VALUE AT RISK AND EXPECTED RETURNS OF PORTFOLIO COMPANIES LISTED ON LQ45 INDEX PERIOD 2013-2016

Undergraduate Thesis

By

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FACULTY OF ECONOMICS AND BUSINESS

UNIVERSITY OF LAMPUNG

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ABSTRACT

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The objective of this study is to investigate whether there is a positive relationship between Value at Risk and Expected Portfolio Returns in Indonesia Stock Exchange. The population of this study is companies listed on LQ45 index period 2013-2016 and the sample is 20 companies that meet the criteria. Markowitz method was used to form 65 portfolios consist of 2 combination of stock that has a negative correlation.

The result shows that there is no positive relationship between Value at Risk and Expected Portfolio Returns. On the contrary, the correlation coefficient indicated that there is a negative relationship between the variables, means that there is an inverse relationship (high return low risk and vice versa). It proves the assumption of a rational investor is avoiding risk (risk averse). This result is also supported by the findings from Schroders Global Investment Trends Survey 2015 which shows that 63 percent of investors in Indonesia prefer to allocate their investments in instruments with low and medium risk levels. However, it does not mean the concept of high-risk high-return is not applicable in Indonesia because the result is not significant.

Keyword: Value at Risk, Markowitz Method, Portfolio.

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Researcher

ADINDA SALSABILA

Undergraduate Thesis

As One of Requirements to Achieve
BACHELOR OF ECONOMICS

In

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Hereby declare that:

1. Thesis titled "Value at Risk and Expected Returns of Portfolio Companies Listed on LQ45 Index Period 2013-2016", is my own and I do not plagiarism or quoting on works by other author except in my writing clearly listed in the References.
2. Submit entirely the result of my research in the form of hard copy and soft copy thesis to be published to the print and electronic media to the Management Faculty of Economics and Business, University of Lampung.
3. Will not demand / request compensation in any way for anything done by the Department of Management Faculty of Economics and Business, University of Lampung on this Research / Thesis.
4. This statement I make with real and if in the future there is untruth in this statement, then I am willing to accept the sanction given to me, and I am willing and able to prosecuted in accordance with applicable law.

So I make this affidavit truthfully, to be used as appropriate.

Bandar Lampung, 9 May 2018

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BIOGRAPHY

The researcher was born on November 20th, 1997 in Bandar Lampung, Indonesia. The first child of Iskandar Muda and Yusna Adia and the sister of Adisa Athalla Fakhira and M. Ariq Rizqullah.

The researcher initial academic stage started on Playgroup Tunas Mekar Indonesia in 2000 and continue to TK Kartika Jaya II-5 Bandar Lampung in 2002. Then, the researcher continued studying at SD Kartika Jaya II-25 Bandar Lampung in 2003, then continued to SMPN 2 Bandar Lampung in 2009. The researcher only studied for 2 years in Junior High School because she took academic acceleration program. In 2011, the researcher continued studying in SMAN 2 Bandar Lampung.

In 2014, the researcher was accepted in Faculty of Economics and Business, University of Lampung, majoring in Financial Management and took International Class.

MOTTO

مَنْ جَدَّ وَجَدَ

“whoever strives shall succeed”

“Do something today that your future self will thank you for.”
— Sean Patrick Flanery

“Honesty and integrity are absolutely essential for success in life, all areas of life.”
— Zig Ziglar

“Have courage and be kind. Where there is kindness there is goodness, and where there is goodness there is magic”
— Cinderella

DEDICATIONS

With gratitude of all joy and blessings given by Allah SWT, this thesis is dedicated to the most important people in my life. My parents, My siblings and My grandmother.

Thank you for all the support you have given. I'm truly grateful to be surrounded and guided by an incredibly supportive family. I would not be who I am today without their guidance, love, advices and prays. I will try as hard as I could to make you proud.

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Praise and gratitude to Allah SWT for its blessings and directions, thus the research can finish this undergraduate thesis entitled “Value at Risk And Expected Returns of Portfolio Companies Listed on LQ45 Index Period 2013-2016”. This undergraduate thesis is one of requirements to receive the Undergraduate Degree in Faculty of Economic and Business, University of Lampung.

In writing this undergraduate thesis, the researcher realized that this achievement would never have come into existence without any supports, encouragements, and assistance by several important people. Thus, the researcher would like to express gratitude to:

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17. All parties who gave support for the researcher during the writing of this undergraduate thesis. May Allah grant mercy and blessings and may this undergraduate thesis become useful and meaningful.

The researcher realized that the writing of this undergraduate thesis is still far from perfect. Hopefully, this script would give a positive contribution for those who are interested to conduct the further research.

Bandar Lampung, April 2018

Adinda Salsabila

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I. INTRODUCTION

A. Background

In general, there are two choices of assets that investors can choose to invest, which are real assets and financial assets. Real assets and financial assets are the option that can be chosen by the investor. Real assets include assets that have productive capacities such as building, land, and machinery while financial assets consist of stocks or bonds. Investments in real assets can be done directly through the factory or manufacturer that produces such assets. The investment in financial assets can be done in the market such as the Surat Berharga Pasar Uang (SBPU) and the capital markets.

All activities of investments made by investors will be through the Investment Process. To understand the investment process, an investor must first know some basic concepts of investment that will be the basis of the step in every stage of making investment decisions made. The most fundamental thing in the investment process is the understanding between expected returns and risks that occur in the investment. The relationship between the expected return and the risk of an investment is a directly proportional relationship, it means that the more returns received the greater the risk to be borne by the investor.

All the investor has the objective to get profit from the equity investments to companies. Investors buy some stock today with the hope of gaining from rising

stock prices or the amount of dividends (return of profits) in the future, as a reward for the time and risk associated with the investment (Tandelilin, 2007). To achieve these objectives, the investor must perform an analysis of the shares to be purchased. A rational investor will focus on 1) The highest return rate with a certain level of risk, and 2) a certain level of return with low risk. Both conditions indicate investment in optimal conditions. If an investor wants an optimal profit, the investor must set a good strategy.

To reduce investment risk, investors can invest in various types of stock by forming a portfolio. If an investor wants to form a portfolio then they should be able to analyze the existing market appropriately. According to (Jogianto, 2003) if there is a possibility of unlimited portfolio formation, then the question is which portfolio will be chosen by the investor. The problem that often happens is that investors are faced with uncertainty when it comes to choosing shares to be formed into their preferred portfolio. Of course, the answer depends on investors' own risk preference. Investors are faced with many combinations of shares in the portfolio. A rational investor will certainly choose an optimal portfolio that can minimize risk at a certain profit level or get a maximum return at a certain risk level (Jogianto, 2003).

In determining the efficient portfolio there are two models that can be used that is Markowitz model and Single Index model. The Markowitz model emphasizes the relationship between return and risk of the portfolio investment while the Single Index model assumes that the rate of return between two or more stocks will be correlated, move together and have the same reaction to one factor (Halim, 2005).

The Markowitz model can overcome the weakness of random diversification. The assumption that the continuous increase in the number of stock in one portfolio will bring greater benefits is in contrast to the Markowitz model. This model believes that continuous stock addition to a single portfolio will, at a certain point, further reduce the benefits of diversification and will increase the risk level (Tandelilin, 2010). The Markowitz model introduces a portfolio diversification model. The firm-specific risk reduction is done by diversifying so that only remains the systematic risk also known as the insurance principle.

Understanding about risk is an important thing for every investor and potential investor. Before making an investment decision, an investor should at least consider two things, the expected return and risk contained from investment alternatives. The higher the risk faced by an investor, the higher the investor to gain expected return. In modern investment management is known to divide the total risk investment into two types of risks, namely systematic risk and unsystematic risk. Systematic risk, known as market risk, is related to changes in the market in general. Market changes will affect the variability return of an investment. While unsystematic is a risk that is not related to the market as a whole.

According to Reto Gallati (2003), the risk is defined as a condition in which an exposure may be harmful or disadvantageous. The risk in investments is the uncertainty that faced because of the price of an asset or investment being smaller than the expected return. The main problem faced by an investor is to determine which risky assets that must be purchased. Therefore, risk management which

also include risk measurement is necessary for making investment decisions. Financial institutions, as well as investors, always want to strive for risk to always be quantified. Traditional measurements are used to quantify the risks associated with sensitivity measurements. It does not give an idea of the potential or probability of the occurrence of such losses.

The most common risk measure used in both hedge fund and mutual fund evaluations is standard deviation. Standard deviation in this case is the level of volatility of returns measured in percentage terms, and usually provided on an annual basis. Unfortunately, and particularly when related to hedge funds, standard deviation does not capture the total risk picture of returns. This is because most hedge funds do not have normally distributed returns and standard deviation assumes a bell-shaped distribution, which assumes the same probability of returns being above the mean as below the mean. Most hedge fund returns are skewed in one direction or another and the distribution is not as symmetrical. For this reason, there are a number of additional metrics to use when evaluating hedge funds and, even with the additional metrics, some risks simply cannot be measured. Another measure that provides an additional dimension of risk is Value-at-Risk (VaR). VaR measures the dollar-loss expectation that can occur with a 5% probability.

Fardiansyah (2006) stated that risk measurement methods, Value at Risk (VAR) is currently very popular and widely used by the financial industry worldwide. Value at risk (VaR) that has been called the "new science of risk management" is a statistical technique used to measure and quantify the level of financial risk

within a firm or investment portfolio over a specific time frame. For investors, risk is about the odds of losing money, and VAR is based on that common-sense fact. By assuming investors care about the odds of a really big loss, VAR answers the question, "What is my worst-case scenario?" or "How much could I lose in a really bad month?" (Harper, 2017).

VaR can be defined as the estimated maximum loss to be gained over a certain period of time under normal market conditions at a certain confidence level (Jorion, 2007). Simply VaR would like to answer the question, how much (in percent or a certain amount of money) an organization, company or individual can lose during the investment period t with a confidence level of α. In this case, the value of the confidence level should be able to reflect the standard probability of the investment. One of the advantages of VaR is that this method of measurement can be applied to all traded financial products. The figures obtained are the result of aggregate or comprehensive calculation of product risks as a whole. VaR also provides an estimate of the likelihood or probability of incurring losses that amount greater than the number of losses that have been determined. VaR also pays attention to changes in prices of existing assets and its influence on other assets. This allows for measurement of the reduced risk caused by a product or portfolio diversification (Sartono and Setiawan, 2006).

The first study to examine the VaR-return relationship in the context of asset pricing is Bali and Cakici (2004). They investigate whether there is a relationship between VaR-return in portfolio level as well as the direction of the relationship of the two variables. Empirical studies on the role of VaR are: Bali and Cakici

(2004), Trimech and Benammou (2012), Iqbal and Azher (2014), Chen et al. (2014), and Tariq and Valeed (2017). All of the studies find a positive risk premium associated with VaR. Chen et al. (2014) investigate the pricing of VaR in the Taiwan's stock market and find a positive risk premium for VaR. Iqbal and Azher (2014) found that average portfolio return are positively correlated with VaR. There is a strong relationship between average returns and VaR. The direction of the relationship is positive, which means that both VaR and average return tend to increase together. The results show that, the greater a portfolio's potential losses, the higher will be the expected return. In Indonesia, Value at Risk has been studied by Suhadi (2012) who evaluates Value at Risk calculations on three state-owned. The same research was also conducted by Safitri (2011) who evaluated Value at Risk of LQ45's optimum stock portfolio.

This study will analyze the relationship between Value at Risk and average returns in portfolio level of companies listed in Index LQ45 of Indonesia Stock Exchange. This study will be different with the previous study in terms of portfolio formation. The previous study used decile method to form portfolio, but this study will use Markowitz method to form portfolio. The Pearson correlation test is used to examine whether there is a positive relationship between Value at Risk and expected portfolio return of Index LQ45 In Indonesia Stock Exchange.

Companies listed in the LQ45 Index are selected for sampling on the basis of the consideration that it is the companies with the most significant capitalization rates and consists of companies with a broad range of industries, so this study can provide a broader picture.

This study is feasible because the research related to examine the relationship between Value at Risk and expected returns in portfolio level of companies listed in LQ45 Indonesia Stock Exchange (BEI) has never been done in Indonesia. Based on the background that has been presented, this study will be **"Value at Risk and Expected Returns of Portfolio (Companies Listed on LQ45 Index Period 2013-2016)"**

B. Problem Formulation

Based on the background above, then the authors formulate problem as follows:
Does Value at Risk has positive relationship with expected portfolio return in Indonesia Stock Exchange?

C. Purpose of The Research

The general purpose of this study is to examine whether VaR has positive relationship with expected portfolio return of Index LQ45 In Indonesia Stock Exchange. The specific purpose of this study is to answer the questions contained in the formulation of the problem, among others:

1. To examine the relationship of Value at Risk and expected portfolio returns
2. To know the Value at Risk of each stocks and portfolio of LQ45 covering the time period 2013-2016

D. Research Benefits

The results of this study are expected to provide benefits to:

1. For academics

This study could be used to add theoretical knowledge about Value at Risk and its application and it is expected to provide an overview of how to calculate Value at Risk on single assets and portfolio. This study can also be used in financial management research and can complement other studies and can develop further research.

2. For investors

   Investors could know how much risk will be incurred to minimize losses if investing in shares listed in LQ45 so that in making investment decisions they could consider whether the risk suitable with the expected returns.

3. For researchers and the general public

   This study can be used as additional information and reference as well as a comparison for the future research.

II. LITERATURE REVIEW, CONCEPTUAL FRAMEWORK, AND HYPOTHESIS

A. Theoretical Basis

1. Investment

Investment is investing assets for the purpose of gaining profit in the future. An investor buys the current stock price in the hope of gaining profit from future stock price increases, in addition to the events and risks associated with the investment (Tandelilin, 2007). Investing in the broadest sense means sacrificing dollars now to move forward in the future. In some cases, the element of time is a viable factor. In other cases, risk becoming a dominant attribute. But it can also be both time and risk to be an important factor. (William et al., 2005).

There are two factors to consider in making the investment, the expected returns and risk. Almost all investments contain uncertainty so investors do not know the results they will get. This is why investors tend to prefer investments that generate the highest returns but do not like the high risk.

a. Investment Process

The investment process shows how an investor should make an investment decision on the securities of which securities to choose, how much the investment will be, and when will the investment be made. To take the decision there are required steps as follows:

1. Determining Investment Objectives

   There are three points to consider in this stage: the expected rate of return, the rate of risk, and the availability of funds invested.

2. Conducting Securities Analysis

   This stage means to analyze an effect or a group of effects. One of the objectives of this assessment is to identify mispriced effects, whether the price is too high or too low. There are two approaches that can be used, namely:

   a. Fundamental Approach

      This approach is based on information published by issuers as well as by stock exchange administrators.

   b. Technical Approach

      This approach is based on data/changes in stock prices in the past as an attempt to estimate stock prices in the future.

3. Build a Portfolio

   Portfolio means a set of investments. This stage will certainly be which securities will be selected, and how much the funds will be included on each of these securities.

4. Revise Portfolio

   This stage is a repetition of the previous three stages, with the intention that it is considered that the existing portfolio is no longer optimal, or not

in accordance with the preferences of investors, the investors can make changes to the securities that build up the portfolio.

5. Portfolio Performance Evaluation

   In this stage, the investor performs an assessment of the portfolio performance, both in terms of the level of profit earned and the risk covered (Rodoni, 2009).

b. Stock Investments

Stocks are securities that indicate ownership of a company (Bodie et al., 2006). Each common share represents one vote on all matters of company management and uses the vote in the company's annual meeting and profit sharing.

According Darmadji and Fakhruddin (2001), stock can be defined as a sign of participation or ownership of a person or entity within a company or limited liability company. The form of stocks is a piece of paper called stock certificate. A stock certificate is the physical piece of paper representing ownership in a company. Stock certificates will include information such as the number of shares owned, the date, an identification number, usually a corporate seal, and signatures (Investopedia). Portion of ownership is determined by how much participation or inclusion is invested in the company. However, not all stocks have the same rights. Depending on the type of stock owned by the investor.

There are several points of view to differentiate stocks (Warsini, 2009):

1. Based on how it is transferred:

a. Registered stocks which the name given to securities whereby ownership is registered with the issuing company or their agent.
b. Bearer stock is an equity security wholly owned by whoever holds the physical stock certificate.

2. Based on ownership rights:
   a. Common stocks

      Common stock is the type of securities most commonly used by issuers to obtain funds from the public and is the most popular type in the capital market. Common stock represent a claim on profits (dividends) and confer voting rights.

   b. Preferred stocks

      Preferred stock functions similarly to bonds, and usually doesn't come with the voting rights (this may vary depending on the company, but in many cases preferred shareholders do not have any voting rights).

2. Portfolio Theory

In investing, investors are always faced with the problem of maximizing the level of income or return and minimize the risk level of the investment that they did. Investors do not invest only in an asset but on a variety of assets. Portfolio can be interpreted as a series of combinations of several assets invested and held by both individual and institutional investors (Sunariyah, 2003).

Essentially the formation of a portfolio is to reduce risk by diversifying, i.e. allocating funds to various investment alternatives whose assets in the portfolio

are mutually correlated. It is necessary to identify how much proportion of funds will be invested in each asset in order to make a portfolio with large profits but a small risk (Halim, 2005). Harry Markowitz in his article entitled portfolio selection suggests how an investor can form a portfolio that produces the highest level of profit based on a certain risk stage, or form the lowest-risk portfolio at a certain stage of profitability. (Rodoni and Hamid, 2010)

A portfolio is called to be efficient if the portfolio, when compared to other portfolios, satisfies the following conditions:

a. Provide the largest ER (Expected Return) with the same risk,

   or

b. Provide the smallest risk with the same ER (Halim, 2005)

3. Markowitz Portfolio Model

Markowitz's Portfolio Theory is also called the Mean-Varian Model, which emphasizes the effort to maximize return (mean) expectations and minimize the uncertainty/risk (variance) for selecting and preparing an optimal portfolio. This means that it can be said that the optimal portfolio selection approach is based on its preference for return and risk expectations of each investment option. In portfolio theory is known the concept of the efficient portfolio and optimal portfolio. An efficient portfolio is a portfolio that provides certain returns for investors with minimal risk or offers under the same conditions with maximal returns, while an optimal portfolio is a portfolio selected by investors of the many options available in an efficient portfolio.

Investors who will invest their funds in a portfolio can use the Markowitz Model to help select stocks worth investing. Establishing a portfolio with this model provides an advantage whereby every investor can take advantage of all the information provided in the market. The assumptions underlying the formation of the portfolio use Markowitz's theory, ie the time spent in the study is only one period, the investor bases the calculation on the expected return and portfolio risk, no risk-free lending and savings, and no transaction cost calculation.

According to Markowitz (1959), portfolio risk is influenced by the weighted average of each individual asset risk and the covariance between the assets that build the portfolio. The variance and standard deviation of returns is a common measure of risk. Portfolio risk can also be measured by the magnitude of the standard deviation or variant of the return values of the single securities in it. The portfolio risk may decrease according to the number of different stocks added, it can be reduced by combining several single securities into portfolio form (Jogiyanto, 2003). According to Martono (2005), there are several ways to determine the portfolio according to the Markowitz model:

a. Calculate the Return of each stock with the formula:

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

Where:

P_t : Investment price at time t

P_{t-1} : investment price at the time of $t-1$.

D_t : Dividends

b. Calculate the Expected Return of each stock by the formula:

$$E(R_i) = \frac{\sum_{i=1}^{N} R_{ij}}{n}$$

Where:

$E(R_i)$: Expected return

R_{ij} : Rate of return on investment-i

n : Number of observation periods

c. Calculate the Risks (variance and standard deviation) of each stock This measure of risk is intended to find out how likely the value we get deviates from the value we expect. Calculations can be done by the formula:

$$\sigma_i^2 = \sum_{j=1}^{n} \frac{(R_{ij} - E(R_i)^2}{n}$$

Where:

σ_i^2 : Variance stock-i

R_{ij} : Rate of return on investment-i

$E(R_i)$: Expected return of stock-i

n : Number of observation periods

$$\sigma = \sqrt{\frac{\left(R_{ij} - E(R_i)\right)^2}{n}}$$

Where:

σ : Standard deviation

R_{ij} : Rate of return on investment-i

$E(R_i)$: Expected return of stock-i

n : Number of observation periods

d. To determine the number of portfolios to be formed, the following factorial formulas can be used:

$$C_{(r,n)} = \frac{n!}{r!(n-r)!}$$

Where:

$C_{(r,n)}$: Number of combination of r objects chosen from n objects

$n!$: Factorial number of stock objects

$r!$: Factorial number of stocks combined

e. Calculating the correlation coefficient between stock returns. The size of the correlation coefficient will affect the portfolio risk. The formula used is:

$$\rho_{xy} = \frac{n\sum xy - \sum x \cdot \sum y}{\sqrt{[n\sum x^2 - (\sum x)^2] \cdot [n\sum y^2 - (\sum y)^2]}}$$

Where:

ρ_{xy} : Correlation coefficient between stock return x and y

n : Number of observation periods

x : Rate of return stock x

y : Rate of return stock y

f. Calculates the Expected Return of the portfolio. The expected profit levels of the portfolio can be calculated using the formula:

$$E(R_p) = \sum_{i=1} W_i \, . \, E(R_i)$$

Where:

$E(R_p)$: Expected return of portfolio

W_i : Proportion or weights of total funds invested in security *i*

$E(R_i)$: Expected return of security *i*

g. Calculates the Risk (variance and standard deviation) of the portfolio. The variance and standard deviation of the portfolio can be calculated from the following equation:

$$\sigma_p = \sqrt{X_A^2 \cdot \sigma_A^2 + X_B^2 \cdot \sigma_B^2 + 2(X_A \cdot X_B \cdot \rho_{AB} \cdot \sigma_A \cdot \sigma_B)}$$

Where:

σ_p : Standard Deviation of portfolio

σ_A , σ_B : Variance stock A and B

X_A , X_B : The proportion of funds invested in shares A and B

4. Risk Diversification

Investors diversify their investments to reduce the risks they faced. Diversification in the statement means that investors need to establish a portfolio in such a way that risk can be minimized without reducing the expected return. The risk that can be diversified is the risk that is not systematic that is part of the risk of securities that can be eliminated by forming a portfolio. In general, investors are risk averse. Therefore, they prefer to diversify in portfolio investment to reduce some of the risks it has.

The concept of diversification originated from Harry Markowitz's dissertation in 1952. With so beautiful and plain, Markowitz lowered the main benefits of quantitative diversification by using a portfolio of two risky assets. According to Tandelilin (2010), Markowitz diversification is the formation of a portfolio taking into account the covariant and negative correlation coefficient between assets in

order to reduce the level of portfolio risk. With simple mathematics, Markowitz proves that portfolio risk can be minimized if both assets have a perfectly negative correlation coefficient, that is negative 1. An example of two such securities is two stocks whose price always moves in opposite directions. If one rises, the other goes down with the same degree, and vice versa. Markowitz also found that diversification can always lower portfolio risk, as long as the correlation coefficient is not positively perfect or smaller than one.

5. Return

The main purpose of people investing is to make a profit. Income or loss of an investment, depending on the price changes and a number of assets owned. Investors are attracted by the relatively large returns to the initial investment. Return measures the income because the return of an asset is a price change from the initial price and return is one of the factors that motivate investors to invest (Ruppert, 2004).

This rate of return is a form of indicator to determine the level of increase or decrease an investor's wealth over a period of time. The rate of return can be used as one criterion for an investor in determining whether an investment is feasible to maintain.

Return on investment in securities or shares is determined by 2 things, namely (Jogiyanto, 2003): (1) Capital gain (loss): the difference between the current investment price relative to the price of the previous period, (2) Yield: periodic cash receipts which is a percentage of the investment price in a given period.

a. Realized Return

Return of a single stock can be calculated using historical data. The calculation of stock return (total return) consists of capital gains and yield (Jogiyanto, 2003). Capital gain (loss) is the difference from the current investment price relative to the price of the past period. While the yield is a percentage of periodic cash receipts to the investment price of a certain period of an investment (Jogiyanto, 2003). The total return is formulated as follows (Jogiyanto, 2003):

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

Where:

P_t : Investment price at time t

P_{t-1} : investment price at the time of $t-1$.

D_t : Dividends

However, since the company does not always pay dividend periodically to its shareholders, so dividend here is considered 0, so the stock return

can be calculated as follows (Jogiyanto, 2003):

$$R_t = \frac{P_t - P_{t-1}}{P_{t-1}}$$

Where:

P_t : Investment price at time t

P_{t-1} : investment price at the time of $t-1$.

b. Expected Return

Expected return is the amount of profit or loss an investor anticipates on an investment that has various known or expected rates of return (Investopedia). Unlike the realized return that has happened, the expectation return has not happened yet (Jogiyanto, 2003). The formula of expected return (Jogiyanto, 2003):

$$E(R_i) = \frac{\sum_{i=1}^{N} R_{ij}}{N}$$

Where:

$E(R_i)$: Expected return

R_{ij} : Rate of return on investment-i

N : Number of observation periods

c. Portfolio Realized Return

The portfolio realized return is the weighted average of the realized returns of each of the individual securities in the portfolio. The formula of portfolio return (Jogiyanto, 2003):

$$R_p = \sum_{i=1}^{n} (W_i \cdot R_i)$$

Where:

R_p : Portfolio return

W_i : The proportion, or weights of total funds invested in security *i*

R_i : Return of security *i*

n : the amount of a single security

d. Portfolio Expected Return

Expected return is calculated as the weighted average of the likely profits of the assets in the portfolio, weighted by the likely profits of each asset class. The formula of portfolio expected return (Jogiyanto, 2003):

$E(R_p) = \sum_{i=1} W_i \cdot E(R_i)$

Where:

$E(R_p)$: Expected return of portfolio

W_i : Proportion or weights of total funds invested in security *i*

$E(R_i)$: Expected return of security *i*

6. Risk

In the context of investment management, risk is the amount of deviation between expected return (ER) and actual return. These risks come from: market risk, business risk, inflation risk, interest rate risk, currency exchange risk, country risk, financial risk, and liquidity risk (Tandelilin, 2007).

Risk has two dimensions, i.e. deviate larger or smaller than expected. Zubir (2011) mentions "no pain, no gain" or "high risk, high return" is some investment tagline that states the relationship between risk and return. From here comes the concept of the size of the spread intended to know the magnitude of the possible value that we will get from the expected value. The statistical tool used as the size of the deployment is the variance or standard deviation. The greater the value, the greater the deviation (meaning the higher the risk) (Halim, 2005).

Tandelilin (2001) in Rodoni (2009), on traditional analysis, the total risk of various financial assets is derived from:

a. Interest Risk. The risk derived from the variability of returns due to changes in interest rates. This change in interest rates negatively affects the price of securities.
b. Market Risk. The risk arises from the variability of returns due to fluctuations in the overall market so that it affects all securities.
c. Inflation Risk. A factor that affects all securities is purchasing power risk. If interest rates rise, then inflation will also increase, as lenders need additional premium inflation to offset purchasing power losses.
d. Business Risk. The risks are due to doing business in a particular industry.
e. Financial Risk. Risks arising from the use of financial leverage by the company.
f. Liquidity Risk. Risks associated with certain secondary markets where securities are traded. An investment if it can be bought and sold quickly without significant price changes, then the investment is said to be liquid, and vice versa.
g. Exchange Rate Risk. The risk arising from variability returns securities due to currency exchange rate fluctuations.
h. Country Risk. This risk concerns the politics of a country that leads to political risk.

In portfolio theory, risk is expressed as a possible profit deviating from the expected. In addition, the combination of these instruments also determines the high risks and potential benefits the portfolio gains. The risk of a portfolio does not represent a weighted average of all the risks of a single security. Portfolio risk may be less than the weighted average risk of each single security. In the context

of portfolio management, the more number of shares included in the Portfolio, the greater the benefits of risk reduction. However, the benefits of portfolio risk reduction will reach its peak point when the portfolio consists of several types of shares, and after that, the benefits of portfolio risk reduction will not have its effect again (Tandelilin, 2001). According to Husnan (1998), although we increase the number of stocks that make up the portfolio, we are always faced with certain risks. In portfolio, risk is divided into two (Halim, 2003):

a. Systematic Risk

Risks that cannot be eliminated by diversification, because these fluctuations in risk are influenced by macro factors that can affect the overall market, for example is the change in interest rates, foreign exchange rates, and government policies. So it is common and applicable to all stocks in the stock exchange concerned. This risk is also called undiversiable risk.

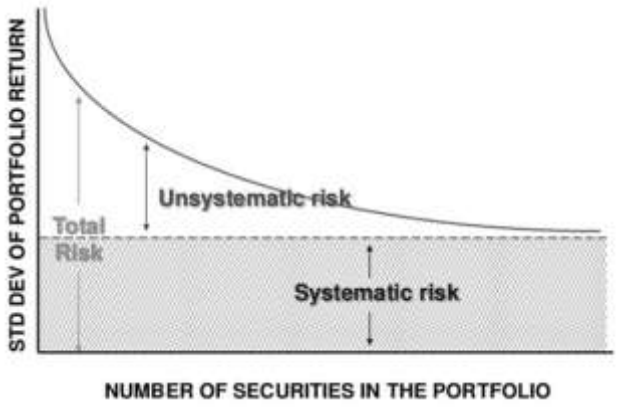

Figure 2.1. SYSTEMATIC AND UNSYSTEMATIC RISK

b. Unsystematic Risk

Unsystematic risk is a risk that can be done by diversifying, because this risk is only within a particular company or industry. These risk fluctuations vary

in magnitude from one share to another. Because of this difference, each stock has a different sensitivity to market changes. This risk is also called diversifiable risk.

Investing in any market is all about risk. No investment is inherently 100 percent safe or guaranteed and not all people want to take great risks with their money. Thus, financial professionals break investors into categories based on the investor's appetite for risk:

a. Risk Averse

The risk-averse investor would generally choose the guaranteed payment. He believes that something is better than nothing and would rather "play it safe." Risk-averse investors dislike risk so they tend to choose safer investments to place their assets and therefore stays away from high-risk stocks or investments.

b. Risk Neutral

Risk neutral is a mindset where an investor is indifferent to risk when making an investment decision. The risk-neutral investor places himself in the middle of the risk spectrum, represented by risk-seeking investors at one end and risk-averse investors at the other.

c. Risk Seeking

Risk seeking is the search for greater volatility and uncertainty in investments in exchange for anticipated higher returns. Risk seekers might pursue investments such as small-cap stocks and international stocks, preferring

growth investments over value investments. Risk-seeking investors should conduct even greater due diligence when considering a riskier investment, due to the increased implied risk of such investments.

7. Value at Risk

According to Philip Best (1998) Value at Risk or VaR is a statistical risk measurement method that estimates the maximum possible loss of a portfolio at a given level of confidence. The following statements are the formal definitions of VaR quoted from Philip Best (1998) in Wibowo, AW (2006): Value at Risk is the maximum amount of money that may be lost on a portfolio over a given period of time, with a given level of confidence. According to Cormac Butler (1999) Value at Risk measures the worst expected loss that an institution can suffer from a given time interval under the normal market conditions at a given confidence level. It assesses risk by using statistical and simulation models designed to capture the volatility of assets in a bank's portfolio.

Simply VaR would like to answer the question, how much (in percent or a certain amount of money) an organization, company or individual can lose during the investment period T with a confidence level of α. Based on the question, we can see three important variables, namely loss, time period and trust level. In relation to the ease of understanding of VaR values, Stambaugh (1996) states that VaR has the following functions:

a. Providing a common language for risk,
b. Allowing for more effective and consistent internal risk management, risk limit setting and evaluation,

c. Providing an investor-wide mechanism for external regulation, and providing investors with an understandable tool for risk assessment.

According to Jorion in Agustinus (2012), VaR has several benefits for financial institutions, regulators, nonfinancial corporations, and asset managers, including:

a. Passive role in information reporting, since VaR provides benefits in measuring overall risk, then VaR can be used management in analyzing risks of investment and trading activities, and reporting of corporate risk to shareholders in non-technical scope more easily.
b. The defensive role in controlling risk, because VaR can be used to determine the position limits for business units and traders, then VaR can create a decisive factor for the comparison of risky activity in various markets.
c. Active role in managing risk, because VaR can be used for the allocation of wealth among traders, business units, products, and even whole institutions. The process begins with the adjustment of return on the risk, so it will automatically correct incentives for traders. In addition, VaR also helps portfolio managers make better decisions by providing a comprehensive consideration of the impact of riskier portfolio trade.

The value of VaR rests on the mean and standard deviation of the distribution, and the critical value that corresponds to a confidence interval. As in Jorion (2007) among others, normal VaR for stocks is computed as:

$$\text{VaR}_{normal} = -\mu + \sigma \times \alpha \qquad (2.10)$$

Where

$-\mu$: The mean of returns

σ : Standard deviation

α : Confidence interval, which is 2.326 for 99%, 1.645 for 95% and 1.281 for 90% confidence interval.

VaR for portfolio can be calculated using following formula:

$$VaR_p = (Z\ V) \quad (2.11)$$

Where

Z : Confidence level

V : Volatility or standard deviation of asset/portfolio

8. LQ 45

The development of stock trading on the IDX will increase investor interest to monitor the movement of prices of actively traded stocks. The use of Jakarta Composite Index (IHSG) as a proxy for calculating market return is felt to have a weakness because JCI uses weighting based on the capitalization of all shares. Thus the less active stocks will have little effect on JCI and big capitalized stocks will have very strong influence. So that JCI does not reflect the movement of active or liquid stocks in the secondary market. Therefore it is deemed necessary to create a new index that reflects the movement of stock prices actively traded and also affect the state of the market. A new index is formed which reflects several selection criteria consisting of stocks with liquidity, high market capitalization, high trading frequency and good growth prospects and financial condition consisting of 45 stocks (Sartono and Zulaihati, 1998).

The LQ 45 index, using 45 selected stocks based on stock trading liquidity and adjusted every six months (every early February and August). Thus the stock contained in the index will always change. The goal is as a tool to meet the need for a benchmark that is considered to represent the condition of the stock. The LQ 45 Index only consists of 45 stocks that have been selected through various selection criteria, so it will consist of stocks with high liquidity and market capitalization.

Indonesia Stock Exchange regularly monitors the performance of listed companies in the LQ45 index calculation. Replacement of shares will be done every six months, i.e. in early February and August. To ensure fairness of stock selection, IDX may also seek opinions from the advisory committee consisting of experts from Capital Market Supervisory Agency and Financial Institution, Universities and professional in the field of independent capital markets (Buku Panduan Indeks Harga Saham BEI, 2010).

B. Previous Research

In this section will be discussed on some previous research. The study is particularly concerned about the relationship between VaR and average returns at portfolio level. Some of these studies are:

1. Bali and Cakici (2004) investigate the relationship between portfolios sorted by VaR and expected returns. The regression of portfolio returns on VaR are statistically significant, which means that a strong relationship exists between expected returns and VaR at portfolio level.

2. Trimech and Benammou (2012) used VaR as an explanatory factor along with Fama and French's (1993) factors in the French stock market and find that a four-factor model that includes a VaR factor in addition to Fama-French's factors explains the cross-section of excess stocks return find that VaR is related to the expected stock returns of hedge funds.

3. Chen et al. (2014) investigate the pricing of VaR in the Taiwan's stock market and find a positive risk premium for VaR. They document a significant slope coefficient of 1 and 5 percent VaR, but an insignificant coefficient of 10 percent VaR in the cross-sectional regression

4. Iqbal and Azher (2014) provide corroborative evidence from Pakistan and find that stocks with high VaR yield higher returns compared to stocks with low VaR. They find a similarly strong relationship between average returns and VaR, using the 95 percent confidence levels. The results show that, the greater a portfolio's potential losses as captured by VaR, the higher will be the expected return.

5. Tariq and Valeed (2017) investigate whether investors are compensated for holding high VaR stocks in the emerging stock market of India. Tariq and Valeed (2017) find a positive relationship between VaR and stock returns at different loss probability levels (1, 5 and 10 percent VaR). It is evident that the high VaR portfolio provides a higher return than the low VaR portfolio, indicating a positive premium for VaR.

C. The Conceptual Framework

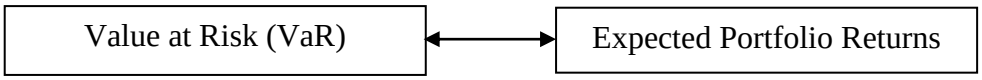

Figure 2.2. Conceptual Framework

Figure 2.2 shows the relationship variables examined in this study, which this figure can be seen that the researchers will examine the correlation of Value at Risk and Expected Portfolio Returns.

D. Hypothesis

Value at risk measures the worst expected loss that an institution can suffer from a given time interval under the normal market conditions at a given confidence level. This study aims to test whether there is a relationship between variables X (Value at Risk) and variable Y (Expected Portfolio Return). Iqbal and Azher (2014) found that expected return are positively correlated with Value at Risk on portfolio level. The results show that, the greater a portfolio's potential losses as captured by VaR, the higher will be the expected return.

Research on Value at Risk is done by Bali and Cakici (2004), found a strong positive relationship exists between expected return and VaR at portfolio level. The same study also conducted Tariq and Valeed (2017) on Indian stock market which also shows a positive relationship between Value at Risk and expected portfolio return.

H_a: There is positive relationship between Value at Risk and Expected Portfolio Return in Indonesia Stock Exchange

III. RESEARCH METHODOLOGY

A. Types of research

This study is an associative research. Associative research is a study that aims to determine the influence or relationship between two or more variables. In associative research using quantitative or statistical analysis techniques. A quantitative techniques is an activities that include data collection in order to test the hypothesis or answer questions concerning the state at a time running from the subject of a study (Ghozali, 2006).

In order to get valid data and achieved research objectives, research method must be determined in accordance with the research objectives. Based on the purpose of this study which is to know the relationship between Value at Risk and expected portfolio return, then the compatible method to use is correlational test. According to Sukardi (2007), correlation test is a study that involves the action of data collection to determine whether there is a relationship and the level of relationship between two or more variables. In this study, researchers wanted to know whether there is a relationship between Value at Risk and expected portfolio return companies listed in LQ45 Index period 2013-2016.

B. Research Object

1. <u>Population</u>

Population is a generalization region consisting of objects or subjects that have a certain quantity and characteristics applied by researchers to study and then drawn conclusions (Sugiyono, 2007). The population in this study are companies listed on the Indonesia Stock Exchange which are included in the LQ 45 index in the period January 2013 until December 2016. Shares listed in this index are 45 stocks that have high liquidity. The reason for LQ 45's stock selection is to reduce or eliminate the liquidity problem or assuming by choosing the shares included in LQ45, the shares can be traded at any time at market price.

2. Sample

Sample according to Sugiyono (2000) is part of the number and characteristics possessed by the population. The stocks selected in this study use purposive sampling technique. Purposive sampling is a non-probability sampling method and it occurs when "elements selected for the sample are chosen by the judgment of the researcher. Researchers often believe that they can obtain a representative sample by using a sound judgment, which will result in saving time and money". Black, K. (2010).

The criteria in this study are as follows:

1) Listed in the LQ45 index continuously form period 2013-2016

2) Does not have a negative average return

The selection starts from the collection of LQ45 stock data from January 2013 - December 2016. The first step is done to stocks that listed in LQ45 Index in a row during January 2013-December 2016. The next step, the stocks that pass the first

selection will be selected again by looking at the rate of return where the elimination is done to stocks that have a negative average return. This is done to avoid the possibility of a small return or loss in the future.

Based on the criteria outlined above, then we obtained all of the population as the sample and shown in the following table:

Table 1. RESEARCH SAMPLE

Sample Characteristics		**Emiten**
Listed in the LQ45 Index		
2013	Period 1	45
	Period 2	(3)
2014	Period 1	(8)
	Period 2	(3)
2015	Period 1	(2)
	Period 2	0
2016	Period 1	(2)
	Period 2	0
Stocks with negative average return		(7)
Total Research Sample		**20**

Source: data processed

Those stocks are listed in the following table:

Table 2. SELECTED STOCK

No	Code	Stock Name
1	AALI	PT. Astra Argo Lestari Tbk.
2	ADRO	PT. Adaro Energi Tbk.
3	AKRA	PT. AKR Corporindo Tbk.
4	ASII	PT. Astra International Tbk.
5	BBCA	PT. Bank Central Asia Tbk.
6	BBNI	PT. Bank Negara Indonesia Tbk.
7	BBRI	PT. Bank Rakyat Indonesia Tbk.
8	BMRI	PT. Bank Mandiri Tbk.
9	BSDE	PT. Bumi Serpong Damai Tbk.
10	CPIN	PT. Charoen Pokphand Tbk.
11	GGRM	PT. Gudang Garam Tbk.

12	ICBP	PT. Indofood CBP Sukses Makmur Tbk.
13	INDF	PT. Indofood Sukses Makmur Tbk.
14	JSMR	PT. Jasa Marga Tbk.
15	KLBF	PT. Kalbe Farma Tbk.
16	LSIP	PT. PP London Sumatera Indonesia Tbk.
17	PTBA	PT. Tambang Batu Bara Bukit Asam Tbk.
18	TLKM	PT. Telekomunikasi Indonesia Tbk.
19	UNTR	PT. United Tractors Tbk.
20	UNVR	PT. Unilever Tbk.

Source: www.idx.co.id

C. Research Variable and Operational Variable

The research variables are defined as everything that is determined by the researcher to be studied, then obtained the information then drawn a conclusion (Ghozali, 2006). Based on the issues that have been discussed previously, the variables to be analyzed are grouped into:

1. Value at Risk

The first variable is Value at Risk. According to Cormac Butler (1999) Value at Risk measures the worst expected loss that an institution can suffer from a given time interval under the normal market conditions at a given confidence level.

For an investor, the risk is odds of losing money and Value at Risk is based on this. Assuming that investors are very concerned about the odds of major losses, then by using VaR, investors can determine their investment policies, both passive (VaR as a routine report), defensive (VaR used for risk control tools), as well as active approaches, where reports VaR can be used to control risk and profit maximization such as capital allocation, investment fund, and forth.

VaR for portfolio can be calculated using following formula:

$VaR_p = (V\ P)$

Where

Z : Confidence level

V : Volatility or standard deviation of asset/portfolio

2. Expected Portfolio Return

The second variable is expected portfolio returns. Return measures the income because the return of an asset is a price change from the initial price and return is one of the factors that motivate investors to invest (Ruppert, 2004). Expected portfolio return is calculated as the weighted average of the likely profits of the assets in the portfolio, weighted by the likely profits of each asset class. The formula of expected portfolio return (Jogiyanto, 2003):

$E(R_p) = \sum_{i=1} W_i \cdot E(R_i)$

Where:

$E(R_p)$: Expected return of portfolio

W_i : Proportion or weights of total funds invested in security *i*

$E(R_i)$: Expected return of security *i*

D. Analysis Tools

1. Data collection

The data required in this study is secondary data, i.e. data obtained by researchers indirectly provide data through intermediate media (obtained and recorded by other parties), which generally in the form of evidence, records, or historical reports that have been arranged in the archive (documentary data) published and

unpublished. The data used is the stock price data that has been published in Indonesia Stock Exchange (IDX) and accessible through www.yahoofinance.com which will be processed to get return from each share. Data for both variable is monthly returns of stocks.

2. Calculate stock return

The calculation of stock return (total return) consists of capital gains and yield (Jogiyanto, 2003). However, since the company does not always pay dividend periodically to its shareholders, so dividend here is considered 0, so the stock return can be calculated as follows (Jogiyanto, 2003):

$$R_t = \frac{P_t - P_{t-1}}{P_{t-1}}$$

Where:

P_t : Investment price at time t

P_{t-1} : investment price at the time of $t-1$.

3. Calculate standard deviation of each stock

Calculate the Risks of each stock. This measure of risk is intended to find out how likely the value we get deviates from the value we expect. Calculations can be done by the formula:

$$\sigma = \sqrt{\frac{\left(R_{ij} - E(R_i)\right)^2}{n}}$$

Where:

σ : Standard deviation

R_{ij} : Rate of return on investment-i

$E(R_i)$: Expected return of stock-i

n : Number of observation periods

4. Determining the Correlation Coefficient

Calculating the correlation coefficient between stock returns. The size of the correlation coefficient will affect the portfolio risk. The formula used is:

$$\rho_{xy} = \frac{n\sum xy - \sum x \cdot \sum y}{\sqrt{[n\sum x^2 - (\sum x)^2] \cdot [n\sum y^2 - (\sum y)^2]}}$$

Where:

ρ_{xy} : Correlation coefficient between stock return x and y

n : Number of observation periods

x : Rate of return stock x

y : Rate of return stock y

5. Determining Portfolio Formation

Build a portfolio is one of the favorable alternatives for investors compared to purchasing individual shares. The formation of this portfolio can minimize the level of risk borne by investors due to the spread of risk. In this study, the formation of the portfolio consists of two combinations of stocks that have a negative correlation because the lower the correlation coefficient will be greater the benefits of diversification and optimal diversification will be achieved when the correlation coefficient is negative 1.

6. Testing of Return Data

Before performing VaR calculations, the return data of each stock and portfolio must be tested first. Tests conducted to determine how the characteristic of the return data of each stock and portfolio is the Normality Test.

Normality test aims to test whether the sample used has a normal distribution or not. This study use the Kolmogorov-Smirnov normality test provided in the SPSS program. Normality test is used as a basis for determining alpha value (α), whether using α according to normal distribution with Jarque-Bera probability value or with alpha prime (α') which refers to probability value of Cornish Fisher Expansion.

If the probability > 0.05 then stock returns is normally distributed. If the probability < 0.05 then the distribution of the stock returns is not normal. If the stock return shows normality, then the value of α according to table Z (in this case 95% confidence level = 1.65). However, if the data obtained is not normal, then the value of α is adjusted to the Cornish Fisher Expansion approach in the equation:

$$\alpha' = \alpha - \frac{1}{6}(\alpha^2 - 1)\varepsilon$$

Where:

α' : Alpha prime (Cornish Fisher)

α : Alpha normal distribution (Jarque-Bera)

ε : Skewness (the slope of the difference from the normal distribution)

7. <u>Calculate Value at Risk of each stock</u>

After the alpha value has been determined, then VaR are calculated by the formula:

$\text{VaR} = -\mu + \sigma \times \alpha$

8. Calculate Value at Risk of portfolio

After forming the portfolios, calculate VaR for portfolio. VaR portfolio can be calculated using following formula:

$VaR_p = (Z\ V)$

Where:

Z : Confidence level

V : Volatility or standard deviation of asset/portfolio

E. Statistic Analysis

Descriptive statistics are intended as one of the data analyzes that describe the social phenomena studied descriptively (Danandjaja, 2012). It aims to provide an overview of the object under study through the sample data to make general conclusions so that the variables used in the study are easier to understand.

In a broad sense, statistics are scientific ways prepared to collect, file, and analyze data in the form of numbers. Meanwhile, in a narrow sense, a statistical method used to indicate all the tangible reality of numbers. The data assessed are the two variable data which are Value at Risk and Expected Portfolio Return.

To test the hypothesis proposed in this study, Pearson Product-Moment Correlation is used and calculated by Microsoft Excel. The following formula is the statistic formula for Pearson Product-Moment Correlation (Arikunto, 2010):

$$r_{xy} = \frac{N(XY)-(\sum X)(\sum Y)}{\sqrt{\{N\sum X^2-(\sum X)^2\}\{N\sum Y^2-(\sum Y)^2\}}}$$

Where:

r_{xy} : Correlation coefficient

N : Number of samples

X : Variable Score X

Y : Variable Score Y

$\sum$ X : Number of Variable Score X

$\sum$ Y : Number of Variable Score Y

$\sum X^2$: The sum of squares of variable scores X

$\sum Y^2$: The sum of squares of variable scores Y

F. Hypothesis Testing

Correlation is a statistical technique used to test whether there is a relationship and the direction of the relationship of two or more variables. In SPSS there are three simple correlation methods (bivariate correlation) such as Pearson Correlation, Kendall's Tau-b, and Spearman Correlation. Pearson Correlation is used for interval or ratio data, while Kendall's tau-b, and Spearman Correlation are more suitable for ordinal data. In this study, Pearson method or often called Product Moment Pearson is used.

a. If Correlation Coefficient > 0, then there is a positive relationship between variables (H_a Accepted),
b. If the Correlation Coefficient < 0, then there is no positive relationship between variables (H_0 Accepted).

According to Nugroho (2005), the coefficient correlation will determine the direction of the correlation. Coefficient correlation can interpret the strengths and weakness of variable relation level in the study based on following conditions:

Table 3. CORRELATION LEVEL

Coefficient Interval	Level of Correlation
< 0.20	Very Weak
0.21 – 0.40	Weak
0.41 – 0.70	Moderate
0.71 – 0.90	Strong
0.91 – 0.99	Very Strong
1	Perfect Correlation

The direction of the relationship can be seen from the coefficients. A positive correlation, when correlation coefficient is greater than 0, signifies that both variables move in the same direction. A negative correlation, when correlation coefficient is less than 0, indicates that both variables move in the opposite direction.

V. CONCLUSION AND SUGGESTION

A. Conclusion

Based on the results of the calculation of the data that has been done as described, as well as the problems and objectives of the background of this study, it can be concluded that Value at Risk has no positive relationship with Expected Portfolio Return of LQ45 Index in Indonesia Stock Exchange. The correlation coefficient indicates the opposite relationship between the two variable. The result show that there is a weak negative relationship between Value at Risk and Expected Portfolio Returns, which means the greater a portfolio's potential losses as captured by VaR, the lower will be the portfolio return.

B. Suggestion

Based on the results and conclusions that have been presented, some of the suggestions put forward, that are:

1. The next research can use boarder sample, one portfolio could consist more than 2 stocks so it will reflect Indonesian Stock Exchange perfectly. In the formation of the portfolio is expected to use more methods.
2. Future studies could be extended to compare VaR with other measures of risk such as beta, downside beta, lower partial moment, and liquidity.

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