





## How does the six-factor model do in explaining the relationship between return and risk on the Indonesia stock exchange?



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### ABSTRACT

*This study aims to determine the effect of six-factor (market return, firm size, value, profitability, investment, human capital) on excess return in companies with shares listed in LQ45 for the 2015-2019 period. The population of this study consists of 45 LQ45 companies listed on the Indonesia Stock Exchange (IDX). The purposive sampling method is the sample selection method that is used in this study. As a result, it shows that there are 26 companies that fit the criteria and taken as samples. Furthermore, the data analysis method that is used in this study is the panel data regression model. Based on the results of this study, it is showed that partially, market return (X1), firm size (X2), profitability (X4), and investment (X5) have a significant positive effect on the excess return of companies listed in LQ45 for the 2015-2019 period. Whereas, value (X3) and human capital (X6) do not have a significant effect on the excess return of companies listed in LQ45 for the 2015-2019 period. Another result also shows that simultaneously or as a whole, six-factors (market return, firm size, value, profitability, investment, human capital) have a significant effect on the excess return of companies listed in LQ45 for the 2015-2019 period.*

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## Introduction

In viewing Indonesia's development using a global perspective, not only can Indonesia itself be said to be a developing country, but the economy of Indonesia has also been experiencing very rapid development in these past five years, from 2015 to 2019. Growth from the economy has not only important for Indonesia, but it is the same for every country. Why is it said so? According to (Nugraha and Susanti, 2018) a country that is experiencing a developing economic condition is very important goal of the central government's macroeconomic policy, this condition is caused by the determined policies having a very close relationship in the welfare of every community within the country. Naturally, the economy of a country is also reflected in its capital market. The capital market allows investment in various forms such as real assets and financial assets. One of the instruments from the capital market that is often used by investors is stocks, where investors will get returns or what is better known as returns in the form of dividends (Tirta, 2016).

It is said that the LQ 45 index is the most trusted index by investors. According to (Karamoy and Tasik, 2019) this is because the stocks that are able to listed in this index are proven better than that other stocks. Companies with stocks that listed in the LQ45 index have better financial strength and also the smaller risk level. Despite being classified as a superior category, in the period 2015-2019 the stocks were found to produce negative value returns. The excess return generated by the majority of stocks was negative and had been experiencing decreased as well. In 2015, 2018 and 2019 the returns produced negative values, in the range of -5% to -16%. Although in 2016 and 2017 returns showed positive values, 6.86% and 1.82% respectively, but it showed a very large decline, -73.46%. In 2018 to 2019, although the returns show an increase, but it showed negative results as well, -15.66% and -5%, respectively. On the other hand, from the 26 LQ45 companies in the 2015-2019 period that were sampled in this study, there were 17 companies that experienced a decrease in excess return with a negative value and only 9 companies experienced positive and increasing excess returns. As stated before, the stocks on this index are classified as superior category stocks with a very high level of market capitalization and trading frequency, hence, growth; financial condition and the rate of excess return of the company should be showing a good condition, but the data shows the opposite instead.

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Every investor when investing in stocks or securities always finds problems and the same question, namely: "How do you determine the best investment in stocks to reduce the risk of the invested shares so that they can get a high rate of return?" The answer to this question can be explained in this following theory. Every investor is certainly a character who tends to avoid risk (risk adverse). Risk, certainly, can be minimized by every investor by forming a portfolio combining stocks or single securities so that it will form an optimal portfolio that will minimize the risks that may arise. (Tandelilin, 2010: 103-104). In investing to form an optimal portfolio, generally, the relationship between risk-return must be considered and calculated in such a way by investors so that investors are able to get high returns with the lowest level of risk or are said to be the optimal portfolio. In explaining the relationship between risk-return, there are many models that have been researched and suggested by experts. The measurement of the risk-return relationship has always been a problem in the financial sector (Acaravci and Karaomer, 2017).

The very first and most well-known model in explaining the relationship between risk-return to assist investors in making the most optimum investment decisions is the CAPM model which was introduced by Sharpe (1964). Using only one factor, the beta factor in explaining stock returns (Sutrisno and Ekaputra, 2016), CAPM model received a lot of criticism. It is believed that this method is considered very inadequate in explaining stock returns and the validity of this method is seriously questioned (Acaravci and Karaomer, 2017). In addition, this method also oversimplifies the complex nature of the market (Susanti, 2013). According to (Wijaya et al., 2017) the model of CAPM is also used to predict the expected return of shares as a method that is far from flawless. Due to the inadequacy and over-simplicity, the next model that appears after is the APT (Arbitrage Pricing Theory) method introduced by Ross (1976), which used multiple factors such as GDP growth, dividend yield, inflation and so on. However, this model received criticism as well, where this model is considered inconsistent and very difficult to determine the exact factors in its measurement or in other words, the use of this model must depend on the type of company. (Susanti, 2020).

Fama and French (1993), from their research introduced a new model being developed model from CAPM. This model is very well known and a lot of research has examined and made this model as the topic of their research. Three-factor Model of Fama and French explains return with 3 factors: market return, firm size (SMB, Small Minus Big) and book to market equity (HML, High Minus Low) by cross sectional method (Fama and French, 1993). In FF's research, it is proven that the factor of beta solely is not efficient enough in clarifying the return of stocks, with the additional of the size and book to market equity marks the better clarifying return of stocks is. This result is in line with the ones conducted by (Susanti, 2013; Wijaya et al., 2017). Despite being more effective, this model is still considered insufficient. Research from Carhart (1997), The four-factor model used 4 factors in explaining portfolio and return, namely, market return, firm size (SMB, Small Minus Big), book to market equity (HML, High Minus Low) and, momentum (WML, Winner Minus Loser). Research conducted by (Candika, 2017); (Evbayiro-Osagie and Osamwonyi, 2017) on the Nigerian capital market, (Nugraha and Susanti, 2019) on the Indonesian are in line with Carhart's (1997) research where four-factor explains stock returns better and clearer when compared to the three-factor.

Fama and French (2014) again conducted a research to improve the previous model. Due to the large number of studies proven three-factor is considered incomplete and inadequate. The research from Titman et al. (2003) and Novy and Marx (2012) and other studies were the main driving factors for FF to re-conduct their research. As a result, FF adds 2 additional factors in the three-factor model. Five-Factor Model of Fama and French using 5 factors, which are market return, firm size (SMB, Small Minus Big), book to market equity (HML, High Minus Low), profitability (RMW, Robust Minus Weak) and investment (CMA, Conservative Minus Aggressive) (Fama and French, 2014). The result proves that the five-factor model is better in providing the explanation of return and in line with the research of (Eventsvci and Karaomer, 2017) on the Pakistan capital market, (Wijaya et al., 2017; Tirta, 2016; Putra et al., 2019; Putra and Susanti, 2019) on the Indonesian capital market, (Martins and Eid, 2015) on the Brazilian capital market. However, it turns out that besides the five-factor model, there is another model which is very intriguing and interesting to be researched as well, the six-factor model. Kim et al. (2011) conducted a research and it turns out that human capital has the power to predict value, Belo et al. (2017) also found that the component of human capital has a very close relationship with cross-sectional asset pricing. This research has successfully become the trigger point for Roy and Shijin's (2018) to conduct a research entitled "A Six-Factor Asset Pricing Model". As the name implies, this model uses 6 factors in explaining the return of the portfolio, namely market return, firm size (SMB / Small Minus Big), book to market equity (HML / High Minus Low), profitability (RMW / Robust Minus Weak), investment (CMA / Conservative Minus Aggressive) and human capital. The results of the research showed that six-factor is able to explain the return of stocks, besides that the components of human capital also have the same predictive power as the factors of the five-factor model. Maiti's (2018) research on six factor asset pricing in the capital market in India confirmed the importance of human capital in making investment decisions. Besides, by ignoring this component could cause serious problems.

Because the research on the six-factor model is still very little even in Indonesia itself, there are still very few studies that have raised this model as a research topic, so researchers are very intrigued and interested in researching the six-factor model. Thus, this study aims to verify whether the six-factor asset pricing model is actually able to explain the relationship between risk-return in LQ45 companies listed on the Indonesia Stock Exchange for 2015-2019 period. As a result, researchers raise the title of this research as "Does the Six-Factor Model Explain the Relationship Between Return and Risk on the Indonesian Stock Exchange?".

## **Literature Review**

### **Theoretical background and conceptual framework**

#### **Investment**

According to Tandelilin (2010), investment can be said to be a commitment made by investors for funds or other resources where the activities of this commitment are carried out at the present time, with the aim of obtaining a number of benefits in the future. Meanwhile, according to Tirta (2016) investment is said to be a transaction activity by buying assets in which the form of real and financial which has the aim of bringing returns in the future by carefully considering risk. According to Putra et al. (2019) investment can be interpreted as an activity in delaying consumption in a number of funds or other resources where this is done so that investors can get benefits in the future. Thus, it can be concluded that investment is an action taken by investors in the form of a temporary delay in the utilization of funds where in the future with this delay, investors will be able to gain profit.

#### **Stock/Share**

According to Tandelilin (2010) shares can show the ownership of an investor in a company. Meanwhile, according to Tirta (2016) shares can be said to be securities which are seen as evidence of ownership in a company. Each share is capable of representing one vote in the GMS, namely the General Meeting of Shareholders. Stock is one of the investment instruments that is very popular among investors. Thus, from the above understanding, it can be concluded that shares are one of the instruments of investment which are securities that are able to show the ownership of an investor in a company.

#### **Portfolio**

A portfolio in an investment in a combination of several stocks and securities that have the aim of diversifying or minimizing the risk arising from stock investing (Tirta, 2016). Each investor will be able to minimize the risk by forming a portfolio so that it will form an optimal portfolio that will minimize the risks that may arise (Tandelilin, 2010).

#### **Return**

Return is the feedback that investors will get on the capital or funds that they have invested in a company (Susanti, 2013). Without any doubt, in carrying out stock investment activities, besides calculating the risks faced and ways to minimize them, investors also need to calculate the ultimate goal in investing, the actual return that they will receive in the portfolio, usually this return will be compared to the return if the investor does invest in the risk-free rate. Therefore, the actual return that the investor will get is the difference between the actual return of the portfolio and the risk-free rate or what is known as the excess return (Dewi, 2018). Thus, it can be said that return is the feedback that will be obtained by investors on capital that has been invested in a company.

#### **Risk**

In investment, certain investor will not only receive feedback as returns, but risks must also be faced by investors, where risk is the uncertainty of investment activities carried out by investors, deviating from the actual return expected by the investor (Susanti, 2013) and (Lemiyana, 2015). According to Putra and Susanti (2019) risk can be said to be a very important factor in helping investors to make investment decisions. In investing, both in stocks and in portfolios, in order to get the best decisions, it is not only the return that must be considered, but the risk as well. If investors do not consider risk and only consider returns, then it is nearly impossible in making a great investment decision, besides it will have a very high risk (Karamoy & Tasik, 2019). This is because the relationship between risk and return shows a positive relationship, where the greater the risk is, the return obtained by investors will also be greater (Tandelilin, 2010). Thus, it can be said that risk is the uncertainty that every investor will face when making an investment where this can happen because of the deviating between the actual rate of return with the rate of return expected by investors.

#### **Six-Factor Model**

The emergence of six-factor was driven by the research conducted to refine the explanation between risk-return in helping investors make the best investment decisions and also in helping academic research. The first model introduced is the CAPM model introduced by Sharpe (1964) where this model uses the only factor, the beta factor. Another method appears that refines the CAPM model, is the Arbitrage Pricing Theory (APT) method which uses multiple factors and was first introduced by Ross (1976). In 1992, Fama and French (FF) introduced a new model, the Three-Factor Model of Fama and French and in 1997, Carhart's research added 1 factor from three-factor model to further clarify the return from stocks often referred to as the four-factor model. In 2015, Fama and French again conducted research to develop a three-factor model which is known as the Five-Factor Model of Fama and French. After the five-factor model, another model was developed, namely the six-factor model. This research was started by Roy and Shijin (2018) using 6 factors in explaining the return of the portfolio which are:

#### **Market Return**

According to Putra et al. (2019) market return is one of the factors that helps investors in making decisions. Susanti (2013) states that market return can be calculated by finding the difference from the monthly average of all stocks with a monthly risk-free rate. The

results of the study shows that market return has a positive relationship with excess return (Tirta, 2016). Thus, it can be concluded that the higher the market return rate, the higher the excess return offered for investors. The formula for the market return is:

$$\text{Market Return} = \text{monthly average return of all stocks} - R_f/\text{month}$$

#### **Firm Size (SMB)**

According to Putra and Susanti (2019) Firm Size is said to be a symbol that has a relationship between the capabilities and opportunities of a company in entering the capital market. According to Dewi (2018) Small Minus Big (SMB) is said to be a variable based on the size of the company, shown in the capitalization of the market. SMB itself is intended to describe the risk factors for return that will be related to the size of the company. According to Susanti (2020) the assessment carried out at SMB has the aim of grouping companies based on the size of the company namely, on the basis of the capitalization value of the company's shares. When the company is grouped, it will be calculated first based on the formula after that, it will be sorted starting from companies with big caps or companies with large market capitalization values to small caps or known as companies with small capitalization values. The following is the formula for the SMB:

$$\text{SMB}_t = \text{MeanRi}(\text{small})_t - \text{MeanRi}(\text{big})_t$$

#### **Book to Market Equity (HML)**

According to Susanti (2020) High Minus Low (HML) can be said to be a variable that observes the value of book to market (B/M). HML has a goal in describing the factors of risk on return related to the value of the company where this value will be assessed is the book to market ratio (Dewi, 2018). B/M is calculated by comparing the book value to the company's market value in the capital market. After that, companies with high B/M will be grouped and companies with high and low B/M values. Based on Acaravci and Karaomer (2017) HML can be interpreted as a comparison of companies with high B/M and companies with low B/M. The following is the formula for HML:

$$\text{HML}_t = \text{MeanRi}(\text{high})_t - \text{MeanRi}(\text{low})_t$$

#### **Profitability (RMW)**

RMW is said to be a variable that describes the risk factor on return which has a relationship with the profitability of the company and from research (Tirta, 2016; Dewi, 2018; Susanti, 2020) RMW is represented by ROE. The ROE value in this study is shown by how the company's ability to generate net profit after tax using equity or capital owned by the company (Egam et al., 2017). After calculating the ROE which represents RMW, companies with high ROE will be grouped robust and companies with low ROE will be the weak group (Acaravci and Karaomer, 2017) say that RMW is a comparison between the average of returns with strong profitability (R) and the average of returns on a weak portfolio of profitability (W). The following the formula for RMW:

$$\text{RMW}_t = \text{MeanRi}(\text{robust})_t - \text{MeanRi}(\text{weak})_t$$

#### **Investment (CMA)**

CMA is able to describe the risk factors for return that have a relationship with investment (Dewi, 2018). In this study, the factor from this investment that are utilized is the value of the company's asset growth (AG), which is similar to research from (Maiti, 2018; Dewi, 2018; Susanti, 2020). The value of AG is able to show how the ability of the company to develop when compared to previous periods. After calculating the AG, then the companies will be grouped with low AG value in the conservative group, on the other hand, companies with high AG value are in the aggressive group. (Acaravci and Karaomer, 2017) said that the CMA factor, the comparison between a portfolio with a conservative investment (C) with a portfolio with an aggressive investment (A). The following is the CMA formula:

$$\text{CMA}_t = \text{MeanRi}(\text{conservative})_t - \text{MeanRi}(\text{aggressive})_t$$

#### **Human Capital (LBR)**

Human Capital is the skill of every individual where this factor is said to be an asset that has a very important factor in determining the success of a company (Endri, 2011). According to Susilandari (2018) investment from human capital can be said to be things done with the aim of improving the skills of individual companies to get higher salaries in the future. According to Susanti (2020) due to the increasing importance of this human capital factor, investment activities carried out with people's objects are usually training, education, and also health, where the activities of this investment are proven to increase the level of productivity of the object. Research by Belo et al. (2017) found that the components of human capital have a very close relationship with cross-sectional asset pricing. Maiti's (2018) research on six factor asset pricing in the capital market in India also confirmed the importance of human capital in making investment decisions and ignoring the components of human capital would cause serious problems. In research Roy and Shinji (2018) Human Capital as an additional factor can explain the relationship between risk-return very well. In their research, human capital is proxied by the labor income growth rate (LBR). Where according to (Susanti, 2020) LBR is compensation received by employees plus basic income from employees. The following is the formula for LBR, namely:

$$\text{LBR} = \text{EC} + \text{PI}$$

Notes:

LBR = Labor income

EC = Employee compensation

PI = Proprietor income

Therefore, the six-factor model conducted in a mathematical representation can be seen from the following equation:

$$E(R_{it}) = R_{ft} + \beta_l(LBR) + \beta_m[E(R_m) - R_{ft}] + \beta_s(SMB) + \beta_h(HML) + \beta_r(RMW) + \beta_c(CMA)$$

Notes:

$E(R_{it})$  = Expected return from the stock portfolio i in period t

$R_{ft}$  = Risk free rate of return in period t

$E(R_m)$  = Expected return of market index

$\beta_l(LBR)$  = The coefficient of human capital (labor income)

$\beta_m[E(R_m) - R_{ft}]$  = The coefficient of market index

$\beta_s(SMB)$  = The coefficient of size premium (small minus big)

$\beta_h(HML)$  = The coefficient of value premium (high minus low)

$\beta_r(RMW)$  = The coefficient of profitability (robust minus weak)

$c(CMA)$  = The coefficient of investment pattern (conservative minus aggressive)

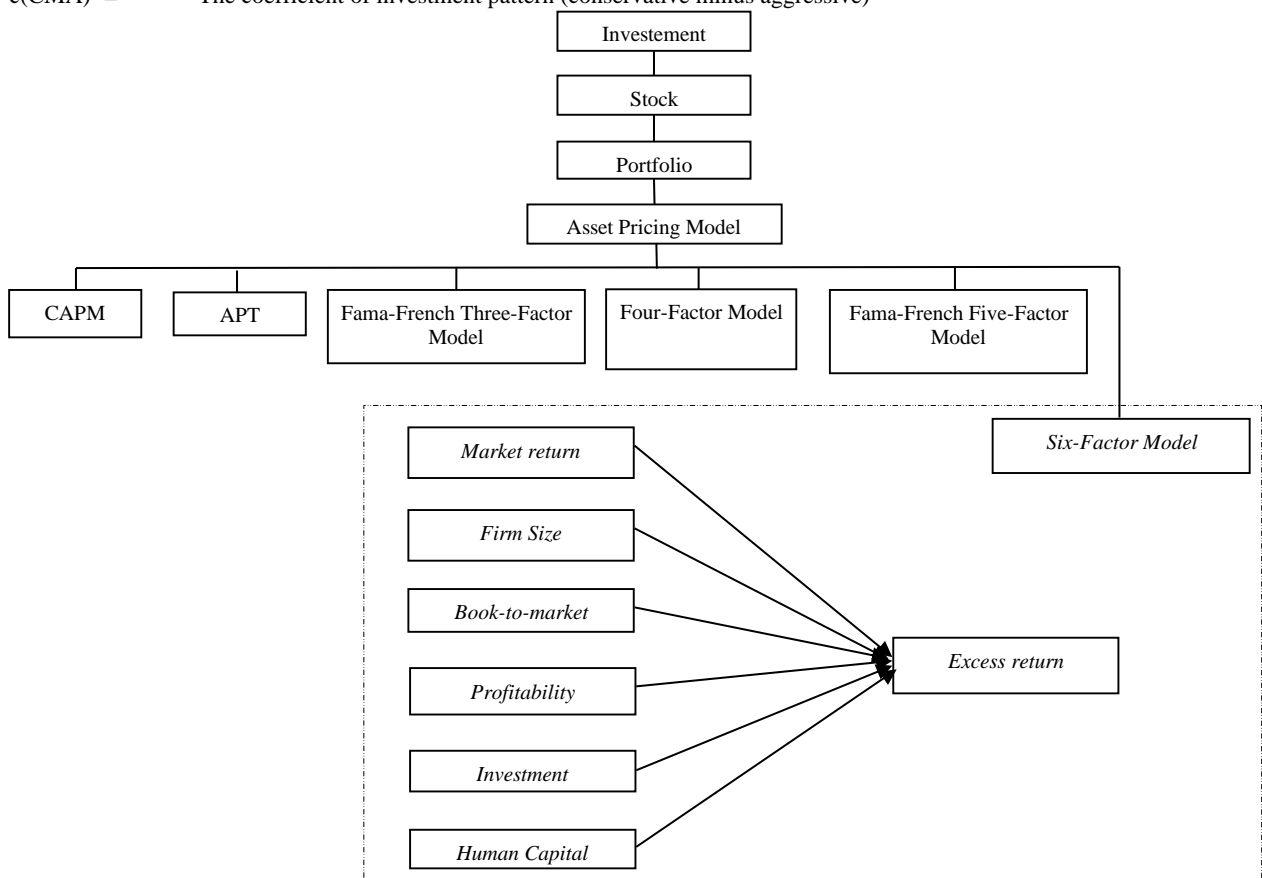


Figure 1: Proposed conceptual model.

## Empirical Review and Hypothesis development

### The Effect of Market Return on Excess Return

The variable of the market return of the six-factor model is able to show the relationship between the systematic risk of a portfolio and the expected return. Research results from (Susanti, 2013) show that partially, market return has a significant effect on excess return. Research from Susanti (2013) is also in line with research from Tirta (2016) and Putra et al. (2019) which shows that market return has a positive and significant relationship with excess return resulting the first hypothesis as follows:

$H_1$ : Market Return (X1) variable has an effect on Excess Return (Y) partially.

### **The Effect of Firm Size (SMB / Small Minus Big) on Excess Return**

The variable of firm size has the objective of describing the risk factors for return that will be related to firm size. Based on the results of research from Wijaya et al. (2017) it shows that partially, the variables from SMB have a significant and positive effect on excess return. Research from Acaravci and Karaomer (2017) conducted on the stock market in Turkey shows that SMB has an effect on excess return. So that, the second hypothesis results:

*H<sub>2</sub>: Variable Firm Size (SMB / Small Minus Big) (X<sub>2</sub>) has an effect on Excess Return (Y) partially.*

### **The Effect of Book to Market Equity (HML / High Minus Low) on Excess Return**

The variable of HML has the objective of describing the risk factor of return associated with the value of the firm. Based on the results of research from Candika (2017) the variable of HML partially has a significant positive effect on stock excess return, this study is also in line with the research of Putra et al. (2019) resulting the third hypothesis as follows:

*H<sub>3</sub>: The variable Book to Market Equity (HML / High Minus Low) (X<sub>3</sub>) has an effect on Excess Return (Y) partially.*

### **The Effect of Profitability (RMW / Robust Minus Weak) on Excess Return**

RMW is said to be a variable that describes the risk factor on return which has a relationship with the profitability of the company. Based on the results of research from Fama and French (2015) the variable of RMW, an additional variable from the three-factor model, shows that this factor has a role in explaining the excess return of stocks. Research from Wijaya et al. (2017) also shows the same results, wherein partially, the variable of HML has a significant effect on excess return. So that the fourth hypothesis results:

*H<sub>4</sub>: Variable Profitability (RMW / Robust Minus Weak) (X<sub>4</sub>) has an effect on Excess Return (Y) partially.*

### **The Effect of Investment (CMA / Conservative Minus Aggressive) on Excess Return**

The variable of CMA is able to describe the risk factor of return which has a relationship with investment. Based on the research results of Fama and French (2015) the addition of the CMA variable which represents investment as an additional variable is also able to explain the excess return of stocks, research from Acaravci and Karaomer (2017) shows that the variable of CMA partially has a significant positive effect on stock excess return, research of them are also in line with research from Putra et al. (2019). Resulting the fifth hypothesis as follows:

*H<sub>5</sub>: The variable Book to Market Equity (HML / High Minus Low) (X<sub>5</sub>) has an effect on Excess Return (Y) partially.*

### **The Effect of Human Capital (LBR / Labor Rate) on Excess Return**

Human Capital is an asset that shows the skills of each individual which are very important and has a close relationship with asset pricing (Belo et al., 2017). Research results from Roy and Shinji (2018) Human Capital as an additional factor can explain the relationship between risk and return very well. The results of research from Maiti (2018) also says that human capital has a extremely important role in helping to make the best investment decisions and if it is ignored, it can cause serious problems. Hence, the sixth hypothesis generated from this study is:

*H<sub>6</sub>: Variable Human Capital (LBR / Labor Rate) (X<sub>6</sub>) has an effect on Excess Return (Y) partially.*

### **The Effect of Six Factor-Model on Excess Return**

The Six-Factor Model is a development of the Five-factor model of Fama and French by adding a new variable, namely human capital (Roy and Shinji, 2018). Research results from Roy and Shinji (2018) prove that six-factor can explain stock returns very well. Other studies that are in line with their research, namely Maiti (2018) and Ayub et al. (2020) also proves that six-factor is able to explain returns from stocks very well. So that, the seventh hypothesis generated from this study is:

*H<sub>7</sub>: Six Factors (Market Return, Firm Size (SMB / Small Minus Big), Book to Market equity (HML / High Minus Low), Profitability (RMW / Robust Minus Weak), Investment (CMA / conservative Minus Aggressive), Human Capital (LBR / Labor) has an effect on Excess Return (Y) simultaneously.*

## **Research and Methodology**

The method used in this study is an explanatory method, descriptive statistics and verification. The descriptive method in this research is used to describe the results which include information from the Six Factors Model (Market Return, SMB, HML, RMW, CMA, LBR) and Excess Return on companies that listed on the LQ-45 index continuously from the 2015 - 2019 period as research sample. While the verification method is used to explain or answer the problem of how the influence of the six-factor model which includes market return, firm size, book to market value, profitability, investment, human capital on excess return simultaneously and partially in companies that listed on the LQ45 index continuously from the 2015-2019 period listed on the Indonesia Stock Exchange (IDX). The dependent variable related to the problem to be studied is the excess return from stocks. While the independent variables related

to the problem to be studied are market return, small minus big (SMB), high minus low (HML), Robust Minus Weak (RMW), Conservative Minus Aggressive (CMA), and Human Capital.

### Sampling design

The sampling technique used in this study was purposive sampling with the following criteria:

- i. Companies listed in LQ45 for the period 2015 - 2019;
- ii. Companies that entered the LQ45 index consecutively from 2015 - 2019;
- iii. LQ45 companies for the period 2015-2019 which have complete company financial statement data from 2015-2019;
- iv. LQ45 companies for the period 2015 - 2019 that issue financial statements in rupiah currency.

Of the 45 companies that listed the LQ45 index consecutively from 2015 to 2019, 26 companies met the criteria and as a result, they are selected as research samples.

### Data collection

The type of data used in this research is entirely secondary data, data that has been published on the IDX website (Indonesia Stock Exchange), Indonesia Capital Market Directory (ICMD), Annual Report uploaded from the website [www.idx.co.id](http://www.idx.co.id) and other sites, such as [www.finance.yahoo.com](http://www.finance.yahoo.com), [www.sahamok.com](http://www.sahamok.com), [www.bi.go.id](http://www.bi.go.id).

### Data analysis methods

The data analysis used in this research is quantitative method. Quantitative data analysis technique is a form of analysis that uses numbers and calculations with statistical methods using panel regression analysis, which is a regression technique that combines time series data with cross section data. The application used in this study is EViews version 10. The model used in this study is a panel data regression model which is a combination of cross section data with time series data. The form of the regression equation from this study:

$$Y = a + b_1X_1 + b_2X_2 + b_3X_3 + b_4X_4 + b_5X_5 + b_6X_6 + e$$

Notes:

- Y = Excess Return  
 a = constant  
 b1, b2, b3, b4, b5, b6 = regression coefficient  
 X1 = Market Return  
 X2 = Firm Size (SMB/Small Minus Big)  
 X3 = Book to Market Value (HML/High Minus Low)  
 X4 = Profitability (RMW/Robust Minus Weak)  
 X5 = Investment (CMA/Conservative Minus Aggressive)  
 X6 = Human Capital (LBR/Labour Rate)  
 e = error term

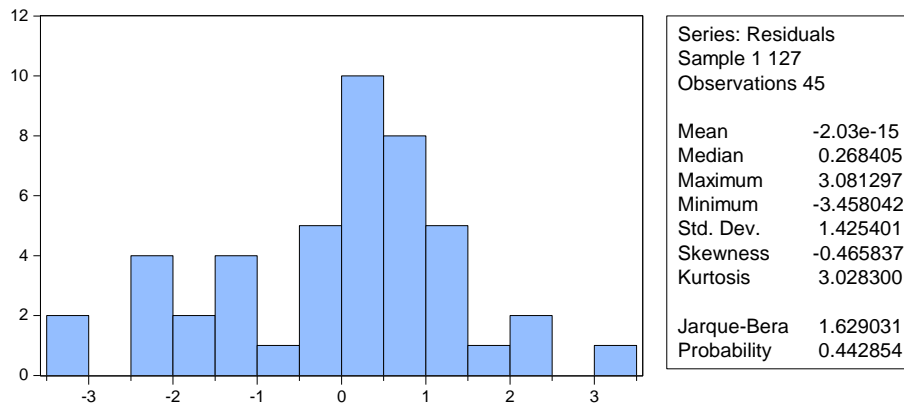
## Result and Discussion

**Table 1:** Descriptive Analysis

	MR	SMB	HML	RMW	CMA	LBR	ER
<b>Mean</b>	-0.022751	1.877872	1.625613	0.071275	-4.370907	0.050268	-0.055062
<b>Median</b>	-0.017702	2.328258	1.590503	0.066603	-4.146733	0.050331	-0.051762
<b>Maximum</b>	0.177674	3.856825	2.014591	0.172642	-1.390806	0.051697	0.068562
<b>Minimum</b>	-0.193576	0.223899	1.296224	-0.086111	-9.472077	0.048366	-0.156597
<b>Std. Dev.</b>	0.153254	1.470050	0.265656	0.104300	3.211365	0.001209	0.100856
<b>Skewness</b>	0.140560	0.129216	0.332455	-0.541903	-0.774398	-0.613314	0.075285
<b>Kurtosis</b>	1.583832	1.696826	2.190034	2.057446	2.327223	2.526849	1.398797
<b>Jarque-Bera</b>	0.434283	0.367718	0.228781	0.429801	0.594042	0.360102	0.538859
<b>Probability</b>	0.804816	0.832053	0.891910	0.806622	0.743029	0.835228	0.763815
<b>Sum</b>	-0.113753	9.389358	8.128063	0.356373	-21.85453	0.251338	-0.275309
<b>Sum Sq. Dev.</b>	0.093947	8.644184	0.282293	0.043514	41.25145	5.85E-06	0.040688
<b>Observations</b>	5	5	5	5	5	5	5

Based on the output results in Table 1, it can be seen that (1) The average value of Excess Return (Y) is -0.055062 with a standard deviation of 0.100856. (2) The average value of Market Return (X<sub>1</sub>) is -0.022751 with a standard deviation of 0.153254. (3) The average value of SMB (X<sub>2</sub>) is 1.877872 with a standard deviation of 1.470050. (4) The average HML (X<sub>3</sub>) value is 1.625613 with a standard deviation of 0.265656. (5) The average value of RMW (X<sub>4</sub>) is 0.071275 with a standard deviation of 0.104300. (6) The average CMA value (X<sub>5</sub>) is -4.370907 with a standard deviation of 3.211365. (7) The average value of LBR (X<sub>6</sub>) is 0.050268 with a standard deviation of 0.001209.

**Data Normality Test**



**Figure 2:** Normality Test

Based on Figure 2 it can be seen that the Jarque-Bera statistical value of 1.629031 is significant at the 0.05 significance level with a probability value of 0.442854 which is more different than 0.05. Thus, H<sub>0</sub> is accepted and H<sub>1</sub> is rejected, which can be concluded that the data is normally distributed.

**Multicollinearities Test**

**Table 2:** Multicollinearities test

Variable	Coefficient Variance	Uncentered VIF	Centered VIF
C	2.886218	3258.306	NA
MR	0.053331	1.162404	1.131242
SMB	0.004669	1005.549	1.463905
HML	0.012961	5.068045	1.714790
RMW	0.013783	2.088981	1.259486
CMA	0.027755	1.760078	1.065449
LBR	0.019056	2477.742	1.146877

Based on Table 2, it can be seen that all variables have a VIF value that is smaller than the specified critical value (VIF > 10). Thus, H<sub>0</sub> is rejected and H<sub>1</sub> is accepted, meaning that there is no multicollinearity between the independent variables (free from multicollinearity symptoms).

**Heteroskedasticities Test**

**Table 3:** Heteroskedasticities Test

Heteroskedasticity Test: White

F-statistic	0.556347	Prob. F (26,103)	0.9562
Obs*R-squared	0.018622	Prob. Chi-Square (26)	0.9360
Scaled explained SS	68.27096	Prob. Chi-Square (26)	0.0000



Based on Table 3, it can be seen that the results of the heteroscedasticity test using the White Heteroskedasticity Test model show that the Obs\*R-squared value is 0.018622 which is significant at the 0.05 significance level with a Chi-Square probability value of 0.9360 which is greater than 0.05. Thus,  $H_0$  is accepted and  $H_1$  is rejected, meaning that there are no symptoms of heteroscedasticity (the data meets the homoscedasticity assumption).

**Autocorrelation Test**

**Table 4:** Autocorrelation Test

Breusch-Godfrey Serial Correlation LM Test:

F-statistic	1.107902	Prob. F (2,121)	0.2476
Obs*R-squared	2.610213	Prob. Chi-Square (2)	0.2553

Test Equation:  
 Dependent Variable: RESID  
 Method: Least Squares

R-squared	0.143156	Mean dependent var	1.86E-17
Adjusted R-squared	0.086505	S.D. dependent var	0.331358
S.E. of regression	0.316702	Akaike info criterion	0.605008
Sum squared resid	12.13634	Schwarz criterion	0.803530
Log likelihood	-30.32554	Hannan-Quinn criter.	0.685674
F-statistic	2.526980	Durbin-Watson stat	1.900158
Prob (F-statistic)	0.014084		

In Table 4, it can be seen that the number of independent variables = 6, the number of all variables = 7, Sample = 130 and  $\alpha = 5\%$ , it can be found that  $dL = 1.6184$  and  $dU = 1.8110$  where DW (Durbin – Watson) = 1.900158. where  $4 - dU = 2.189$ . It is obtained that the results of the DW are  $dL < dW < 4 - dU$ , namely  $1.6184 < 1.900158 < 2.1890$ , meaning that it does not occur or does not exist in the autocorrelation area.

**Panel Data Regression Analysis**

**Chow Test**

**Table 5:** Chow Test

Redundant Fixed Effects Tests  
 Equation: Untitled  
 Test cross-section fixed effects

Effects Test	Statistic	d.f.	Prob.
Cross-section F	0.500301	(22,16)	0.2047
Cross-section Chi-square	50.371510	22	0.0005

Based on Table 5, the value of the Cross-section F-statistic is 0.500301 with a probability value (p) of 0.2047. Because the probability value is greater than the specified significance level ( $0.2047 > 0.05$ ),  $H_0$  is accepted and  $H_1$  is rejected. This means that the Common Effect model is more appropriate than using the Cross-Section Fixed Effect model.

**Hausman Test**

**Table 6:** Hausman Test

Correlated Random Effects - Hausman Test  
 Equation: Untitled  
 Test cross-section random effects

Test Summary	Chi-Sq. Statistic	Chi-Sq. df.	Prob.
Cross-section random	1.737889	6	0.4074

Based on Table 6, the Chi-Square Cross-section Random statistical value is 1.737889 with prob. (p) value of 0.4074. Because the probability value is greater than the specified significance level ( $0.4074 > 0.05$ ),  $H_0$  is accepted and  $H_1$  is rejected. This means that the Cross-Section Random Effect model is better than the Cross-Section Fixed Effect model.

**LM Test (Lagrange Multiplier)**

**Table 7: LM 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	3.560451 (0.0592)	0.760889 (0.3831)	4.621340 (0.0376)
Honda	-1.886916 --	-0.872290 --	-1.951053 --
King-Wu	-1.886916 --	-0.872290 --	-1.510683 --
Standardized Honda	-1.516916 --	0.134090 (0.4467)	-6.217083 --
Standardized King-Wu	-1.516916 --	0.134090 (0.4467)	-5.083314 --
Gourieriou, et al.*	--	--	0.000000 (>= 0.10)

\*Mixed chi-square asymptotic critical values:

1%	7.289
5%	4.321
10%	2.952

Based on Table 7, it is found that the Cross Section 3.560451 is greater than chi-square with a significance level of 5%, namely 4.321, and the resulting probability is 0.0592 smaller than the 0.05 significance level so that the model chosen in this study is Common Effect.

**Regression Analysis Results**

**Table 8: Regression Result**

Dependent Variable: EXCESS\_RETURN  
 Method: Panel Least Squares  
 Date: 10/18/20 Time: 09:55  
 Sample: 2015 2019  
 Periods included: 5  
 Cross-sections included: 26  
 Total panel (balanced) observations: 130

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.810365	1.698887	-0.476998	0.6342
MR	0.581238	0.230935	2.516890	0.0131
SMB	0.086928	0.068332	1.272135	0.0257
HML	-0.117681	0.113847	-1.033675	0.3033
RMW	-0.096236	0.117402	-0.819711	0.0140
CMA	0.121800	0.166597	0.731105	0.0461
LBR	-7.307904	29.46507	-0.248019	0.8045
R-squared	0.721858	Mean dependent var		-0.051621
Adjusted R-squared	0.235109	S.D. dependent var		0.349480
S.E. of regression	0.339344	Akaike info criterion		0.728738
Sum squared resid	14.16399	Schwarz criterion		0.883144
Log likelihood	-40.36797	Hannan-Quinn criter.		0.791478
F-statistic	2.303508	Durbin-Watson stat		2.626773
Prob(F-statistic)	0.000395			

Based on Table 8, it can be seen that the results of the t statistical test in verifying the hypothesis are as follows:

- i. In verifying the hypothesis obtained a t-statistic of 2.516890 with a prob of 0.0131 which is smaller than the expected significance level ( $0.0131 < 0.05$ ) with a positive coefficient value. Then  $H_1$  is accepted. The results of the analysis show that MR has a significant positive effect on Excess Return.
- ii. In verifying the hypothesis obtained a t-statistic of 1.272135 with a prob of 0.0257 which is smaller than the expected significance level ( $0.0257 < 0.05$ ) with a positive coefficient value. Then  $H_1$  is accepted. The results of the analysis show that there is a significant positive influence between SMB on Excess Return.
- iii. In verifying the hypothesis, obtained a t-statistic of -1.033675 with a prob of 0.3033, which is greater than the expected significance level ( $0.3033 > 0.05$ ) with a negative coefficient value. Then  $H_1$  is rejected. The analysis results show that there is no significant effect between HML on Excess Return.
- iv. In verifying the hypothesis obtained a t-statistic of 0.819711 with a prob of 0.0140 which is smaller than the expected significance level ( $0.0140 < 0.05$ ) with a positive coefficient value. Then  $H_1$  is accepted. The analysis result shows that there is a significant positive effect between RMW on Excess Return.
- v. In verifying the hypothesis obtained a t-statistic of 0.731105 with a prob of 0.0461 which is smaller than the expected significance level ( $0.0461 < 0.05$ ) with a positive coefficient value. Then  $H_1$  is accepted. The results of the analysis show that there is a significant positive effect between CMA on Excess Return.
- vi. In verifying the hypothesis obtained a t-statistic of -0.248019 with a prob of 0.8045 which is greater than the expected significance level ( $0.8045 > 0.05$ ) with a negative coefficient value. Then  $H_1$  is rejected. The results of the analysis show that there is no significant influence between LBR on Excess Return.

**Table 9:** Regression Result (Statistical F Test Results)

Dependent Variable: EXCESS\_RETURN

Method: Panel Least Squares

Date: 10/18/20 Time: 09:55

Sample: 2015 2019

Periods included: 5

Cross-sections included: 26

Total panel (balanced) observations: 130

R-squared	0.721858	Mean dependent var	-0.051621
Adjusted R-squared	0.235109	S.D. dependent var	0.349480
S.E. of regression	0.339344	Akaike info criterion	0.728738
Sum squared resid	14.16399	Schwarz criterion	0.883144
Log likelihood	-40.36797	Hannan-Quinn criter.	0.791478
F-statistic	2.303508	Durbin-Watson stat	2.626773
Prob(F-statistic)	0.000395		

Based on Table 9, it can be seen that the Prob (F-statistic) value is 0.000395 with  $\alpha = 5\%$ , then  $H_0$  is rejected ( $0.000395 < 0.05$ ), and the first hypothesis  $H_1$  is accepted. That is, the variables MR, SMB, HML, RMW, CMA and LBR simultaneously or together have a significant effect on Excess Return. Where the effect of MR, SMB, HML, RMW, CMA and LBR simultaneously on Excess Return is equal to the figure shown in R-squared, namely 0.721858 or 72.19% with the remaining 27.81% influenced by other variables not examined in this study.

## Discussion

### The Effect of Market Return on Excess Return

The market return variable from the six-factor model is one of the factors that is able to show the relationship between the systematic risk of a portfolio and the expected return. The research result shows that there is a significant influence between Market Return and Excess Return in companies listed on the LQ45 index for the 2015-2019 period. The relationship between these two variables also shows positive results, which means the greater the market return is, the higher the excess return generated for investors to receive. Therefore, investors are kindly recommended to choose market return as an indicator to help them for their portfolio. Investors are also advised to choose a large market return, so that the excess return obtained by investors will also be in the massive value. The result of this study is in line with research from (Susanti, 2013) which shows that partially, market return has a significant effect on excess return. In addition, research from Tirta (2016) and also Putra et al. (2019) shows that market return has a positive and significant relationship with excess return as well. In addition to the capital market in Indonesia, research conducted by Evbayiro-Osagie & Osamwonyi (2017) on the capital market in Nigeria also shows that market return shows a statistically significant relationship as a whole in the ten portfolios they studied.

### **The Effect of Firm Size (SMB/Small Minus Big) on Excess Return**

The variable of firm size has the objective in describing the risk factors for return that will be related to firm size. From the research result, it is found out that there was a significant positive effect between SMB on Excess Return for companies listed on the LQ45 index for the 2015-2019 period. The result of this study indicates that when investing, the value of the SMB must also be considered well by the investors in order to get the best investment decisions. A positive relationship shows that when choosing a portfolio to invest in, investors should choose a company with a small market capitalization (SMB value). The cause of this statement is that companies with a small SMB value will be better in providing large excess returns to their investors. This study has the same results as from Wijaya et al. (2017) showing that partially, the variables from SMB have a significant and positive effect on excess return. Research from Acaravci and Karaomer (2017) conducted on the stock market in Turkey shows that SMB has an effect on excess return. Research from Martins and Eid (2015) on the stock market in Brazil in the overall regression, the SMB factor has the power to capture the variation in returns from most portfolios.

### **The Effect of Book-to-Market-Equity (HML/High Minus Low) on Excess Return**

The variable of HML has the objective in describing the risk factor of return associated with the value of the firm. The result of the study indicates that there is no significant effect between HML and Excess Return for companies listed on the LQ45 index for the 2015-2019 period. In other words, the factor of HML will not affect the amount or value of excess return. The result of this study is not in line with the research conducted by Candika (2017) and Putra et al. (2019) which is that the variable of HML has a significant positive effect on stock excess return. But this research is in line with research conducted by Wijaya et al. (2017) where HML does not have any significant effect on a number of portfolios they studied, from 36 portfolios studied, there are 20 portfolios which show insignificant results on the Kompas 100 index. Research from Susanti (2013) also shows that there is no partially significant effect between these two variables. Research from Fama & French (2015) also shows that the factor of HML is a redundant variable in explaining stock excess return in the US when there is an added factor of profitability and investment in the three-factor FF model. It turns out that this is because when there is an addition of HML, the large average HML return is absorbed by HML exposure to the other four factors of the five-factor model, especially the factors of profitability and investment. Therefore, this research results that the HML factor is redundant in explaining the excess return of stock portfolios listed in LQ45 for the 2015-2019 period.

### **The effect Profitability (RMW/Robust Minus Weak) on Excess Return**

RMW is said to be a variable that describes the risk factor on return which has a relationship with the profitability of the company. From the research, it is found out that there is a significant positive effect between RMW on Excess Return for companies listed on the LQ45 index for the 2015-2019 period. A positive relationship indicates that investors should choose a portfolio with a high RMW value, this is because it is able to provide an excess return with a greater value to investors. This result is in line with the research conducted by (Fama and French, 2015). The variable of RMW which is an additional variable of the three-factor model that has been developed by them previously, shows that the factor of RMW has a role in explaining the excess return of stocks. Research from Wijaya et al. (2017) also shows the same results, wherein partially, the variable of HML has a significant effect on excess return.

### **The Effect of Investment (CMA/Conservative Minus Aggressive) on Excess Return**

The variable of CMA is able to describe the risk factor of return which has a relationship with investment. The results showed that there was a significant positive effect between CMA on Excess Return for companies listed on the LQ45 index for the 2015-2019 period. The result of the study indicates the CMA should be considered by investors in order to be able in making the best investment decisions. Investors are advised to choose a portfolio with a high CMA value because it will undoubtedly to provide a high excess return as well. Research with the same results, namely (Fama and French, 2015) the addition of the CMA variable which represents investment as an additional variable is also able to explain the excess return of stocks, research from Acaravci and Karaomer (2017) the variable of CMA has a significant positive effect on stock excess return. Their research is also in line with research from (Putra et al., 2019) showing that partially, the variable of CMA has a significant effect on excess return.

### **The Effect of Human Capital (LBR/Labor Rate) on Excess Return**

Human Capital is an asset that shows the skills of each individual which is very important and has a close relationship with asset pricing (Belo et al., 2017). The result of the analysis shows that there is no significant influence between LBR on Excess Return. The result of this study is not in accordance with the research conducted by Roy and Shinji (2018) where they state that Human Capital as an additional factor can explain the relationship between risk-return very well. Research from Maiti (2018) also states that human capital has a very important role in helping to make investment decisions and if it is ignored, serious problems can occur. However, the result of this study is in line with the research conducted by Susilandari (2018), which examines the effect of human capital with LBR as the proxy on returns from stocks, in 30 portfolios with 6 company sectors showing that LBR has an effect on returns is not proven if it is applied to stocks that are elected in Indonesia. This discrepancy with Six-Factor studies can be caused by several things, such as research conducted by Maiti (2018) shows that the main problem of six-factor with human capital is its failure to capture average return on microcaps with low-value stocks to invest in. It is said that this type of stock invests less in human capital. In this study, of the 130 samples studied, there were 80 stocks that had low value, (S / L and B / L), this could be a handicap in this study

so that the types of stocks from LQ45 could not take advantage of variables from human capital to explain the excess return from the established portfolio. In addition, research from Roy & Shinjin (2018) uses very different types of portfolios, which is from the US and with a very different number, namely 100 types of portfolios with different types of sorting, while this research uses only 12 types of portfolios listed on the LQ45 Index for the 2015 period. -2019. The number of portfolios that is not as much as the research from Roy & Shinjin could cause the result of the research not as accurate as their research so that it can be one of the causes of the discrepancy of the research results. Besides, the research from Maiti (2018) which changes the factor from CMA to CMAO (orthogonal CMA) in the Indian capital market can be as well one of the causes of the discrepancy of the research results. On the other hand, from the research result it can also be concluded that the LBR factor partially, although it affects the stock market in the US and India, does not affect the excess return of stocks listed on LQ45 in the 2015-2019 period which are listed on the Indonesia Stock Exchange (BEI).

### **The Effect of Six-Factor Model on Excess Return**

The Six-Factor Model is a development of the Five-factor model of Fama and French by adding a new variable, human capital (Roy and Shinji, 2018). Based on the research result, the variables MR, SMB, HML, RMW, CMA and LBR simultaneously or together have a significant effect on the Excess Return as much as 72.19%. This shows that investors in making investment decisions to calculate excess returns can use the six-factor model as an indicator in order to gain a massive excess return. The result of this study is in line with the research conducted by Roy and Shinji (2018) proving that six factors are able to explain returns from stocks very well. Another study that is in line with their research, Maiti (2018) which found out that the six-factor is designed to capture the variables of size, value, profitability, investment, and human capital that affect the average portfolio return and this model is proven to be able to perform better than FTFF (Three-Factor when book-to-market-value is replaced by leverage) and FFFF (FF Three-Factor). Research from Ayub et al. (2020) also proves that six-factor are able to explain returns from stocks very well.

### **Conclusions**

This study aims to determine the effect of six-factors (market return, firm size, value, profitability, investment, human capital) on excess return in companies with shares listed in LQ45 for the 2015-2019 period. Based on the research, it can be concluded that partially, market return (X1), firm size (X2), profitability (X4), and investment (X5) have a significant positive effect on excess return of companies listed in LQ45 for the 2015-2019 period. Whereas, value variable (X3) and human capital (X6) do not have a significant effect on excess return of companies listed in LQ45 for the 2015-2019 period. It turns out that the inconsistency of the results of this study with other studies can be caused by several things, such as the factor of HML which is said to be a redundant variable in explaining stock excess return when there is an additional factor of profitability and investment in the three-factor FF model where when there is an addition of average HML, resulting the large HML returns are absorbed by HML exposure to the other four factors of the five-factor model, especially the factors of profitability and investment. In addition, in the human capital variable partially, it is said that the problem with six-factor human capital is its failure to capture the average return on microcaps with low-value stocks because this type of stock invests less in human capital and in this study, most of the stocks taken as samples have a low value, on the other hand, the type and number of the research portfolio this time is very different and are not as much as the previous research. However, it is still proven that simultaneously or as a whole, six-factors (market return, firm size, value, profitability, investment, human capital) have a significant effect on excess return of companies listed in LQ45 for the 2015-2019 period.

For further researchers who are willing in continuing this research, as this research only uses LQ45 index stocks as a sample which is said not to be very much, therefore further researchers are advised to conduct research with a larger stock index or shares in other industrial sectors, so that research can be better, more accurate and more comprehensive.

This study used only samples for a period of 5 consecutive years as well, namely 2015-2019, so that further researchers are also advised to increase the period of the research which will turn out that the results can be good and also more accurate. Investors are advised to conduct a selection on stocks when they are interested in making investment in companies listed on the LQ45 index. By doing this, investors will be helped in forming portfolios that are able to provide greater returns, more stable and more accordance with the expectations of investors. Where investors can conduct this by identifying and also considering the factors that affect the return of stocks, such as using the six-factor model when deciding to invest in order to examine the relationship between risk and return properly.

For companies, it is advisable to improve the performance of the company further, this will result in making investors to put more trust in the company by turning investment in the company. With the increased performance of the company will increase the investment in the company, as a result it will able to increase the profit of the company, in the end, company will also be able to provide feedback in the form of a higher return to investors where expectations from investors can be achieved, besides, this will also increase the confidence level of investors and potential investors to invest in the companies.

Researcher is well aware that the research carried out this time has many limitations so it is hoped that this study can be taken as a topic and improved in the further studies.

## References

- Acaravci, S. K., & Karaomer, Y. (2017). Fama-French Five Factor Model: Evidence From Turkey. *International Journal of Economics and Financial Issues*, 7(6), 130–137.
- Ayub, U., Kausar, S., Noreen, U., Zakaria, M., & Jadoon, I. A. (2020). Downside Risk-Based Six-Factor Capital Asset Pricing Model (CAPM): A New Paradigm in Asset Pricing. *Sustainability (Switzerland)*, 12(17), 1–16. <https://doi.org/10.3390/SU12176756>
- Belo, F., Li, J., Lin, X., & Zhao, X. (2017). Labor-Force Heterogeneity And Asset Prices: The Importance Of Skilled Labor. *The Review of Financial Studies*, 30(10), 3669e3709. <https://doi.org/10.1093/rfs/hhx070>
- Candika, Y. I. (2017). Pengujian Kekuatan Model Carhart Empat Faktor Terhadap Excess Return Saham Di Indonesia. *The Indonesian Journal of Applied Business*, 1(1), 14–29.
- Carhart, M. M. (1997). On Persistence in Mutual Fund Performance. *The Journal of Finance*, 52(1), 57–82. <https://doi.org/10.1111/j.1540-6261.1997.tb03808.x>
- Dewi, M. M. R. (2018). *Pengaruh Five Factor Asset Pricing Model Fama-French Terhadap Excess Return Pada Periode Sebelum Dan Sesudah Currency Crisis*. Undergraduate Thesis: Business Faculty, President University.
- Endri. (2010). Peran Human Capital Dalam Meningkatkan Kinerja Perusahaan: Suatu Tinjauan Teoritis Dan Empiris. *Jurnal Administrasi Bisnis*, 6(2), 179–190. <https://doi.org/10.26593/jab.v6i2.396>
- Egam, G. E. Y., Ilat, V., & Pangerapan, S. (2017). Pengaruh Return On Asset (ROA), Return On Equity (Roe), Net Profit Margin (NPM), Dan Earning Per Share (EPS) Terhadap Harga Saham Perusahaan Yang Terdaftar Dalam Indeks Lq45 Di Bursa Efek Indonesia Periode Tahun 2013-2015. *Problems of a Mature Economy*, 5(1), 45–61. [https://doi.org/10.1007/978-1-349-15400-5\\_6](https://doi.org/10.1007/978-1-349-15400-5_6)
- Evbayiro-Osagie, E. I., & Osamwonyi, I. O. (2017). A Comparative Analysis of Four-Factor Model and Three-Factor Model in The Nigerian Stock Market. *International Journal of Financial Research*, 8(4), 38. <https://doi.org/10.5430/ijfr.v8n4p38>
- Fama, F., & French, K. R. (1993). Common Risk Factors in The Returns on Stocks and Bonds. *Journal of Financial Economics*, 33, 3–56. [https://doi.org/10.1016/0304-405X\(93\)90023-5](https://doi.org/10.1016/0304-405X(93)90023-5)
- Fama, E., & French, K. R. (2014). A Five-Factor Asset Pricing Model. *Journal of Financial Economics*, 116, 1-22.
- Karamoy, H., & Tasik, H. H. D. (2019). Peran Eksistensi Saham Di LQ45 Pada Kinerja Profitabilitas Perusahaan. *EKUITAS (Jurnal Ekonomi dan Keuangan)*, 3(1), 72. <https://doi.org/10.24034/j25485024.y2019.v3.i1.4117>
- Kim, D., Kim, T. S., & Min, B. K. (2011). Future Labor Income Growth And The Cross-Section Of Equity Returns. *Journal of Banking & Finance*, 35(1), 67e81. <https://doi.org/10.1016/j.jbankfin.2010.07.014>
- Lemiyana. (2015). Analisis Model CAPM dan APT Dalam Memprediksi Tingkat Return Saham Syariah (Studi Kasus Saham Di Jakarta Islamic Index). *I-Finance*, 1(1), 1–20.
- Maiti, M. (2018). *A Six Factor Asset Pricing Model*. Thesis: Pondicherry University Department Of Banking Technology.
- Martins, C. C., & Eid Jr, W. (2015). Pricing Assets With Fama And French 5-Factor Model: A Brazilian Market Novelty. *Research Gate*. 0–13.
- Novy, R., & Marx. (2012). The Other Side of Value: The Gross Profitability Premium, *Proc, NBER Asset Pricing and Q Group Meetings*.
- Nugraha, N. M., & Susanti, N. (2019). The Use of the Three Factor Asset Pricing Models and Carhart Four Factors to Assess Excess Return. *Atlantis Press (Advances in Social Science, Education and Humanities Research)*, 197, 361–369.
- Osamwonyi, I. O., & Evbayiro-Osagie, E. I. (2017). The Relationship between Macroeconomic Variables and Stock Market Index in Nigeria. *Journal of Economics*, 3(1), 55–63. <https://doi.org/10.1080/09765239.2012.11884953>
- Putra, I. G. S., Susanti, N., & Putra, O. E. (2019). Pengujian Fama & French Five - Factors Asset Pricing Model. *Bisma (Jurnal Bisnis Dan Manajemen)*, 13(3), 148–157.
- Putra, I. G. S., & Susanti, N. (2019). Perbandingan 3 Faktor dan 5 Faktor Asset Pricing Model. *Jurnal Pendidikan Akuntansi & Keuangan*, 7(1), 1–10. <https://doi.org/10.17509/jpak.v7i1.15799>
- Ross, S.A. (1976). The Arbitrage Theory of Capital Asset Pricing. *Journal of Economic Theory*, 13(3), 341–360. [https://doi.org/10.1016/0022-0531\(76\)90046-6](https://doi.org/10.1016/0022-0531(76)90046-6)
- Roy, R., & Shijin, S. (2018). A Six-Factor Asset Pricing Model. *Borsa Istanbul Review*, 18(3), 205–217. <https://doi.org/10.1016/j.bir.2018.02.001>
- Sharpe, W. F. (1964). Capital Asset Prices: A Theory Of Market Equilibrium Under Conditions Of Risk. *The Journal of Finance*, 19(3), 425–442. <https://doi.org/10.2307/2977928>
- Susanti, N. (2013). Pengujian Fama French Three Factor Model Pada Perusahaan Di Indonesia Yang Sahamnya Terdapat Di LQ 45 Tahun 2005 – 2009. *Forum Keuangan & Bisnis II*, 535–559.
- Susanti, N. (2020). *Pengaruh Faktor - Faktor Terpilih Model Penetapan Harga Aset dan Kinerja Perusahaan Terhadap Pengembalian Saham Serta Dampaknya pada Nilai Perusahaan di Bursa Efek Indonesia*. Thesis: Universitas Pasundan.
- Susilandari, C. A. (2018). Pengaruh Human Capital (Labor Income) Terhadap Expected Stock Returns. *Jurnal Akuntansi*, 12(1), 58–79. <https://doi.org/10.25170/jara.v12i1.58>
- Sutrisno, B., & Ekaputra, I. A. (2016). Uji Empiris Model Asset Pricing Lima Faktor Fama-French Di Indonesia. *Jurnal Keuangan Dan Perbankan*, 20(3), 343–357. <https://doi.org/10.26905/jkdp.v20i3.287>
- Tandelilin, Equardus. 2010. *Portofolio dan Investasi Teori dan Aplikasi*. Yogyakarta: Kanisius.

- Tirta, W. O. P. (2016). Identifikasi Perbedaan Asset Pricing Model: Pendekatan Three Factor Model, Identifikasi Perbedaan Asset Pricing Model: Pendekatan Three Factor Model, Q-Factor Model & Five Factor Model (Studi Kasus Pada Perusahaan Yang Terdaftar Di Bursa Efek. *Journal Manajemen Airlangga*, 5(4).
- Titman, S., Wei, K.C. J., Xie, F. (2003). Capital Investments And Stock Returns. *NBER Working Paper Series*.
- Wijaya, Sheila, C., Murhadi, W., & Utami, M. (2017). Analisis Fama French Five Factor Model Dan Three Factor Model Dalam Menjelaskan Return Portofolio Saham. *Roundtable for Indonesian Entrepreneurship Educators (RIEE)-5*.

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