

STOCK VALUATION ANALYSIS OF DIVIDEND DISCOUNT MODEL, FREE CASH FLOW TO EQUITY AND WALTER MODEL IN INVESTMENT DECISION

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Abstract: This study aimed to (1) test the influence of stock valuation with dividend discount model (DDM) method on investment decisions, (2) test the influence of stock valuation with Free Cash Flow to Equity (FCFE) method on investment decisions, and (3) test the influence of stock valuation with Walter Model method on investment decisions in Consumer Good Industry Companies listed in ISSI period 2016-2019. 24 Companies in the Consumer Good Industry sector were sampled in this study. The data used was secondary data. The results of this study show that the Dividend Discount Model (DDM) has a significant positive influence on investment decisions, while the Free Cash Flow to Equity (FCFE) and Walter Model methods do not have a significant influence on investment decisions.

Keywords: *Valuation, Dividend Discount Model, Free Cash Flow to Equity, Walter Model, Investment Decision*

Abstrak: Penelitian Ini bertujuan untuk (1) menguji pengaruh valuasi saham dengan metode Dividend Discount Model (DDM) terhadap keputusan investasi (2) menguji pengaruh valuasi saham dengan metode Free Cash Flow to Equity (FCFE) terhadap keputusan investasi dan (3) menguji pengaruh valuasi saham dengan metode Walter Model terhadap keputusan investasi pada Perusahaan Consumer Good Industry yang terdaftar di ISSI periode 2016-2019. 24 Perusahaan di sector Consumer Good Industry menjadi sampel dalam penelitian ini. Data yang digunakan adalah data sekunder. Hasil dari penelitian ini menunjukkan bahwa Dividend Discount Model (DDM) memiliki pengaruh positif signifikan terhadap keputusan investasi, sedangkan metode Free Cash Flow to Equity (FCFE) dan Walter Model tidak memiliki pengaruh signifikan terhadap keputusan investasi.

Kata Kunci: *Valuasi, Dividend Discount Model, Free Cash Flow to Equity, Walter Model, Keputusan Investasi.*

INTRODUCTION

The number of Sharia stocks listed on the Sharia Securities Register (DES) increases every year from 328 companies become 445 companies during 2013-2019, its followed by the growth of Sharia investors which increased by almost 9000 percent during 2012-2019. The highest average return on investment per year is to invest shares with a return of 17.5%, while the lowest return is from saving with a return of 2.42%.

One of the risks that often occur among investors is misprice (Husnan, 2015). Investors are expected to conduct fundamental analysis as well as technical analysis to minimize these risks. One important fundamental analysis for investors to do is stock valuation. Investors are obliged to conduct valuation analysis to find out which stocks are worth buying. Value describes what something worth in terms of something else (May, 2017). The statement assumes that valuation means the feasibility of stock to invest and how it compares the share price with its performance, accompanied by fair valued, undervalued, or overvalued output.

Author used 3 methods in this study, there are Dividend Discount Model, Free Cash Flow Equity, and Walter Model. The author used the Dividend Discount Model method based on research which states that the Dividend Discount Model method is good enough to provide preliminary insights for anyone who wants to learn about stock valuations (Natalia, 2018). Furthermore, research explained that the Free Cash Flow Equity method has more accurate indicators for calculating cash flow received by shareholders (R. Hendrawan, 2018). And the last, Research states Walter's model related to the relevance of dividend policy and its relation to the value of the shares (Amiri, 2016).

Consumer of Goods sector became one of the most resilient sectors when there was an evaluation on the Stock Exchange. Consumer Goods posted only a 5% decline in 2015. Similarly, in April 2019 when Alfred Nainggolan, Head of Capital Connection Research, said that the correction in the Consumer Goods sector reached 5%. The condition is very interesting because the financial performance of this sector was positive throughout 2018. Household

consumption in 2018 grew by 5.05% higher than 4.95% in 2017. Retail sales growth also rose from 2.9% in 2017 to 3.7% in 2018.

The decline in the performance of the consumption sector index is a good opportunity for investors, as it is not supported by a decline in fundamental performance. That is, the shares of this sector are already relatively cheap. After the General Election, the sector's stocks are likely to rise faster, especially as the sector is dominated by blue-chip issuers that generally get market priority when conditions improve.

Grand theory used in this research is signaling theory. Signals are actions taken by companies to inform investors about management views the company's prospects (Brigham, 2011). Such information in the form of annual financial statements containing information on the company's circumstances, records, and also reflect the performance of a company (Ross, 1977).

Valuation belongs to the category of art and not part of science, that is because it relies heavily on perspective. A valuation can only provide a range of values, not precise values, and not absolute values of an asset, even in the technique of assessing many assessors using mathematical calculations and financial formulas. That is because when performing calculations, assessors use many elements of assumptions, estimates, and projections or work plans (Djaja, 2017).

Investment decisions are a decision taken in making investments for profit in the future. (Iramani, 2014). There are three guidelines can be used to determine investment decisions (Harianto, 1998):

- If intrinsic value > the current market price, then the stock is undervalued, so it is worth buying or withheld if the stock has been owned.
- If intrinsic value < the current market price, then the stock is overvalued, making it worth selling.

- If intrinsic value = current market price, then the stock is considered a reasonable price and it is in a state of balance.

There have been several previous studies relevant to the Dividend Discounted Model (DDM), Free Cash Flow to Equity (FCFE), and Walter Model. Some studies have found that each of three methods is influential in investment decisions. In Dividend Discount Model (DDM) can be relied on to predict companies on the Philippine Stock Exchange with the results of 15 positively influential companies from 19 companies studied (Gacus, 2018). In Free Cash Flow to Equity better reflects the performance of shares than PER because PER does not reflect the fundamental performance of the company (Dewi, 2017). And the last in Walter model related to the relevance of dividend policy and its relation to the value of the shares, dividends paid to shareholders are reinvested by shareholders further to obtain higher returns (Amiri, 2016).

However, there are some studies that state that each of the three methods does not have a positive influence on investment decisions. In Dividend Discount Model (DDM) it is associated with inefficient market factors, incorrect discount factors, information differentials, measurements, and evaluation issues (Olweny, 2011). In Free Cash Flow to Equity approach can cause a higher risk of excessive investment or less corporate financing (using too high debt/equity ratio) in contrast to FCFE (Free Cash Flow to Firm) causing less threat to the interests of the owner (Pawel Mielcarz, 2015). In Walter Model was not free from assumptions of internal financing, return on investment, retention, and constant capital costs (Kosgei, 2017).

The difference with previous research is the use of the Walter Model method combined with two other methods, namely the Dividend Discount Model and Free Cash Flow to Equity. Research using the Walter model is rare, due to some underlying assumptions namely a stable rate of return and always stable capital costs. Researchers using sharia stock index research object in the top Consumer Goods Industry sector trying to prove Walter model can give

accurate results and by applying 3 methods found the results of fundamental analysis of the company well.

Based on previous research can build hypotheses such as the following:

H₁ = Dividend Discounted Model (DDM) has a positive effect on investment decisions.

H₂ = Free Cash Flow to Equity (FCFE) has a positive effect on investment decisions.

H₃ = Walter's Model has a positive effect on investment decisions.

METHOD

Researchers used a quantitative approach, where the type of research used was descriptive research. The type of data used in this study was secondary data. Secondary data taken was a combination of times series and cross-section data called panel data (Kuncoro, 2011). The data was taken using archives or data obtained from the Annual Report on a sample of Consumer Goods Industry companies and their reports on the Indonesia Stock Exchange with the period 2016 to 2019.

The population in this study was 44 Consumer Good Industry companies registered in Indonesia Sharia Stock Index (ISSI). The criteria used in this study are the main board index criteria, researchers chose to use the main board index because the sample has a large size and has a track record, which distinguishes it from the development board. The main board is a prospective company and has been able to generate profits and in good health. Criteria for obtaining representative samples by the specified criteria, namely:

- Incorporated companies
- Having undergone the company's operational activities for at least 36 months
- Having made a profit from operations for at least the last 1 year
- The Company has a minimum net tangible asset value of Rp 100,000,000,000,000
- The company's financial statements for the past two years re Unqualified Opinion (WTP) or Qualified Opinion (WDP)
- The number of stocks owned by parties other than the controller and major shareholders is at least 100,000,000 stocks.

Based on the above criteria, there are 24 companies that can be sampled for research are as follows:

No	Code	Name of Companies
1	CAMP	PT Campina Ice Cream Industry Tbk.
2	CEKA	Wilmar Cahaya Indonesia Tbk.
3	CLEO	Sariguna Primatirta Tbk.
4	DVLA	Darya-Varia Laboratoria Tbk.
5	GOOD	Garudafood Putra Putri Jaya Tbk.
6	HOKI	Buyung Putra Sembada Tbk.
7	HRTA	Hartadinata Abadi Tbk.
8	ICBP	Indofood CBP Sukses Makmur Tbk.
9	INAF	Indofarma (Persero) Tbk.
10	INDF	Indofood Sukses Makmur Tbk.
11	KAEF	Kimia Farma (persero) Tbk.
12	KICI	Kedaung Indah Can Tbk.
13	KLBF	Kalbe Farma Tbk.
14	MBTO	Martina Berto Tbk.
15	MRAT	Mustika Ratu Tbk.
16	MYOR	Mayora Indah Tbk.
17	ROTI	Nippon Indosari Corpindo Tbk.
18	SIDO	Industri Jamu dan Farmasi Sido
19	TCID	Mandom Indonesia Tbk.
20	TSPC	Tempo Scan Pacific Tbk.
21	ULTJ	Ultra Jaya Milk Industry & Tra
22	UNVR	Unilever Indonesia Tbk.
23	KINO	Kino Indonesia Tbk.
24	WOOD	PT Integra Indocabinet Tbk.

Source: Indonesia Stock Exchange Official Site

Dividend Discount Model Method

Here are the steps to be taken to assess the stock valuation using the dividend discounted model (Ehrhardt, 2002):

- Financial Performance Analysis

- Return on Equity

$$ROE = \frac{\text{Net Income}}{\text{Total Equity}} \times 100\%$$

- Earnings per Share

$$EPS = \frac{\text{Net Income}}{\text{number of shares outstanding}} \times 100$$

- Dividend per Share

$$DPS = \frac{\text{Total Dividends Distributed}}{\text{number of shares outstanding}}$$

- Dividend Payout Ratio

$$DPR = \frac{\text{Dividend Per Share}}{\text{number of shares outstanding}}$$

- Growth (g)

$$g = ROE - DPR$$

- Expected Return

$$D_2 = D_1(1 + g)$$

Descriptions:

D_2 = Dividend per Share in year t

D_1 = Dividend per Share in year t-1

g = Growth

- Required rate of return (r)

$$r = \frac{D_1}{P_0} + g$$

Descriptions:

D_1 = Dividend per Share in year t-1

P_0 = Actual Stock Price t-1

g = Growth

- Intrinsic Value

$$DDM = \frac{D_2}{r - g}$$

Free Cash Flow to Equity Method

Here are the steps to be taken to assess the stock valuation using the Free Cash Flow to Equity (Tandelilin, 2001):

- Beta

$$Ri_t = \alpha_i + \beta_i Rm_t$$

Descriptions:

Ri_t = Return of the company i stocks in the t-period

α_i = Intercession of regression for each company

β_i = Beta for each company

Rm_t = Market Index Return in the t-period

- Cost of Equity

$$K_e = R_f + \beta (E(R_m) - R_f)$$

Descriptions:

K_e = Cost of Equity

R_f = Risk-free rate

R_m = Market Return

- Free Cash Flow to Equity

FCFE = Net Income – (Capital Expenditure – Depreciation) – (Change in non-cash working capital) + (New Debt – Debt Repayment)

- Growth

$$ERR = \frac{(Net\ CaPex + \Delta WC) \times (1 - Debt\ Ratio)}{Net\ Income}$$

- Value of FCFE

$$Value\ FCFE = \frac{FCFE_{awal} \times (1 + g)}{K_e - g}$$

- Intrinsic Value of FCFE

$$IV = \frac{\text{Value FCFE}}{\text{number of shares outstanding}}$$

Walter Model Method

Here are the steps to be taken to assess the stock valuation using the Walter Model (Francios, 2016):

$$P = \frac{DPS}{k} + \frac{r(EPS - DPS)/k}{k}$$

Descriptions:

- P = *Market price per share*
DPS = *Dividend per share*
EPS = *Earnings per share*
r = *firm's rate of return (average)*
k = *firm's cost of capital or capitalization rate*

Accuracy Comparison Using RMSE

$$RMSE = \sqrt{(f - o)^2}$$

Descriptions:

- f = *estimates (expected value or unknown results)*
o = *observed value (known results)*

Data Panel Regression

Panel data regression analysis is a regression analysis tool where data is collected individually (cross-section) and followed at a certain time (time series). In the panel data regression, there are three models be used. These models include Common Effect Model, Fixed Effects Model, and Random Effect Model (Gujarati, 2004).

Test Model Specifications

- Chow Test

$$H_0 = \text{Common Effect}$$

$$H_a = \text{Fixed Effect}$$

If the test result of this specification indicates a probability of Chi-square more than 0.05 then the selected model is a common effect and vice versa.

- Hausmann Test

$$H_0 = \text{Random Effect Model}$$

$$H_a = \text{Fixed Effect Model}$$

If hypothesis H_0 is rejected then the conclusion should be to use FEM and vice versa.

- Lagrange Multiplier Test

$$H_0 = \text{Common Effect Model}$$

$$H_a = \text{Random Effect Model}$$

The result of the LM test if the value of both Breusch-Pagan is less than 0.05 then the H_0 rejected and vice versa.

Test of Significance

- Simultaneous Test (F)

Test F is used to determine the effect of all Independent variables together on dependent variables. If the prob value < a sig level of 5%, it can be concluded that the Independent variables together have a significant effect on the dependent variable.

- Partial Test (t)

Partial test was used to find out how much influence free variables have individually in explaining bound variables. This test is done by looking at the probability of t count when the prob < a sig level of 5%, then H_0 is rejected, so it can be concluded that such free variables significantly affect bound variables.

- Determinant Coefficient Test

The coefficient of determination or goodness of fit is an important measure in regression, as it can inform whether or not the regression model is estimated. R^2 is used to find out how far the model is capable of explaining variations in bound variables. The value of R^2 is in the range of 0-1. The higher the number, the better the model is created and vice versa.

RESULT

1. Root Mean Square Error

A comparison between the Dividend Discount Model (DDM), Free Cash Flow to Equity (FCFE), and Walter model was made to find out the most accurate method of the method used in the study.

Method	Root Mean Square Error
DDM	1768
FCFE	21272
Walter	368320

Source: Data Processed by author

The calculation result shows that the smallest Root Mean Square Error (RMSE) value was the Dividend Discount Model method worth 1768, it shows that the most accurate method and close to its market price of all methods used in the study was the Dividend Discount Model.

2. Regression Model Testing

Testing the data panel regression model can be done with three method approaches namely Common Effect Model, Fixed Effect Model and Random Effect Model. All three data panel regression models should be tested to select the right regression model for use in this research

- Chow Test

Redundant Fixed Effects Tests			
Equation: FEM			
Test period fixed effects			
Effects Test	Statistic	d.f.	Prob.
Period F	0.491959	(3,52)	0.6894

Source: Eviews 9 processed result

Based on the results of the chow test obtained statistical value of test F on the influence of three model on Investment Decision of 0.491959 with a probability value of 0.6894. The probability value was greater than 0.05 ($0.6894 > 0.05$). Statically the results of the regression model data panel Chow Test for Dividend Discounted Model, Free Cash Flow to Equity and Walter Model

against investment decisions in consumer good industry companies received H_0 rejected and H_a so that the right model used was Common Effect Model.

- Lagrange Multiplier Test

Lagrange Multiplier Tests for Random Effects			
Null hypotheses: No effects			
Alternative hypotheses: Two-sided (Breusch-Pagan) and one-sided (all others) alternatives			
	Test Hypothesis		
	Cross-section	Time	Both
Breusch-Pagan	2.535497 (0.1113)	0.899792 (0.3428)	3.435290 (0.0638)
Honda	-1.592325 --	-0.948574 --	-1.796686 --

Source: Eviews 9 processed result

Based on the results of the Lagrange Multiplier test obtained a Breusch-Pagan Both probability value of 0.0638. The probability value was greater than 0.05 ($0.0638 > 0.05$). Statistically, the results of the data regression model test panel Lagrange Multiplier Test for Dividend Discounted Model, Free Cash Flow to Equity, and Walter Model against investment decisions on Consumer Good Industry companies received H_0 rejected and H_a , so the right model used was the Common Effect Model.

3. Hypothesis Test

	Mean		
R-squared	0.869096	dependent var	4004.797
Adjusted R-squared	0.861956	S.D.	4282.452
S.E. of regression	1591.115	Akaike info criterion	17.64765
Sum	1.39E+08	Schwarz	17.78850

squared	criterion	
resid		
Log-likelihood	-516.6056	Hannan-Quinn criteria. 17.70263
F-statistic	121.7184	Durbin-Watson stat 2.776373
Prob(F-statistic)	0.000000	

Source: Eviews 9 processed result

4. Determination Coefficient Test (R^2)

Based on the estimation of The Common Effect Model Adjusted R-Squared Value of 0.86 (86%) means that the variance of MPS can be explained by DDM, FCFE, and Walter by 86%, while the rest (100%-86%=14%) described by other variables outside the model used.

5. Simultaneous Test (F-test)

Based on data, probability values (0.000000<0.05) then variable Dividend Discount Model (X_1), Free Cash Flow to Equity (X_2), and Walter Model (X_3) together affect the variable investment decision. This indicates that the variable value of Dividend Discount Model, Free Cash Flow to Equity, and Walter Model down or up will be followed by the rise or fall of the share price. The effect of variable Dividend Discount Model, Free Cash Flow to Equity and Walter Model together on the share price shows that dividend discount model, Free Cash Flow to Equity and Walter Model are always considered by investors to invest in stocks in ISSI-listed Consumer Good Industry companies.

6. Partial Test

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	443.8643	284.5408	1.559932	0.1245
DDM	0.849313	0.075720	11.21647	0.0000
FCFE	-0.001356	0.001685	-0.804425	0.4246
WALTER	0.007059	0.087763	0.080436	0.9362

Source: Eviews 9 processed result

- **Dividend Discount Model (DDM)**
Partial hypothesis testing of the Dividend Discount Model (DDM) variable against investment decisions resulted in a coefficient value of 0.849313 and a calculated t value of 11.21647 with a probability of 0.0000. The test results state that the coefficient was positive and the probability of < 0.05 , so it can be concluded that there was a partially significant influence between the Variable Dividend Discount Model (DDM) on investment decisions at Consumer Good Industry companies listed on ISSI.
- **Free Cash Flow to Equity (FCFE)**
Partial hypothesis testing of the Free Cash Flow to Equity (FCFE) variable against investment decisions resulted in a coefficient value of -0.001356 and a calculated t value of -0.804425 with a probability of 0.4246. The test results state that the coefficient was negative and the probability of > 0.05 , so it can be concluded that there was no partially significant influence between the Free Cash Flow to Equity (FCFE) variable on investment decisions at Consumer Good Industry companies listed on ISSI.
- **Walter Model**
Partial hypothesis testing of the Walter Model variable on Investment Decisions resulted in a coefficient value of 0.007059 and a calculated t value of 0.080436 with a probability of 0.9362. The test results stated that the coefficient was positive but the probability > 0.05 , so it can be concluded that there was no partially significant influence between Walter model variables on investment decisions in Consumer Good Industry companies listed on ISSI.

Effect of Dividend Discount Model (X_1) on Investment Decision (Y)

The first hypothetical result (H_1) states that the Dividend Discount Model has a positive and significant influence on investment decisions, then it can be concluded that H_1 in this study is supported. The result of this study is supported by research conducted by Hasanah and Ruslianti which states that the Dividend Discount Model (DDM) can produce accurate predictive values and close to the actual price of its stocks. If the stock valuation result is close to its actual price, it will be more influenced by the dividend discount model (DDM) on investment decisions. so

that this method can be relied on by investors to determine investment decisions on the company.

Effect of Free Cash Flow to Equity (X₂) in Investment Decision (Y)

The second hypothesis (H₂) states that Free Cash Flow to Equity has no positive and significant influence on investment decisions, then it can be concluded that H₂ in this study is not supported. The results of this study is in line by research conducted by Kusuma which states that Free Cash Flow to Equity has no significant effect on investment decisions, it is because the calculation and beta results of the company's equity in the Free Cash Flow to Equity approach are different from the general theory. This difference is because the risk-free rate in 2018 and 2019 was higher than the market rate of return, making zero-risk investments higher than risky investments, so this method was less reliable to determine investment decisions in the company.

Effect of Walter Model (X₃) in Investment Decision (Y)

The results of the third hypothesis (H₃) state that the Walter Model Model has not a positive and significant influence on investment decisions, then it can be concluded that H₃ in this study is not supported. The results of this study is in line by Kosgei's research which states that Walter Model in dividend policy has no significant effect on investment decisions, this is because the calculation of Walter model when the rate of return is higher than the capital and companies that do not distribute dividends will produce the highest value of stocks, while when the rate of return is smaller than the capital and the company that distributes the dividend will get the highest share value, so this method was less reliable for determining investment decisions in such companies.

CONCLUSION

Firstly, partially dividend discount model (DDM) has a significant positive influence on investment decisions in Consumer Good Industry companies listed on ISSI, so this model was less feasible to be a mainstay of investors to determine investment decisions in the company. **Secondly**, Partially Free Cash Flow to Equity (FCFE) does not have a significant

influence on investment decisions in Consumer Good Industry companies listed on ISSI, so this model was less feasible to determine investment decisions on such companies. **Thirdly**, the Walter Model partially has no significant influence on investment decisions in ISSI-listed Consumer Good Industry companies, so it was less feasible to make investment decisions on such companies.

The suggestions that can be given to the next researcher is as follows that researchers suggest for future researchers to use research models other than the Dividend Discount Model (DDM), Free Cash Flow to Equity (FCFE), and Walter Models such as Price Book Value (PBV), Price Earnings Ratio, and other models to increase stock valuation variations. Furthermore, researchers suggest for the next researcher to use the sample in accordance with the model used, such as when using the DDM method then use a more stable sample when distributing dividends and use the FCFE method if the sample is unstable when distributing dividends.

Researchers recommend for investors to use the Dividend Discount Model in determining investment decisions because the Dividend Discount Model (DDM) approach is the most accurate method of determining investment decisions in a company.

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