianto, 2009; Moradi, Salehi, & Honarmand, 2010; Amah, 2010; Fistyarini & Kusmuriyanto, 2015) but also by profitability (see study result of Abdelsalam, El-Masry & Elsegini, 2008; Marlina & Danica, 2009; Marpaung & Hadianto, 2009; Valipor & Rostami, 2009; Hadianto & Herlina, 2010; Moradi, *et al.*, 2010; Amah, 2012; Fistyarini & Kusmuriyanto, 2015; Haryatih, 2015; Nufianti & Suwitho, 2015; Dewi, 2016; Hadianto & Sahabuddin, 2016; Utama & Gayatri, 2018) and liquidity (see study result of Amah, 2012; Nufianti & Suwitho, 2015; Dewi, 2016; Hadianto & Sahabuddin, 2016).

The impact of investment opportunity on dividend policy, in fact, still has contradictive results. For examples, the study result of Marpaung & Hadianto (2009), Fistyarini & Kusmuriyanto (2015) shows investment opportunity has a positive effect on dividend policy. On the other hand, the study result of Moradi, *et al.* (2010) and Amah (2012) shows a negative effect of investment opportunity on dividend policy. In line with this condition, the effect of profitability on dividend policy can be positive (see the study result of Abdelsalam, *et al.*, 2008; Marlina & Danica, 2009; Marpaung & Hadianto, 2009; Valipor & Rostami, 2009; Hadianto & Herlina, 2010; Moradi, *et al.* 2010; Amah, 2012; Fistyarini & Kusmuriyanto, 2015; Haryatih, 2015; Nufianti & Suwitho, 2015; Hadianto & Sahabuddin, 2016; Utama & Gayatri, 2018) and negative (see the study result of Dewi, 2016). Similar to two conditions mentioned before, liquidity of firm can also have a positive impact on dividend policy (see the study of Amah, 2012; Nufianti & Suwitho, 2015; Hadianto & Sahabuddin, 2016) or a negative impact on dividend policy (see the study of Dewi, 2016).

Based on the contradiction of these previous studies, we use investment opportunity, profitability and liquidity as our explanatory research variables to be related to dividend policy of non-financial firms forming Index of Kompas 100 by using logistic regression model. The use of these firms forming this index is due to the good performance and the high market capitalization as stated by Hartono (2012) that can be alternative for investors to have firms paying dividends. The use of logistic regression model follows study of Hadianto & Herlina (2010). Logistic regression not only can test regression coefficient as usual, but also is able to know the accuracy rate of grouping two firms: firms paying dividends and firms do not pay dividends based on investment opportunity, profitability and liquidity.

Referring to those explanations, the purpose of this study is to answer two things. Firstly, to test the impact of investment opportunity, profitability and liquidity on firm possibility to pay dividends. Secondly, to know the accuracy rate of grouping firms paying dividends and firms do not pay dividends based on the ability of investment opportunity, profitability and liquidity.

**THEORETICAL FRAMEWORK AND DEVELOPMENT OF HYPOTHESES**

**The Effect of Investment Opportunity on Dividend Policy**

According to signaling theory, the payment of cash dividends by firms is an action that cannot be duplicated by other firms because it needs large amount of cash and is expensive. This action is only able to be done by firms having good growth prospect (Megginson, 1997). Good prospect is always described by the projects enabling firm to grow (Kallapur & Trombley, 1999). Therefore, investment opportunity is expected to have a positive effect on dividend payment. This theory is confirmed by the study of Marpaung & Hadiano (2009),Fistyarini & Kusmuriyanto (2015) displaying investment opportunity has a positive impact on dividend policy. Based on this information, the first hypothesis in this study context can be stated as follows.

H<sub>1</sub>: Investment opportunity has a positive effect on possibility of firm to pay dividends.

**The Effect of Profitability on Dividend Policy**

Profits are needed if firm want to pay dividends for its investors so that firm that can pay dividends is assumed as profitable firm (Suharli, 2007). This statement is confirmed by the result study of Abdelsalam, et al. (2008), Marlina & Danica (2009), Marpaung & Hadiano (2009), Valipor & Rustami (2009), Hadiano & Herlina (2010), Moradi, et al. (2010), Amah (2012), Fistyarini & Kusmuriyanto (2015), Haryatih (2015), Nufianti & Suwitho (2015), Hadiano & Sahabuddin (2016, Utama & Gayatri (2016) documenting that profitability positively impacts on dividend policy. Based on this information, the second hypothesis in this study context can be stated as follows.

H<sub>2</sub>: Profitability has a positive effect on possibility of firm to pay dividends.

**The Impact of Liquidity on Dividend Policy**

Liquidity of firm is signed by the sufficient amount of cash flow (Hanafi, 2016). Furthermore, Hanafi (2016) explains that firm with good cash flow is expected to own possibility to pay the greater amount of dividends. Therefore, liquidity is expected to own a positive effect on dividend payment. The explanations of Hanafi (2004) are confirmed by study result of Amah (2012), Nufianti & Suwitho (2015), and Hadiano & Sahabuddin (2016) presenting liquidity impact positively on dividend policy. Based on this information, the third hypothesis in this study context can be stated as follows.

H<sub>3</sub>: Liquidity has a positive effect on possibility of firm to pay dividends.

**RESEARCH METHOD**

The population of this study is non-financial firms listed on Indonesia Stock Exchange forming *Index of Kompas 100* in 2000 to 2015. Based on our observation of the existing data, we find that:

- a. These firms are from various types of industry that are able to be classified based on Jakarta Stock Industrial Classification (JASICA). According to IDX Fact Book 2015, JASICA classifies issuers based on 3 (three) industrial sectors: primary, secondary and tertiary sector.
- b. The number of this firms remaining consistent in forming *Index of Kompas 100* is 34. Moreover, we treat 34 as the number of relevant population.

After knowing these conditions, we allocate 34 firms into three sectors and treat sector as stratum. Because of this reason, we use stratified random sampling as the sampling method. The number of sample (n) representing the number of population (N) is calculated by Slovin formula, that can be seen in Suliyanto (2009), with error margin (e) of 5%.

Based on the calculation by using Slovin formula, the number of sample is  $n = \frac{N}{(1+Ne^2)} = \frac{34}{1+34(0,05*0,05)} = 31.34 \approx 31$  (rounded). The allocation of relevant population number into the number of sample for each stratum can be seen in Table 1 and the names of 36 firms that are randomly taken can be seen in Appendix 1.

**Table 1: The Allocation of Number of Sample From The Number of Population Based On The Strata**

Strata	Number of Relevant Population (N)	%	Number of Sample (n)
Primary Sector	9	26,47	8,205 ≈ 8 (rounded)
Secondary Sector	11	32,35	10,029 ≈ 10 (rounded)
Tertiary Sector	14	41,18	12,765 ≈ 13 (rounded)
Total	34	100	36

This study uses one dependent variable and three independent variables. In this study, dividend policy acts as dependent variable and is measured by dummy variable (DDIV): 1 is for firms paying dividends and 0 is for firms that do not pay dividends. This measure follows the study of Abdelsalam, et al. (2010), Hadiano & Herlina (2010), Hadiano & Sahabuddin (2016). Three independent variables intended are:

- a. Investment opportunity. Following the study of Marpaung & Hadiano (2009), Fityarini & Kusmuriyanto (2015), investment opportunity is measured by price to book ratio (PBV). This position of this ratio is at the end of the year.

- b. Profitability. Following the study of Marlina & Danica (2009), Marpaung & Hadiano (2009), Hadiano & Herlina (2010), Amah (2012), Dewi (2016), Utama & Gayatri (2018), profitability is measured by return on assets (ROA). The position of ROA is at end of the year.
- c. Liquidity. Following the study of Amah (2012), Fistyarini & Kusmuriyanto (2015), Haryatih (2015), Nufianti & Suwitho (2015), Dewi (2016), Hadiano & Sahabuddin (2016), liquidity is measured by current ratio (CR). The position of this ratio is at the end of the year.

In this study, we use logistic regression model with data pooling as the method of data analysis. This regression is used when dummy variable used as the dependent variable. This regression model is useful to test the probability of dependent variable that can be predicted from its independent variables (Ghozali, 2011). In this study, logistic regression model intended can be seen in equation 1.

$$\ln\left(\frac{p_{it}}{1-p_{it}}\right) = \beta_0 + \beta_1 \cdot PBV_{it} + \beta_2 \cdot ROA_{it} + \beta_3 \cdot CR_{it} + \varepsilon_{it} \dots \dots \dots (Eq.1)$$

The estimation of logistic regression model is done by maximum likelihood (ML) method. This method aims to find the regression coefficients maximizing the probability of occurrence of the dependent variable (Widarjono, 2013). Logistic regression model is based on absence of normality assumption of errors, heterogeneous variance of dummy as dependent variable (Hair, et al., 2010), absence of multicollinearity (Tabachnick & Fidel, 2007), non-linear relationship between probability and independent variables used and fulfillment of the goodness-of-fit model test (Ghozali, 2011).

**RESULTS & DISCUSSION**

**Descriptive Statistics**

Descriptive statistics are used to describe the characteristic of the data (Hartono, 2010). Statistics used in this study consist of the number of observation (N), mean, maximum and minimum value as well as standard deviation of dummy of dividend policy (DDIV), PBV, ROA and CR. Moreover, the descriptive statistics can be seen in Table 2 as follows.

**Table 2: Descriptive statistics**

Variable	N	Minimum	Maximum	Mean	Standard Deviation
DDIV	155	0.00	1.00	0.8323	0.37485
PBV	155	-1.68	9.30	2.5739	1.76025
ROA	155	-9.59	43.24	10.1880	8.81381
CR	155	6.60	1064.23	204.4380	159.27527

Source: Output of IBM SPSS 19.

**The Result of Assumption Tests of Logistic Regression Model**

This section shows the result of assumption test of logistic regression model. The results of the logistic regression model test are:

- a. The result of normality test.

The result of this test can be seen in Table 3. In this table, probability value of Jarque-Bera statistics is 0.000000. This value is smaller than the level of significance ( $\alpha$ ) of 5%. Therefore, null hypothesis ( $H_0$ ) is rejected. This means that the residuals logistic regression model are not normally distributed. This result is in accordance with the assumption of logistic regression model that does not require the normality of residuals.

**Table3: The Result of Normality Test Using Jarque-Bera**

Jarque-Bera statistic	68.65566
Probability (Jarque-Bera Statistic)	0.000000

Source: Output of E-Views 6.0

- b. The result of homogeneity test on residual variance between groups of firms.

The result of this test can be seen in Table 4. In this table, the probability value of F. Approx from Box's M statistics is 0.011. This value is smaller than the level of significance ( $\alpha$ ) of 5%. Therefore, null hypothesis ( $H_0$ ) is rejected, which means residual variance between groups of firms is heterogeneous. This result is in accordance with the assumption of logistic regression model that does not require homogeneity of residual variance between groups of firms.

**Table 4: The Result of Homogeneity Test of Residual Variance between Groups of Firms**

Box's M	17.284
F. Approx	2.750
df1	6
df2	11467.070
Sig.	0.011

Source: Output of IBM-SPSS 19.

- c. Multicollinearity test result

The result of this test can be seen in Table 5. In this table, variance inflation factor (VIF) value for ROA, PBV and CR is respectively 2.373; 1.9 and 1.4. Because these values are less than 10, logistic regression model is free from multicollinearity. This condition fulfills the assumption of logistic regression model.

**Table 5: The Result of multicollinearity test**

Explanatory Variable	Collinearity Statistics	
	Tolerance	VIF
PBV	0.526	1.900
ROA	0.421	2.373
CR	0.714	1.400

Source: Output of IBM-SPSS 19

d. Linearity test result

The result of this test can be seen in Table 6. In this table, the probability value of Chi-Square (1) is 0.000000. This value is smaller than the level of significance ( $\alpha$ ) of 5%. Therefore, null hypothesis ( $H_0$ ) is rejected. This means the additional independent variable of FITTED^2 has significant impact on forecasted probability from logistic model (DDIV) so that the relationship between FITTED^2 and DDIV is not linear. This result is in accordance with the assumption of logistic regression model that requires the non-linear relationship between independent variables and probability to pay dividends.

**Table 6: The Result of Linearity Test Using Ramsey RESET test**

Ramsey RESET Test:

F-statistic	671.1986	Prob. F(1,150)	0.0000
Log likelihood ratio	263.5201	Prob. Chi-Square(1)	0.0000

Test Equation:

Dependent Variable: DDIVF

Method: Least Squares

Date: 12/06/16 Time: 12:40

Sample: 1 155

Included observations: 155

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	1.211837	0.027062	44.77949	0.0000
PBV	0.220226	0.007957	27.67844	0.0000
ROA	0.064742	0.002229	29.04071	0.0000
CR	0.001886	6.98E-05	27.03163	0.0000
FITTED^2	-2.911468	0.112379	-25.90750	0.0000

Source: Output of E-Views 6.0

e. The result of goodness-of-fit test

The result of this test can be seen in Table 7. In this table, the probability value of Chi-Square (3) is 0.000000. This value is smaller than the level of significance ( $\alpha$ ) of 5% so that alternative hypothesis is accepted, which means the additional three independent variables consisting of PBV, ROA, and CR have significant effect on firm possibility to pay dividends.

**Table 7: The Result of Goodness-of-fit Test**

Test Equation:				
Dependent Variable: DDIV				
Method: ML - Binary logit (Quadratic hill climbing)				
Date: 12/06/16 Time: 12:45				
Sample: 1 155				
Included observations: 155				
Convergence achieved after 5 iterations Covariance matrix computed using second derivatives				
Variable	Restricted Model		Unrestricted Model	
	Coefficient	Prob.	Coefficient	Prob.
C	1.468986	0.0000	-1.361016	0.0216
PBV	n.a.	n.a.	0.616027	0.0425
ROA	n.a.	n.a.	0.139650	0.0196
CR	n.a.	n.a.	0.005344	0.0465
Log likelihood	-74.70779		-51.06787	
Log likelihood ratio			47.27984	
Prob. Chi-Square(3)			0.0000	

Source: Output of E-Views 6.0

**Estimation Result of Logistic Regression Model**

The current study used logistic regression model using data pooling as data analysis method. Data pooling means a combination of cross section data (company) and time series (time). The estimation result of the logistic regression model can be seen at unrestricted model in Table 7.

**The Test Result of Each Hypothesis**

The first hypothesis states investment opportunity has a positive effect on possibility of firm to pay dividends. This hypothesis is tested by comparing probability value of Z-statistic for PBV with significance level of 5%. It can be seen in Table 8, this probability value is 0.0425. This value is lower than significance level used so that the alternative hypothesis is accepted. Hence, investment opportunity has a significant positive effect on possibility of firm to pay dividends.

The second hypothesis states profitability has a positive effect on possibility of firm to pay dividends. This hypothesis is tested by comparing probability value of Z-statistic for ROA with significance level of 5%. It can be seen in Table 8, this probability value is 0.0196. This value is lower than significance level used so that the alternative hypothesis is accepted. Hence, profitability has a significant positive effect on possibility of firm to pay dividends.

The third hypothesis states liquidity has a positive effect on possibility of firm to pay dividends. This hypothesis is tested by comparing probability value of Z-statistic for CR with significance level of 5%. It can be seen in Table 8, this probability value is 0.0465. This value is lower than significance level used so that the alternative hypothesis is accepted. Hence, liquidity has a significant positive effect on possibility of firm to pay dividends.

**Discussion**

The result of the first hypothesis presents investment opportunity has a significant positive effect on possibility of firm to pay dividends. This result supports the signaling theory, where dividend payment functions as market signal given to investors that firm owns good prospect and performance. Firm is impossible to pay dividend if it has low performance and bad financial condition. Therefore, this result also supports the result of study conducted by Marpaung & Hadianto (2009) and Fistyarini & Kusmuriyanto (2015).

The result of the second hypothesis presents profitability has a significant positive effect on possibility of firm to pay dividends. The availability of profits is the requirement for firm to pay dividends. Without profits that can be regularly retained, firm is not possible to pay dividends. Therefore, this result also supports the result of study conducted by Abdelsalam, et al. (2008), Marlina & Danica (2009), Marpaung & Hadianto (2009), Valipor & Rustami (2009), Hadianto & Herlina (2010), Moradi, et al. (2010), Amah (2012), Fistyarini & Kusmuriyanto (2015), Haryatih (2015), Nufianti & Suwitho (2015), Hadianto & Sahabuddin (2016), Utama & Gayatri (2016).

The result of the third hypothesis presents liquidity has a significant positive effect on possibility of firm to pay dividends. Firm having good liquidity must be having high amount of cash flow so that it is not difficult to pay dividends. Therefore, this result also supports the result of study conducted by Amah (2012), Nufianti (2015), Nufianti & Suwitho (2015), Hadianto & Sahabuddin (2016).

**The Result of Classification Matrix**

To answer the second purpose of this study, a classification matrix is needed. The results of the classification matrix can be seen in Table 8. In this matrix, it can be seen that the accuracy of grouping firms paying dividends and firms not pay dividends based on investment opportunity, profitability and liquidity is 87.1%.

**Table8: The Result of Classification Matrix<sup>a)</sup>**

		Predicted		Percentage Corrrect
		DDIV		
Observed		Firms that do not pay dividends	Firms paying dividends	
DDIV	Firmsthat do not pay dividends	8	18	30.8
	Firms paying dividends	2	127	98.4
Overall percentage				87.1

a) The cut value is 0.5

Source: Output Program IBM SPSS 19.

**CONCLUSION AND RECOMMENDATIONS**

In line with two purposes of this study, it can be concluded two things. Firstly, investment opportunity, profitability and liquidity have positive effect on possibility of firm to pay dividends. Secondly, the accuracy rate of grouping firms that pay and do not pay dividends is 87.1%.

Based on the results of this study, some recommendations can be given to for next researchers, investors, and firms.

- a. For next researchers: Firstly, they are able to use all of non-financial firms as sample of their study and extend period of analysis until 10 years. These actions are used to produce the study having wider scope than this study. Secondly, they

are able to use institutional and managerial ownership structure as well as supervisory board measured by its and its independency besides three explanatory variables used in this study.

- b. For Investors: Regarding investment opportunity has a positive effect on possibility of firm to pay dividends, investors can use PBV ratio to assess the growth prospects of the company in paying dividends. For that reason, investors can choose and buy the shares of companies with small price to book value because these kinds of companies still have prospects so that they have a high possibility to pay dividends.
- c. For firms: Regarding profitability has a positive effect on possibility of firm to pay dividend, firms can deliver signal to investors that their prospects are in good condition by paying dividends. To realize it, the activity related to deliver signal, such as buying productive fixed assets to gain profits, is required to be effectively communicated.

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Ferdi Septian Gunawan  
Maranatha Christian University  
Jl. Prof. drg. Surya Sumantri No.65 Bandung, Indonesia  
Email: [ferdiseptiangunawan@gmail.com](mailto:ferdiseptiangunawan@gmail.com)

Wilson R L Tobing  
Sampoerna University  
Jln. Raya Pasar Minggu, Kav. 16 Pancoran, Jakarta, Indonesia  
Email: [wilsonrltobing@gmail.com](mailto:wilsonrltobing@gmail.com)