

## CAPITAL ASSET PRICING MODEL METHOD USED IN MEASURING AND ANALYZING COMPANIES LISTED IN PEFINDO25 AT INDONESIA STOCK EXCHANGE PERIOD 2015

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### **Abstract**

*The industry in Indonesia is an interesting business to capitalize. In Indonesia many companies were established since it is profitable. The capital market serves as an economic pillar in most countries. Indonesia is a rich country, rich in many ways especially in natural resources. However, the industry has its ups and downs in the stock market. It is interesting to see the performance of the companies listed in the Indonesia Stock Exchange. This study aimed to measure and analyze companies listed in Pefindo25 at Indonesian Stock Exchange using Capital Asset Pricing Model. The sample used is 25 companies listed at Pefindo25 index. Based on the results of the study, it can conclude that after analyzing the companies listed in the Indonesian Stock Exchange using Capital Asset Pricing Model that based on Beta analysis, the companies have the type of stocks that are aggressive and defensive. With positive and negative return. The company with aggressive beta shows that the company tend to face higher risk, as JPFA find itself with positif return 15.47% expected return. And companies with defensive type of stocks tend to have positive return such as: FISH, STTP, AISA, APLN, and others since they are not sensitive to market changes. It is recommended for further research to look on this CAPM method in analyzing the stock investment.*

**Key words:** CAPM, Risk, Return, Beta, Portfolio Investment, Indonesia Stock Exchange

**JEL Classification:** G11

### **I. INTRODUCTION**

The industry in Indonesia is an interesting business to capitalize. In Indonesia many companies were established since it is profitable. The capital market serves as an economic pillar in most countries. Indonesia is a rich country, rich in many ways especially in natural resources. However, the industry has its ups and downs in the stock market. It is interesting to see the performance of the companies listed in the Indonesia Stock Exchange. Hence, investors ponder on how to analyze and consider in evaluating for an investment in these companies. The capital market allows for buyers and sellers to meet and find suitable, worthwhile opportunities. And find the most optimal return for their investment. The capital market is a favorable option for most investors. Thus, the capital market is without risk, and therefore all forms of investments have to some degree risk on investment. With risk there is also reward, which is precedent in the capital market. For most investors, a high risk investment with high return is what attracts. With the kind of level of risk and return, thus, any investor need to analyze and seek information regarding the stocks and company to determine which investment will deliver an optimal return.

Capital markets is a market where people are prepared to trade stocks, bonds and other types of securities with the services of brokerage (Sinarmas Sekuritas, 2016). Indonesia is a country with a prospect that in 2014 has a new president, Joko Widodo or also called Jokowi. With the new elected president, investor finds new hope in a new leader of a developing country like Indonesia. Since most of Indonesian people like to keep their funds in savings or deposits, most of the stock investment in Indonesia are from foreign fund. But because of the level of risk that must be borne in higher capital markets so they have to be careful in allocating funds. To pursue stock investment, one must rationalize and assume the nature of risk and return on the investment. Thus, investors need to visualize a model to calculate the returns so that they can choose and select stocks to buy or sell. There are various methods to analyze the level of risk and return that has been developed by experts. One of the method used in previous studies is the of Sharpe, Treynor and Jensen or better known as the Method of Capital Asset Pricing Model (CAPM). This method can provide precise predictions about the relationship between the risk of an asset with the expected return. PEFINDO25 Index consists of 25 stocks chosen based on their financial and liquidity performances, as well as their high number of public ownerships. IDX, PEFINDO and Investor Daily will routinely monitor the stock components in the Index calculation. Every twice a year, that is on first trading in February and August, the stocks listed in the PEFINDO25 Index will be renewed and changed. The base date for this index is December 29, 2005, with the index value of 100. The PEFINDO25

Index is expected to be one of the indicators for investing in the Capital Market of Indonesia. This study aims to analyze companies listed in PEFINDO25 in the Indonesian Stock Exchange with research title: Capital Asset Pricing Model Method Used In Measuring And Analyzing Companies Listed In Pefindo25 At Indonesia Stock Exchange Period 2015.

## II. REVIEW OF RELATED LITERATURE

Investing is an activity to invest, either directly or indirectly, in the hope in due course the owners of capital to get some benefit from the results of the investment. Markowitz said on his famous investment principle, "don't put all your eggs in one basket," this is due to the reason that when they fall, all the eggs would broke (Tandelilin, 2010). In this situation, investor need to diversify its risks on investment (Halim, 2005; Pratomo and Nugraha, 2009; Sunariyah, 2004).

In terms of investment, an investor can look into the capital market (Nasarudin and Surya, 2004; Tandelilin, 2010; Siamat, 2004, Anoraga and Pakarti, 2003) And the most common instruments are traded through the capital market or Stock Exchange in Indonesia today are stocks, bonds, rights, options, and warrants. In analyzing the risk and return of an investment a method need to be used (Perold, 2004). One of the financial theory that can be used to analyze the risk and return of an investment is the Capital Asset Pricing Model by Sharpe, Lintner and Black (Bhatnagar & Rhamlogan, 2012, Perold, 2004). The Capital Asset Pricing Model (CAPM) provided the first coherent framework for answering this question. The CAPM builds on the model of portfolio choice developed by Harry Markowitz in 1959 (Fama and French, 2003; Ruffino, 2013). Sharpe in 1964 and Lintner in 1965, add two key assumptions to the Markowitz theory (Fama and French, 2004, Perold, 2004) suggest that the capital asset pricing model (CAPM) gives insight of what kind or risk is related to return. Capital Asset Pricing Model is a fundamental contribution to our understanding of the determinants of asset prices where ownership of assets by diversified investors lowers their expected returns and raises their prices (Fama and French, 2004, Perold, 2004).

Previous research findings on the initial test of the CAPM, finds that high beta stocks were found to have had higher returns than low beta stocks (Perold, 2004). One research criticize the use of CAPM version by Sharpe and Lintner (Fama and French, 2004). Another research by Ruffiano (2014) describe that, many insights can be drawn from the capital asset pricing model (CAPM) under risk, and from its many variations. The use of CAPM also been verily used in pondering the capital market of different countries such as China Market (Dai and Lan, 2014) and Nigerian Stock Market (Oke, 2013).

## III. METHOD OF THE STUDY

The method used in this study is descriptive, and the data collected was analyzed and presented in a descriptive manner. The data were derived from monthly stock price, the interest rate of Bank Indonesia (BI) and PEFINDO25 Index data. The sample used in the study are 25 companies that are listed as companies listed in PEFINDO25 Index at Indonesia Stock Exchange in year 2015. The sample obtained from the active companies traded during the observation period of month January to December in the year 2015. Variables are identified among other things, the level of individual stock returns ( $R_i$ ), the risk-free rate of return ( $R_f$ ), the market return ( $R_m$ ), the risk of Beta ( $\beta$ ) and the expected return [ $E(R_i)$ ]. Analysis of the data used with the help of Microsoft Office Excel 2010. The stages in the data analysis are as follows:

1. Calculate the rate of return on individual stocks ( $R_i$ ) each month,
2. Calculate the market return ( $R_m$ )
3. Calculate the risk-free rate of return ( $R_f$ ) through the interest rate of Bank Indonesia
4. Calculate Beta ( $\beta$ ) and expected returns [ $E(R_i)$ ]

$\beta$  is a measure of a parallel connection of an ordinary share with a whole trend in the stock market. When the value  $\beta = 1$  means a perfect correlation with the performance of the entire market as measured in market index (market index).

When  $\beta > 1$  means that stocks tend to rise and fall is higher than the market. And, when  $\beta < 1$  means that stocks tend to rise and fall lower than the market index.

## IV. RESULTS AND DISCUSSION

### RATE OF RETURN ( $R_i$ )

Stock Price used is closing stock price at the end of the observation. So if investors buy or sell transaction on this day, the price will be obtained will be known on stock announcement the next day, so the publication shares do every day can give an indication to the investors to make a decision to buy or sell. On this basis the average return on the shares of this study will be calculated based on the daily period as follows:

**Table 1: Return of Companies Listed at PEFINDO25**

No	Code	Ri	No	Code	Ri
1	FISH	-0.0186	16	BIMF	-0.0094
2	STTP	0.0039	17	TUFI	0.0321
3	AISA	-0.0406	18	BBMI	-0.0006
4	APLN	0.0061	19	BCAF	0.0036
5	MYRX	-0.0065	20	MDLN	0.0063
6	PGAS	-0.0552	21	SMFP	0.0250
7	AKRA	0.0020	22	TRIO	0.0418
8	BACA	0.0807	23	NISP	-0.0034
9	MYOR	0.0158	24	JPFA	-0.0075
10	DILD	-0.0018	25	MEDC	-0.1061
11	ADMF	-0.0044		Ri 2015 =	-0.0005
12	BMRI	0.0040			
13	PJAA	0.0308			
14	PNBN	-0.0227			
15	PPKT	0.0127			

Table 1 shows 25 companies observed that were listed in PEFINDO25 Index at Indonesia Stock Exchange from January to December of year 2015. The average rate of return (Ri) for the year 2015 is -0.0005.

**MARKET RETURN (RM)**

In this research the market return used is from PEFINDO25 Index. Market return is the cumulative profit rate that reflects all shares listed on the Stock Exchange in this case PEFINDO25.

**Tabel 2: Market Return (Rm)**

Year	Month	Close Price	Rm
2014	December	487.033	
2015	January	484.145	-0.0059
2015	February	501.478	0.0358
2015	March	476.506	-0.0498
2015	April	441.139	-0.0742
2015	May	466.540	0.0576
2015	June	420.740	-0.0982
2015	July	422.096	0.0032
2015	August	375.425	-0.1106
2015	September	344.029	-0.0836
2015	October	357.771	0.0399
2015	November	345.076	-0.0355
2015	December	353.363	0.0240
		Rm 2015=	-0.02477

And Table 2 shows the market return from the month of January to December, it shows fluctuate return and for year 2015, the market return is -0.02477.

**RISK FREE RATE OF RETURN (RF)**

Risk-free rate of return is the compensation value of the fund deferred consumption, but not to assume the risk. Thus, the risk-free rate of return reflects the fundamental fact that by investing at this time means it will be able to consume more in the future. In this study, the risk-free rate of return is the interest rate of Bank Indonesia (BI). BI Rate is regarded as a safe instrument because it is published by the government.

**Table 3: Risk Free Rate of Return (Rf)**

Year	Month	BI Rate	Rf
2014	December	7.75%	
2015	January	7.75%	0.0775
2015	February	7.50%	0.075
2015	March	7.50%	0.075
2015	April	7.50%	0.075
2015	May	7.50%	0.075
2015	June	7.50%	0.075
2015	July	7.50%	0.075
2015	August	7.50%	0.075
2015	September	7.50%	0.075
2015	October	7.50%	0.075
2015	November	7.50%	0.075
2015	December	7.50%	0.075
		Rf 2015 =	0.0752

Table 3 above shows the results on the calculation of BI rate during the observation period resulted in the risk free rate of 0.0752 for the period observed.

**BETA ANALYSIS OF CAPITAL ASSET PRICING MODEL (CAPM)**

Beta ( $\beta$ ) in the concept of Capital Asset Pricing Model (CAPM) is a systematic risk. The sensitivity of the rate of profit to market changes commonly referred to as beta investments. Beta in this study using market beta calculation derived from PEFINDO25 index.

**Table 4: Beta Analysis CAPM**

No	Code	Beta	No	Code	Beta
1	FISH	0.8273	16	BIMF	0.4041
2	STTP	0.0574	17	TUFI	0.1047
3	AISA	0.8394	18	BBMI	-0.9650
4	APLN	0.6331	19	BCAF	0.1648
5	MYRX	0.4404	20	MDLN	-0.3051
6	PGAS	1.4872	21	SMFP	0.1336
7	AKRA	0.0467	22	TRIO	-0.0773
8	BACA	-0.3717	23	NISP	0.0104
9	MYOR	-0.0737	24	JPFA	3.2086
10	DILD	-0.3978	25	MEDC	0.1843
11	ADMF	0.0798		Beta 2015 =	0.4041
12	BMRI	-0.0049			
13	PJAA	-0.0503			
14	PNBN	0.3826			
15	PPKT	0.0280			

Based on the table above, the results shows the companies that have aggressive type of stocks shows in their Beta > 1, such as PGAS (1.4872), JPFA (3.2086). Beta that is aggressive shows that the stock is sensitive to the changes in the market, and that stocks tend to rise and fall is higher than the market. On the other hand, the results also show companies that have defensive type of stocks as shown in their Beta < 1, such as: FISH (0.8273), STTP (0.0574), AISA (0.8394), APLN (0.6331), MYRX (0.4404), PGAS (1.4872), AKRA (0.0467), BACA (-0.3717), MYOR (-0.0737), DILD (-0.3978), ADMF (0.0798), BMRI (-0.0049), PJAA (-0.0503), PNBN (0.3826), PPKT (0.0280), BIMF (0.4041), TUFI (0.1047), BBMI (-0.9650), BCAF (0.1648), MDLN (-0.3051), SMFP (0.1336) and others like TRIO, NISP, MEDC. Beta that is defensive shows that the stock is not sensitive to the changes in the market, and that stocks tend to rise and fall lower than the market index.

Moreover, the table shows the expected return E (R) from stocks of the companies listed at PEFINDO25 index.

**Table 5. Expected Return**

No	Code	(E(R))	No	Code	(E(R))
1	FISH	9.57%	16	BIMF	8.52%
2	STTP	7.66%	17	TUFI	7.78%
3	AISA	9.60%	18	BBMI	5.13%
4	APLN	9.09%	19	BCAF	7.93%
5	MYRX	8.61%	20	MDLN	6.77%
6	PGAS	11.20%	21	SMFP	7.85%
7	AKRA	7.64%	22	TRIO	7.33%
8	BACA	6.60%	23	NISP	7.55%
9	MYOR	7.34%	24	JPFA	15.47%
10	DILD	6.54%	25	MEDC	7.98%
11	ADMF	7.72%			
12	BMRI	7.51%			
13	PJAA	7.40%			
14	PNBN	8.47%			
15	PPKT	7.59%			

And the results shows that they the companies have positive and negative expected returns based on the period observed from January to December 2015. The results shows that company with the highest return is JPFA (15.47%), the company with lowest positive return is BBMI (5.13%).

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