# Impact of Capital Asset Pricing Model (CAPM) on Excess Return

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**Abstract**. Different ways and methods can be used in calculating asset pricing models. One method that can be used in calculating asset pricing model is Capital Asset Pricing Model (CAPM). Capital Asset Pricing Model (CAPM) is a model that links the expected rate of return of risk assets with asset risk to balanced market conditions. This study aims to assess the risk and stock returns with the CAPM method of excess return, in order to provide a decent investment decision on stocks listed in the index LQ 45. Type of research used is descriptive quantitative research. Population in this research is the stock of LQ 45 period of 2012 until 2016. The sampling method in this research uses purposive sampling with a criterion of the company which listed continuously in Indonesia stock exchange and recorded in index LQ 45 period 2012 until 2016, which is 20 companies selected to sample research. Secondary data used in the form of closing price of shares of LQ 45 and interest rate of Bank Indonesia on a monthly basis. All data then calculated, hypothesis testing using multiple linear regression analysis with the help of software used is SPSS Version 24.

## 1. Introduction

Economic growth is one of the most important discussions because economic growth will have an impact on the development of a country. An important indicator to know the economic conditions in a country in a certain period is indicated by the Gross Domestic Product (GDP) data. The value of GDP will provide an illustration of how the state is capable of managing and utilizing available resources. It is known that in the period 2000-2004, economic recovery occurred with an average GDP growth at 4.6% per year. After that, GDP growth accelerated (with the exception of 2009, due to shocks and global financial uncertainty, Indonesia's GDP growth fell to 4.6%, a figure that is still amazing) and peaked at 6.5% in 2011. Even so, after 2011 Indonesia's economic expansion began to slow down considerably. Between 2011 and 2015 Indonesia's economic growth also experienced a slowdown.

From its own internal side, monetary development is relied upon to be driven by government framework spending with the end goal to reinforce the profitable segment as a driver of financial development. Not only that, as many as fourteen policy packages launched by the government are expected to encourage investment that can accelerate economic growth and maintain macroeconomic stability. Indonesia has a normal development rate that is still better contrasted with different nations during the period 2006-2015. Meanwhile, up to the third quarter of 2016, Indonesia had a truly good economic growth of 5.02%. In addition to being optimistic about economic growth, the health of Indonesia's economic fundamentals is well maintained. This can be seen from 2016 economic indicators which showed good results, such as inflation that was still under control at 3.02%, appreciation of the Rupiah exchange rate by 2.6% and the JCI growth by 15.3%.
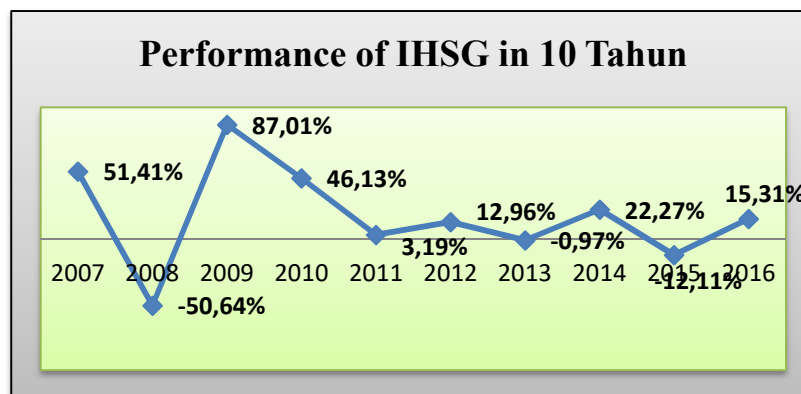


**Source:** www.idx.co.id  (Data processed)

**Graphic 3.** Performance of Indeks Harga Saham Gabungan (IHSG)

The data is the JCI growth data which is calculated from 2007 to 2016. Looking at the growth of the capital market in Indonesia, it is estimated that the capital market in Indonesia can continue to increase every year. This fact shows that investment activities in Indonesia have begun to grow rapidly. So this is inseparable from investment decisions made by investors. The main highlight is the investment decision-making process by investors.

Investment decisions are decisions about investment in the present to get future results or profits. The organization's speculation choice is vital for the survival of the organization as a result of venture choices in regards to the assets that will be utilized for speculation, the kind of speculation that will be made, the arrival on the venture, and venture chances that may emerge.

Investment decisions have a long-term time dimension, so decisions taken must be considered well because they have long-term consequences.

The basics of investment decisions are very important in making investment decisions. The basis of the investment decision consists of the level of expected return, the level of hazard and the connection between return and hazard. Return is the main reason people invest is to get a return. Returns of a certain level are very reasonable for investors who invest their funds. Returns that are expected by investors from their investments are compensation for opportunity costs and the risk of decreasing purchasing power due to the influence of inflation. Need to be distinguished between expected return (expected return) and return that occurs (realized return). The expected return is the level of return that investors anticipate in the future. While the return that occurs (realized return) or actual return is the level of return that has been obtained by investors in the past.

The next basic investment decision is a risk. Risk can be interpreted as the possibility of actual return that is different from the expected return. Specifically, it refers to the possibility of actual return realization lower than the expected minimum return. The normal least return is frequently alluded to as the required rate of return. The third premise of venture choices is the connection between hazard and return desires is a relationship that is unidirectional and straight. This means that the greater the risk of an asset, the greater the expected return on the asset and vice versa.

Another important and fundamental concept in investment science is called a balanced model. Basically, a model will be able to help understand a complex problem in a simpler picture. Using the balance model will be able to understand how the behavior of investors as a whole, and how the mechanism of prices and market returns formations in a simpler form. The balance model can also help to understand how to determine the risks that are relevant to an asset, as well as the risk relationship and expected return for an asset when the market is in a balanced condition. One of the balance models is the Capital Asset Pricing Model (CAPM) and Arbitrage Pricing Theory (APT).

The CAPM model is a balanced model that describes risk and return relationships more simply and uses only one variable (referred to as a beta variable) to describe risk. The CAPM is basically the same as the APT model which only considers one risk factor, namely systematic risk. One criticism of the APT model is that there are difficulties in determining the relevant risk factors [7]. According to [7] CAPM is one of the equalization models that can decide the connection between the level of expected return of a hazard resource and the danger of the advantage in a reasonable economic situation. At the CAPM, the market portfolio is very influential because it is assumed that the relevant risk is a systematic risk as measured by beta (the sensitivity level of securities returns to changes in market returns). The advantage of beta lies in its stability, Jogiyanto said that "Beta which is calculated based on historical data can be used to estimate beta in the future [5]. Empirical evidence shows that historical beta is able to provide information about future beta. "At the CAPM, all macro factors are integrated into one factor, namely portfolio market return. CAPM is a model that can describe or predict reality in a market that is complex, though not to the reality of the assumptions used. In this way, CAPM as a parity model can rearrange the genuine photo of the connection between hazard and return.

The CAPM calculation is based on equilibrium conditions (balanced). "Market equilibrium occurs if prices of assets are at a level that can no longer provide incentives to conduct speculative trading" [5]. In equilibrium conditions, the level of profit required by investors for a stock will be affected by the risk of the stock. Stock risk in CAPM is measured by beta ($\beta$). The expected rate of return [E (Ri)] CAPM method is determined by the market rate of return (Rm), risk-free return rate (Rf), and systematic risk ($\beta$), with the CAPM method investors are expected to measure stock performance.

In this study selected groups of shares included in the LQ45. The LQ45 Index is created and published by the Indonesia Stock Exchange. This index consists of 45 companies whose shares

have high liquidity selected through several selection criteria. The LQ45 index is one of the stock index indicators on the IDX which can be used as a reference as a material to assess the performance of stock trading. Among the stocks in the Indonesian capital market, the LQ45 shares on the Indonesia Stock Exchange are shares that are in great demand by investors.

This is because LQ45 shares have high capitalization and high trading frequency so that the prospects for growth and financial condition of the stock are good. In addition, the LQ 45 index is a complement to the JCI and specifically to provide an objective and reliable means for financial analysis, investment managers, investors and other capital market observers in monitoring price movements of actively traded shares. Based on the shares listed on LQ45 after being re-selected according to the criteria that have been set, shows that of the 45 companies listing in LQ45 respectively from 2012-2016 20 companies were selected. Although the shares in LQ45 are in the category of superior stocks, it was found that the majority of shares produced negative returns in a row, as stated that the LQ45 index has high capitalization and high trading frequency so that the growth prospects and financial conditions of the stock should be good. Following the development of excess stock returns in 20 companies from 2012-2016 :
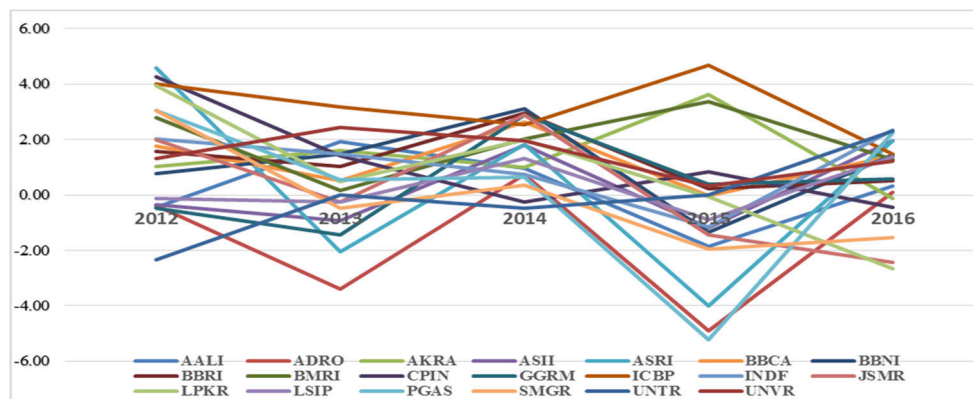


**Graphic 4.** Development of Stock Return for 2012-2016 Period

Based on Graph 4 Development of Stock Returns for 2012-2016 Period, LQ45 shares are active shares so that they can continue to experience changes in stock prices and later affect stock returns. It can be seen in the graph above that there is a fluctuation in stock returns from 2012-2016. Of the 20 companies that were used as research samples, there were 16 companies that produced fluctuating negative returns and 4 companies that produced a steady positive return during the study period. This is because stock returns are influenced by investor demand and supply in investing.

## 2. Literature Review
### 2.1. Stock

Stocks are one of the most attractive capital market instruments for investors because they provide attractive rates of profit. Shares can be defined as a sign of capital statement of a person or unilaterally (business entity) in a company or limited liability company. The definition of shares according to experts is as follows: Shares can be defined as a sign of participation or ownership of a person or entity in a company or limited liability company (PT) [1]. Explained that stocks are evidence that ownership of the assets of the company issuing shares [7]. Stocks are a part of ownership in a company [3]. Meanwhile, stocks are one of the most popular capital market instruments for investors, because they are able to provide attractive returns [2]. Shares are paper that is clearly listed in nominal value, company name, and followed by the rights and obligations that have been explained to each holder.

## 2.2. Return

One of the goals of investing investors is to get a return. Without the level of profit enjoyed from an investment, investors will certainly not invest. States that returns are profits obtained by companies, individuals and institutions from the results of their investment policies [2], explained that return is the result obtained from an investment [5]. Returns can be in the form of realization returns that have occurred which are calculated based on historical data and expected return that has not yet occurred, but which are expected to occur in the future. Based on some of these opinions, a return is basically the expected rate of return on investment activities that have been carried out. Argues that stock returns are the results obtained from investments [4]. A money related resource demonstrates the readiness of speculators to give assets as of now to acquire a stream of assets later on as pay for the time factor as long as the assets are contributed and the hazard borne.

## 2.3. Capital Asset Pricing Model (CAPM)

The CAPM model was introduced by Treynor, Sharpe, and Litner. The CAPM model is a portfolio theory development proposed by Markowitz by introducing new terms, namely systematic risk (systematic risk) and non-systematic risk (unsystematic risk). Understanding the Capital Asset Pricing Model (CAPM) is a risk (asset) pricing model in the market balance in a well-diversified portfolio. The Capital Asset Pricing Model (CAPM) tries to explain the relationship between risk and rate of return. Bodie et al. (2014) explained that the Capital Asset Pricing Model (CAPM) is the main outcome of the modern economy. The Capital Asset Pricing Model (CAPM) provides precise predictions between the risk relationship of an asset and the expected return (Expected Return).

The Capital Asset Pricing Model (CAPM) is widely used because the Capital Asset Pricing Model (CAPM) produces sufficient detail accuracy in an application. The Capital Asset Pricing Model (CAPM) assumes that investors are planners in a single period who share the same perception of market conditions and look for the mean-variance of the optimal portfolio. The Capital Asset Pricing Model (CAPM) also assumes that the ideal stock market is a large stock market, and investors are price-takers, no taxes or transaction costs, all assets can be traded in general, and investors can borrow or lend an unlimited number of fixed risk-free rates. With this assumption, all investors have a portfolio with identical risks.

The Capital Asset Pricing Model (CAPM) states that in a harmony state, advertise portfolios are extraneous to portfolio normal change. The Capital Asset Pricing Model (CAPM) suggests that the hazard premium of any individual or portfolio resource is the result of the superior hazard in the market portfolio and beta coefficient. As per the Capital Asset Pricing Model (CAPM) hypothesis the normal level of salary of a security can be figured utilizing the equation:

**E (Ri) = RF + βi [E (RM) - RF]**

Where:
E (Ri)    = The expected level of income from securities i.
RF        = Risk-free income level.
E (RM)    = The expected level of income from the market portfolio.
 βi        = Risk benchmarks that cannot be diversified from securities i.

## 3. Research Methods

The examination technique utilized in this investigation is an illustrative strategy. The populace in this examination was the offers recorded in the LQ45 time frame 2012 to 2016. The quantity of populace in this investigation there were 45 organizations posting on LQ45. The company is reselected according to the criteria or considerations that have been set. Secondary data in this study

were obtained from various parties related to research, library research and online research were also applied in this study. In this study, the use of purposive sampling method as described previously aims at sampling so that the sample used is 10 companies. Data analysis method in this study uses statistical data processing application, to be specific SPSS with a traditional supposition testing investigation and numerous direct relapse examinations.

*3.1. Data Analysis Techniques*
*3.1.1. Calculation Method (Ri)*

$$\text{Ri}= \frac{Pt-(Pt-1)}{Pt-1} \tag{1}$$

with Ri = individual stock returns, Pt = period t share price, and Pt-1 = period t-1 stock price.

*3.1.2. Calculation Method (Rm)*

$$Rm = \frac{IHSGt-IHSGt-1}{IHSGt-1} \tag{2}$$

with Rm = market return rate, IHSGt = period t stock price index, and IHSGt-1 = period t-1 stock price index.

*3.1.3. Calculation Method (Rf)*
Risk-free or known as risk-free returns are the rate of return on financial assets that are not at risk. The security interest rate issued by the government is the measurement basis used, which is hereinafter referred to as Bank Indonesia Certification (SBI).

*3.1.4. Calculation Method (βi)*

$$\beta_i = \frac{\sigma im}{\sigma^2 m} \tag{3}$$

with $\beta_i$ = Beta stock, $\sigma_i m$ = Covariance market return, $\sigma 2m$ = market variant

*3.1.5. Calculation Method E (Ri)*
E (Ri) = Rf + βi [E (Rm) -Rf] (4)
with E (Ri) = The expected rate of return, Rf = Risk-free return rate, βi = The level of systematic risk of each stock, E (Rm) = the expected rate of return on the stock portfolio.

## 4. Result and Discussion
*4.1 Result*
*4.1.1. Regression Analysis Results*

**Coefficients[a]**

| Model | | Unstandardized Coefficients B | Std. Error | Standardized Coefficients Beta | t | Sig. |
|---|---|---|---|---|---|---|
| 1 | (Constant) | -.159 | .002 | | -88.680 | .000 |
| | Beta | -.009 | .003 | -.589 | -3.094 | .006 |

a. Dependent Variable: Excess Return

$$Y = -.159 - 0.009X1 + e$$

a.  The constant = -0.159 states that if the beta value (X1) equals zero and remains, meaning that there is no change, then the excess return (Y) is -0.159.

b.  Regression coefficient value from beta (X1) is a negative sign at -.009 which means that for every 1 unit increase in beta (X1) it will reduce stock excess return (Y) by -9.00 units.

*4.1.2. Results of Determination Coefficients*

**Model Summary[b]**

| Model | R | R Square | Adjusted R Square | Standard Error of the Estimate | R Square Change | F Change | df1 | df2 | Sig. F Change |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | Change Statistics | | | | |
| 1 | .589[a] | **.347** | .311 | .00772413 | .347 | 9.571 | 1 | 18 | .000 |

a. Predictors: (Constant), Beta
b. Dependent Variable: Excess Return

The coefficient of assurance basically measures how far the capacity of the relapse demonstrates in clarifying the impact of the needy and free factor varieties. Based on the test results it is known that the relationship between excess return and beta shows a positive relationship pattern, meaning that the higher the excess return obtained, the higher the risk (beta) that will be experienced by investors. The value of R Square based on the test results is 34.7%, meaning that the beta variable in explaining the variation of excess return is 34.7% while the rest is impacted by different factors outside the examination demonstrate.

*4.1.3  Hypothesis Test Results t*

**Coefficients[a]**

| Model | | Unstandardized Coefficients B | Std. Error | Standardized Coefficients Beta | t | Sig. |
|---|---|---|---|---|---|---|
| 1 | (Constant) | -.159 | .002 | | -88.680 | .000 |
| | Beta | -.009 | .003 | -.589 | **-3.094** | .006 |

a. Dependent Variable: Excess*Return*

The t-test is utilized to decide if the autonomous variable significantly affects the reliant variable or not. Based on the test results, the effect of the market beta variable on stock excess return by using SPSS version 24 obtained an explanation that t-count (-3.094)> t table (1.989) it can be concluded that there is no significant effect between beta (X1) on Excess Return (Y) in LQ45 shares for the 2012-2016 period.

*4.2 Discussion*

In this study it is known that there is no significant influence between beta and Excess Returns, according to criticism from Richard Roll, CAPM cannot be used as a market return only by using the IHSG value only. While it is known that the capital market in Indonesia is not yet an efficient capital market. By using the JCI as a parameter to become a reference for the market, it will cause a large bias. The use of the Composite Stock Price Index (CSPI) as a market portfolio also has weaknesses, because in the JCI calculation on the Jakarta Stock Exchange, it is also unlimited. Various enabling factors from the CAPM are empirical, including portfolios that allow not reflecting existing portfolios, Beta Offering appropriate measurements to measure, including the effects of taxes; abnormal returns, no risk-free assets, loan, and deposit income levels.

## 5. Conclusions and Suggestions

*5.1. Conclusion*

Based on the results of the tests carried out it is known that in this study, beta does not have a significant effect on excess return, so this means that beta is unable to explain the excess return, and cannot be used by investors as a consideration tool in making investment decisions in this study.

*5.2. Suggestion*

This examination is required to be utilized as a source of perspective and extra data for financial specialists and invested individuals who will lead venture exercises and basic leadership. It is important for parties who have excess funds to invest, but it is also important to know how much return will be received on the investment made. Besides that, it is expected that it can be further compared or compared with other asset pricing models in order to see which method or model is better in estimating returns for investors.

**Reference**

[1] Darmadji, T.H.M Fakhrudin. 2012. Pasar Modal di Indonesia. Edisi Ketiga. Salemba Empat, Jakarta.
[2] Fahmi, Irham. 2012. "Analisis Kinerja Keuangan", Bandung: Alfabeta.
[3] Bodie, Z., et al. (2014). Manajemen Portofolio dan Investasi Edisi 9 Buku 1. Jakarta: Salemba Empat.
[4] Legiman, Fachreza Muhammad, et al. 2015. Faktor-Faktor yang Mempengaruhi *Return* Saham Pada Perusahaan Agroindustry yang Terdaftar di Bursa Efek Indonesia Periode 2019-2012. Jurnal EMBA vol.3 No.3.
[5] Jogiyanto, H. 2013. *Teori Portofolio dan Analisis Investasi*. Edisi Kedelapan. BPFE.
[6] Jogiyanto. 2012. Teori Portofolio dan Analisis Investasi: Edisi Ketujuh. Yogyakarta. BPFE - Yogyakarta.
[7] Tandelilin, E. 2010. *Portofolio dan Investasi (Teori dan Aplikasi)*. Edisi Pertama. KANISIUS.Yogyakarta.

www.kemenkeu.go.id
www.worldbank.org
www.bareksa.com
www.bps.go.id
www.tempo.co
www.bi.go.id
www.idx.co.id