CHAPTER III

RESEARCH METHOD

A. Type of Research

Research method is a way or procedure used to conduct research that answers the formulation of problems and research objectives. The purpose of this research is to determine the stock position, so the result can help investor in making decision related with investment. Before conducting a research, the method that is used in the research must be elucidated clearly. The type of research that used is descriptive qualitative approach.

Descriptive research is the research that has several characteristic such as provide an overview of the phenomenon, explain the relationship (correlation), test the proposed hypothesis, make predictions of the incident (forcase), give meaning or implication to a problem under study (Masyhuri, 2008:34). This research is tried to describe a condition of the company stock using valuation. The result of valuation can be interpreted as a decision.

Quantitative research is the research method that used to testing objective theories using numbered data that can be analyzed using statistical procedures. Quantitative methods involve the process of collecting, analyzing, interpreting, and writing the result of a research (Creswell, 2009:4). The data obtained will be calculated using several formulas. The result of the calculation will be analyzed and described, so it can be taken the conclusion.

B. Location of Research

The location of this research is in Indonesia Stock Exchange through website www.idx.co.id . This location is chosen because Indonesia Stock Exchange or IDX is the information center that provides data especially financial data such as annual reports, composite index and companies list.

C. Variable Operationalization

Variable operationalization is used to explain and understand variables in the research to eliminate potential ambiguity. It is the process of strictly defining variables. It is important to facilitate the research process. In this research, the researcher will do stock valuation using Free Cash Flow to Equity (FCFE) and Price Earning Ratio (PER). Variables contained related to calculation in this research are :

1. Free Cash Flow to Equity (FCFE) Approach

   Free Cash Flow to Equity (FCFE) in this research uses constant growth model. This model is used to value companies that have stable growth. Stable growth is indicated from stable income of the companies in period 2013-2015.

   a) Risk-free rate of return (R_f)

   This is the minimum rate of return when beta is zero. Risk-free rate is represented by interest rate of Bank Indonesia Sertificates (SBI) in period 2013-2015. Adopting the formula as mention by Husnan (2003:176) in chapter 2 page 29, the calculation of risk-free rate of return (R_f) apply in the similar formula.

$$R_f = \frac{\sum R_f \,(\text{SBI})}{N}$$

Where:
    R_f = Risk-free rate of return
    $\sum R_f\,(\text{SBI})$= Average of interest rate of SBI
    N   = Number of month in a year

b) Rate of individual stock return (R_i)

This is the rate of return based on the individual stock. In calculate rate of individual stock return (R_i), researcher uses closing price of stock in period 2013-2015.

$$R_{i,t} = \frac{P_t - P_{t-1} + D_t}{P_{t-1}}$$

Source: Jogiyanto (2014:237)
Where:
    $R_{i,t}$ = Rate of individual stock return in t time (month)
    P_t = Current stock price (closing price)
    P_{t-1} = Previous stock price (closing price)
    D_t = Dividend in t time (month)

c) Rate of market return (R_M)

This rate is the rate of return based on the stock price index development or composite stock price index. In Indonesia, composite stock price index is called *Index Saham Gabungan* (IHSG). IHSG data in this research is data in period 2013-2015.

$$R_{M,t} = \frac{IHSG_t - IHSG_{t-1}}{IHSG_{t-1}}$$

Souce: Jogiyanto (2014:370)
Where:
    $R_{M,t}$ = Rate of market return in t time (month)
    $IHSG_t$ = Current composite stock price index

$IHSG_{t-1}$ = Previous composite stock price index

d) Beta (β)

This measures the systematic risk of securities or portfolio relative on market risk. The calculation uses pre-calculated data in this research.

$$\beta_i = \frac{\sigma_{i,M}}{\sigma^2{}_M}$$

Source: Tandelilin (2010:195)

or

$$\beta_i = \frac{[(R_{it} - \overline{R_{it}}) \text{ x } (R_{Mt} - \overline{R_{Mt}})]}{(R_{Mt} - \overline{R_{Mt}})^2}$$

Source: Jogiyanto (2012:383)

Where:

β_i	= Beta
$\sigma_{i,M}$	= Covariance of securities return and market return
$\sigma^2{}_M$	= Variance of market return
R_{it}	= Rate of individual stock return
$\overline{R_{it}}$	= Average rate of individual stock return
R_{Mt}	= Rate of market return
$\overline{R_{Mt}}$	= Average rate of market return

It can be concluded that the formula to calculate covariance of securities return and market return, and variance of market return are:

(1) Covariance of securities return and market return

$$\sigma_{i,M} = [(R_{it} - \overline{R_{it}}) \text{ x } (R_{Mt} - \overline{R_{Mt}})$$

(2) Variance of market return

$$\sigma^2{}_M = (R_{Mt} - \overline{R_{Mt}})^2$$

e) Cost of Equity (Ke)

This is the rate of return that desired or required by the investor.

$$K_e = R_f + \beta_i[E(R_M) - R_f]$$

Source: Tandelilin (2010:197)

Where:

Ke	=	Cost of equity
$E(R_M)$	=	Expected market portfolio Return
βi	=	Beta
R_f	=	Risk-free rate of return

f) Growth rate (g)

This rate is the dividend growth. This growth is used to valuing stock. The calculation of growth rate uses data of return on equity (ROE) and payout ratio in period 2013- 2015.

$$g = ROE \ x \ (1 - Payout \ Ratio)$$

Source: Tandelilin (2010:315)

g) Free Cash Flow to Equity (FCFE)

This measures cash flow for stockholders after all expense, reinvestment and debt are paid. Data obtained to calculate FCFE is from annual report in period 2015.

$$FCFE = Net \ income - (Capital \ expenditure - Depreciation)$$
$$- (change \ in \ noncash \ working \ capital)$$
$$+ (New \ debt \ issued - Debt \ repayment)$$

Source: Damodaran (2002:352)
Where:

Change in noncash working capital = non-cash current asset – non-debt current liabilities.

New debt issued – debt repayment   = net long-term debt

h) Expected Free Cash Flow to Equity ($FCFE_1$)

This is the estimated Free cash Flow to Equity (FCFE) in period 2016.

$$FCFE_1 = FCFE_0 \ X \ (1 + g)$$

Source: Gardner, McGowan, and Moeller (2012:3)

Where:
$FCFE_1$ = Expected FCFE (2016)
$FCFE_0$ = FCFE previous year (2015)

i) Intrinsic value (FCFE approach)

This value is the value that reflects the actual stock price of the traded stock. The value calculation is using constant growth FCFE model.

$$Value = \frac{FCFE_1}{K_e + g_n}$$

Source: Damodaran (2002:359)
Where:
$FCFE_1$ = Expected FCFE
Ke = Cost of equity of the company
g_n = Growth rate of the company

2. Price Earning Ratio (PER) Approach

In this research, researcher will estimates the Price Earning Ratio (PER) in period 2016 to generate intrinsic value.

a) Growth rate

This rate indicates the dividend growth of stock.

$$g = ROE \; x \; (1 - Payout \; Ratio)$$

Source: Tandelilin (2010:315)

b) Earning per share (EPS)

This is net income available to common stockholders of the company by the amount of outstanding stocks. EPS that research is used in this research is EPS estimation.

$$E_1 = E_0 \; X \; (1 + g)$$

Source: Tambunan (2007:248)

Where:
E_1 = EPS estimation (2016)
E_0 = EPS previous year (2015)
g   = Growth rate of the company

c) Dividend per share (DPS)

This is the amount of dividends paid to stockholders on the amount of total

net income of a company. This research uses DPS estimation.

$$D_1 = D_0 \times (1 + g)$$

Source: Tambunan (2007:230)
Where:
D_1 = DPS estimation (2016)
D_0 = DPS previous year (2015)
g = Growth rate of the company

d) Expected return (k)

This is the rate of return that expected by investor. The calculation uses

pre-calculated data.

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

Source: Brigham and Houston (2010:394)
Where:
k = Expected return
D_1 = DPS estimation (2016)
Po= Market price of stock (closing price 2016)
g = Growth rate of the company

e) Price Earning Ratio (PER)

This is calculating the multiplier of the value reflected in the price of a

stock. In this research, the researcher tries to estimate PER to determine

the intrinsic value stock.

$$Estimated\ PER = \frac{\frac{D_1}{E_1}}{k - g}$$

Source: Tandelilin (2010:376)

Where:

D_1 = Dividend per share estimation
E_1 = EPS estimation
k = Expected return
g = Growth rate of the company

f) Intrinsic value (PER approach)

This value is the value that reflects the actual stock price of the traded stock.

$$Intrinsic\ Value = Estimated\ EPS\ x\ Estimated\ PER$$

Source: Tandelilin (2010:377)

D. Population and Sample

1. Population

According to Masyhuri (2008:151) population is a group of objects that become a research problem. Population is a generalization area of object / subject that have a certain quality or characteristic to be studied by researcher. In the research, population will be clearly stated related with the size of population member and the area of the research covered (Usman, 2014:42). So the population is the area of object / subject that has certain characteristic that can be a research problem in a research.

The populations in this research are the stocks of companies listed in LQ45 index period August 2017 - January 2018. The list of companies is presented in **Attachment 1.**

2. Sample

Sample is part of the population (Sugiono, 2011:81). According to Mayhuri (2008:153) sample raised on the research is reduce the object to be studied. Sample is taken using a particular technique called the sampling technique (Usman, 2014:43). So, the sample is part of the population that will be focus of the research or as the object of research.

There are several sampling techniques used in the research. Sampling technique used in this research is purposive sampling. Purposive sampling is used when selected sample members are based on their research objectives (Usman, 2014:45). According to Sugiono (2011:83) purposive sampling is a technique to determine sample with certain considerations or criteria (Sugiyono, 2011:85). Several criterias in this research are:

a) Companies stocks are listed in LQ-45 index continuously in period 2013-2017.

b) Companies that the annual report data period 2015 are available.

c) Companies that distribute dividend to the stockholders in period 2013-2015.

Based on the list of companies stock of index LQ-45 period 2017, there are 45 stocks which are listed in that index. Furthermore, that stocks will be selected to get data as sample for this research related with the several criterias. Based on the selection, there are 18 companies stock in accordance with the criteria. The procedure of sample selection will be explained in **Table 3.1** and **Table 3.2** as follows:

Table 3.1 Procedure of sample selection

No	Explanation	Companies stock
1	The amounts of companies stock of LQ-45 index period August 2017 – January 2018.	45 stocks
2	The amounts of companies stock that are not listed continuously in LQ-45 index period 2013-2017	(15) stocks
3	The amount of the companies that the annual report data period 2015 are unavailable	(0) stocks
4	The amounts of companies that are not distribute dividend to the stockholders in 2013-2015.	(12) stocks
	The amount of sample	18 stocks

Source : data processed by Researcher 2017

Table 3.2 Research sample

No	Emiten Code	Listed continuously in LQ-45 index period 2013-2017	Available annual report 2015	Distribute dividend in 2013-2015	Note
1	AALI	V	V	-	Non sample
2	ADHI	-	V	V	Non sample
3	ADRO	V	V	V	Sample
4	AKRA	V	V	V	Sample
5	ANTM	-	V	-	Non sample
6	ASII	V	V	V	Sample
7	BBCA	V	V	V	Sample
8	BBNI	V	V	V	Sample
9	BBRI	V	V	V	Sample
10	BBTN	-	V	V	Non sample
11	BJBR	-	V	V	Non sample
12	BMRI	V	V	V	Sample
13	BMTR	-	V	-	Non sample
14	BRPT	-	V	-	Non sample
15	BSDE	V	V	V	Sample
16	BUMI	-	V	V	Non sample
17	EXCL	-	V	-	Non sample
18	GGRM	V	V	V	Sample
19	HMSP	-	V	V	Non sample
20	ICBP	V	V	V	Sample
21	INCO	V	V	-	Non sample
22	INDF	V	V	V	Sample
23	INTP	V	V	V	Sample
24	JSMR	V	V	-	Non sample

Continued Table 3.2

No	Emiten Code	Listed continuously in LQ-45 index period 2013-2017	Available annual report 2015	Distribute dividend in 2013-2015	Note
25	KLBF	V	V	V	Sample
26	LPKR	V	V	-	Non sample
27	LPPF	V	V	-	Non sample
28	LSIP	V	V	V	Sample
29	MNCN	V	V	-	Non sample
30	MYRX	-	V	-	Non sample
31	PGAS	V	V	-	Non sample
32	PPRO	-	V	-	Non sample
33	PTBA	V	V	V	Sample
34	PTPP	V	V	-	Non sample
35	PWON	-	V	V	Non sample
36	SCMA	V	V	-	Non sample
37	SMGR	V	V	V	Sample
38	SMRA	V	V	-	Non sample
39	SRIL	-	V	V	Non sample
40	SSMS	V	V	-	Non sample
41	TLKM	V	V	-	Non sample
43	UNVR	V	V	V	Sample
44	WIKA	-	V	V	Non sample
45	WSKT	-	V	V	Non sample

Source: Data processed by Researcher, 2017

E. Type and Source of Data

This research uses secondary data sources. According to Sugiyono (2011:137) secondary data is indirect source that provides data to researcher, but the data is obtained through other people or it can also through the documentation. It means that researcher did not collect the data directly from respondents or subjects.

Secondary data used in this research is data obtained from IDX data, official web of bank Indonesia and composite stock price index (JCI). The data is obtained or collected from the available sources, as follows:

1. Annual report of the companies in period 2015 and list of companies stocks in LQ-45 Index in Indonesia Stock Exchange 2013-2017 through www.idx.co.id.

2. Data of Composite Stock Price Index (CSPI) or *Index Harga Saham Gabungan (IHSG)* obtained by accessing internet media through www.bps.go.id. This data is used to calculate rate of market return (R_M).

3. Data of Bank Indonesia Certificates (SBI) obtained from through the official web of Bank Indonesia is www.bi.go.id. This data is to calculate risk-free of return (R_f).

F. Data Collection Technique

Data collection technique is related with the ways used to collect data. The collecting data technique in this research is documentary technique. This technique is conducted by collecting the secondary data from Indonesia Stock Exchange and others trustable websites.

G. Technique of Data Analysis

Data analysis used when the data needed is obtained. According to Sugiyono (2011:147) data analysis is an effort that can determine the answer in a research. In conducted the data analysis, the researcher has to find a suitable method for the research. Analysis method that used in this research is quantitative analysis method. This method is conducted by calculating, analyzing, and implementing. The analysis steps in this research as follows:

1. Free Cash Flow to Equity (FCFE) Approach

   a) Calculate risk-free rate of return (R_f)

   $$R_f = \frac{\sum R_f \text{ (SBI)}}{N}$$

   The average of interest rate of SBI [$\sum R_f$ (SBI)] calculation uses interest

   rate of SBI data in period 2013-2015. Risk-free rate of return (R_f) is

   known from average of interest rate of SBI [$\sum R_f$ (SBI)] divided by the

   number of month in a year.

   b) Calculate rate of individual stock return (R_i)

   $$R_i = \frac{P_t - P_{t-1} + D_t}{P_{t-1}}$$

   Source: Jogiyanto (2014:237)

   Return calculation above is using closing price of stock and dividend data

   every month in period 2013-2015.

   c) Calculate rate of market return (R_M)

   $$R_{M,t} = \frac{IHSG_t - IHSG_{t-1}}{IHSG_{t-1}}$$

   Souce: Jogiyanto (2014:370)

   Rate of market return is using *Index Harga Saham Gabungan (IHSG)* data

   every month in period 2013-2015.

   d) Determine beta (β)

   $$\beta_i = \frac{\sigma_{i,M}}{\sigma^2{}_M}$$

   Source: Tandelilin (2010:195)

or elaborated

$$\beta_i = \frac{\sum_{t=1}^{n}[(R_{it}-\overline{R_{it}}) \text{ x } (R_{Mt}-\overline{R_{Mt}})]}{(R_{Mt}-\overline{R_{Mt}})^2}$$

Souce: Jogiyanto (2012:383)

Covariance of securities return and market return ($\sigma_{i,M}$) is generated from the rate of individual stock return and rate of market return every month, and variance of market return ($\sigma^2{}_M$) is generated from the rate of market return every month as well as on the formulas. Beta is known from the total covariance of securities return and market return ($\sigma_{i,M}$) divided by the total of variance of market return ($\sigma^2{}_M$) in period 2013-2015.

e) Calculate cost of equity (Ke)

$$K_e = R_f + \beta_i[\text{E}(R_M) - R_f]$$

Source: Tandelilin (2010:197)

Expected market portfolio return ($\text{E}(R_M)$) is the average of rate of market return period 2013-2015.

f) Calculate growth rate (g)

$$Expected\ growth = Retention\ ratio\ x\ Return\ on\ equity$$

Source: Damodaran (2002:358)

Growth rate calculation using payout ratio and return on equity data in period 2013-2015. Payout ratio is used to calculate retention ratio.

g) Calculate Free Cash Flow to Equity (FCFE)

$$
\begin{aligned}
FCFE = {} & Net\ income - (Capital\ expenditure - Depreciation) \\
& - (change\ in\ noncash\ working\ capital) \\
& + (New\ debt\ issued - Debt\ repayment)
\end{aligned}
$$

Source: Damodaran (2002:352)

Free Cash Flow to Equity (FCFE) uses data in period 2015, because the result of this calculation will be used to calculated Expected Free Cash Flow ($FCFE_1$) in period 2016.

h) Expected Free Cash Flow to Equity ($FCFE_1$)

$$FCFE_1 = FCFE_0 \text{ X } (1 + g)$$

Source: Gardner, McGowan, and Moeller (2012)

i) Calculate intrinsic value (FCFE approach)

$$Value = \frac{FCFE_1}{K_e + g_n}$$

Source: Damodaran (2002:359)

j) Investment decision

 (1) Intrinsic value > market price = "undervalued". The decision is buy the stock or save it.

 (2) Intrinsic value < market price = "overvalued". The decision is sell the stock.

 (3) Intrinsic value = market price, the decision can be sell or buy or save depend on the investor condition.

2. Price Earning Ratio (PER) Approach

 a) Calculate growth rate (g)

$$g = ROEx \, (1 - PayoutRatio)$$

Source: Tandelilin (2010:315)

Growth rate calculation using data return on equity and payout ratio data in period 2013-2015.

b) Calculate Earning per share (EPS) estimation

$$E_1 = E_0 \text{ X } (1 + g)$$

Source: Tambunan (2007:248)

The calculation of EPS estimation uses the EPS data in period 2015 (E_0) for predicting EPS in period 2016 (E_1).

c) Calculate Dividend per share (DPS) estimation

$$D_1 = D_0 \text{ x } (1 + g)$$

Source: Tambunan (2007:230)

The calculation of DPS estimation uses DPS data in period 2015 (D_0) for predicting DPS in period 2016 (D_1).

d) Calculate Expected return (k)

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

Source: Brigham and Houston (2010:394)

Market price return (P_0) in formulation above is the closing price of stock in period 2015.

e) Calculate Price Earning Ratio (PER) estimation

$$Estimated\ PER = \frac{\frac{D_1}{E_1}}{k-g}$$

Source: Tandelilin (2010:376)

f) Calculate intrinsic value (PER approach)

$$Intrinsic\ Value = Estimated\ EPS\ x\ Estimated\ PER$$

Source: Tandelilin (2010:377)

g) Investment decision

(1) Intrinsic value > market price = "undervalued". The decision is buy the stock or save it.

(2) Intrinsic value < market price = "overvalued". The decision is sell the stock.

(3) Intrinsic value = market price, the decision can be sell or buy or save depend on the investor condition.

3. Interpretation

The result of calculation using Free Cash Flow to Equity (FCFE) and Price Earning Ratio (PER) approach will be interpreted. The recommendation of investment decision that already known from the both will be compared to find out whether the recommendations for each company stock from both approaches are similar.