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EXCELLENT STRATEGIC PORTFOLIO IN WEAK FORM EFFICIENCY JAKARTA STOCK EXCHANGE

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Abstract. Capital market has become a regular investment alternative for investors. The existence of capital market provides the chance for investors to maximize their assets. However, capital market has its own risk characteristic. Related to the chance of risk and return, Jakarta Stock Exchange is available to provide the high possibility of earning return, respectively it also provides the high possibility of risk, as it is inefficient of weak-form market efficiency. Investors need to arrange the excellent investment strategy to prepare the investment action in Indonesia. Regarding to the availability of risk and return, investors have their own preference of investment. In general, investors are categorized as aggressive, moderate, and conservative risk profiled. The aggressive investors tend to select more risky assets in order to earn more return though they have to face the higher possibility of risk. The moderate investors tend to select the assets with fair possibility risk and return. And the conservative investors tend to select the assets that provide the lower risk though it will reduce the chance of gaining more return. To incorporate with this condition, investors need the excellent portfolio strategies for their investment. This study is using combined means-variance Markowitz portfolio combined with Merrill Lynch asset allocation for projected portfolio 2015 to 2018. And the results are efficient. The additional asset and fixed income asset included effectively reduce and diversify the potential risk.

Keywords: Capital market, weak-from inefficiency, investor risk tolerance, asset allocation, Markowitz portfolio

Introduction

Capital market has plenty roles in the micro-economic of a nation. The essential role of capital market is to provide the government, banks, and corporations to raise their the long-term funds. This condition occurs as the counter of the existence of inflation which can reduce their value of funds. So, they need to keep their funds from it, moreover they can earn gain as the return. Then capital market also provides a regular investment instrument for investors. Investors need the place where they can save their money. Of course, they can simply put their money in the commercial banks. However, the commercial banks cannot provide the return to investor, as commonly the interest rates given by commercial banks couldn't meet their cost of capital –however, some investors still using it as it gives lower risk. As simple decision for investor is they are willing to invest if the expected return can be greater than the potential risk or their cost of capital. In case of the possibility of risk and return, capital market provides moderate-high risk and return.

Regarding the information reflected in market prices, market efficiency is usually described into three levels: weak, semi-strong, and strong forms of market efficiency. In weak form efficiency, the information reflected in the stock price information are related to the prices in the past, such as historical price data, the volume of transactions, frequency of transactions, etc. Under these conditions, it is impossible for investors to earn excess returns in the stock market. Moreover, in a weakly efficient market conditions,

investors earn no excess return. Then, in a state of semi-strong efficient market, stock prices reflect not only historical data, but also other relevant information that was announced by the company, i.e, the IPO, dividend payments, issue shares, merger and acquisition, changes in the company's internal policies, etc. Finally, in a strongly efficient market conditions, stock prices reflect all information in the economic outstanding. Specifically in Indonesia, (Nikita & Sukarno, 2014) a conducted event study indicates stock price in Jakarta Stock Exchange inefficiently support the weak form efficient market hypothesis.

The most important thing, according to their level of tolerance toward risk, investors are divided into three categories as (Gitman & Chad, 2012) categorize the types of investors as conservative, who prefer to choose safe assets, while aggressive investors prefer to take more riskier in order to find higher returns, and moderate investor combine the risky assets and safe assets in a balanced proportion. This is really essential in making the composition of asset allocation so the investors are able to create the portfolio incorporated with reviews their risk profile. So this study is trying to make the excellent portfolio using combined Markowitz Portfolio and Merrill Lynch Asset Allocation. According to (Pinasthika, 2014) Markowitz Portfolio provides the lowest risk rather than index tracking portfolio construction method. Respected to the lower risk, this portfolio also provides lower return. Then it will be combined with the composition of asset allocation that relies on the risk profile of the investors.

Each financial assets instrument has its own level of risk. As the rule of thumb of investment activity, it is not preferable to put all the eggs in one basket. When the basket falls to the ground, all of the eggs will be broken. Then we shouldn't put all of our investment in the risky assets. Moreover, we have to incorporate with the market efficiency in Indonesia. The result of efficiency market hypothesis of Jakarta Stock Exchange indicates about how the level of risk is currently going on. So, the investors have to make a superior strategy in making optimum earnings but with diversification in manage the risk. According to the explanation above, this study summarizes that the statement of problems are formulated as:

1. How investors measure the diversifiable and non-diversifiable risk as reflected in weak-form market efficiency in Indonesia?
2. What is the best strategy for investors in order to diverse the risk and creating optimum return investment compared to the composite Jakarta Stock Exchange price?
3. What is the best asset allocation portfolio regarding the investors risk profile?

Literature Review

2.1 Market

(Fabozzi & Modigliani, 2008) Market is categorized into market product and factor markets. In relation to the product market, the exchange that occurred involving the exchange of manufactured product and service. In the other hand, the factor market, people-related exchanges can be a factor of production labor and financial. In conjunction with this study, it is the subject of conversation is money market capital market as part of the financial market.

2.2 Capital Market

The capital market is a market that enables suppliers and demanders of long-term funds to make transactions. Included are securities issues of business and government. The essential of capital market is formed by the broker and dealer markets that provide a forum for stock and bond transactions. International capital market also exists.

2.3 Stocks

According to Oxford Dictionary, stock is defined as the capital raised by a business or corporation through the issue and subscription of shares. Common stocks represent the ownership shares of a company. Stocks also represent the claim of parts company ownership and earnings. Stocks can be defined sign of ownership or possession of a person or entity in a company or limited liability company. Stock form is a

piece of paper stating that the owner of the paper is the owner of the company that issued the securities. The rate of return can be expressed as the percentage gain or loss in the certain period and expression for calculating the rate of return is commonly defined as:

$$ri = \frac{C + P_t - P_{t-1}}{P_{t-1}}$$

Where:
r*i* = actual, expected, or required rate of return during period *t*
C = cash flow earned from investment, dividends
P*t* = price (value) of asset *i* at period *t*
P*t-1* = price (value) of asset *i* at period *t-1*
Average return, or the expected return, is the mean of an average of aggregate return in an asset in a horizon of time.

$$\mu_i = \frac{1}{n}\sum_{t=1}^{n} r_{it}$$

Where:
μ = average return
rit = return of asset i in period t
t = investment period
n = number of period

2.4 Bond

Bond is defined as a long-term debt instrument issued by corporate or government which is indicating that the corporate or government borrow a certain amount of funds and promise to repay in the future in term of certain period of maturity with some coupon interest as the return of the obligation, (Gitman & Chad, 2012). The yield, or rate of return, on a bond is frequently used to asses a bond's performance over a given period of time. The simplest way to measure the yields of bond is using the current yield assessment, the annual interest payment divided by the current price.

2.5 Markowitz Portfolio Means-Variance Selection

In the way of constructing the portfolio, investors aim to maximize the expected return from their investment regarding the given of some level of risk. Portfolio, which satisfy the requirement is called efficient portfolio. Portfolio theory guide us how to construct an efficient portfolio, so called as Markowitz Efficient Portfolios. To create an efficient portfolio, it is necessary to make some assumption about how investors behave in making investment decision. First, it assumes that only two matters affect an investor's decision: the expected return and risk. Second, it assumes that investors are risk averse. Third it assumes that investors are trying to achieve the minimum risk at the given level of expected return. The expected return of portfolio is measured by calculating the aggregate weighted return of each single asset in the portfolio. The calculation of the expected return of portfolio is expressed as follow:

$$Erp = \sum_{i=1}^{n} w_i \, r_i$$

Where:
Erp = expected return of portfolio
wi = weight of asset i
ri = return of asset i

The additional assets can affect to the lower portfolio risk. In the way to calculate the risk, standard deviation and beta is used for the portfolio risk assessment. The portfolio risk containing lot of assets can be calculated using matrix multiplication as the formula expressed as follow:

$$\sigma p = \sqrt{\omega^{\tau} \Omega \omega}$$

Where:

σp = the standard deviation of portfolio

ω' = vector of portfolio weight

Ω = covariance matrix for return on asset in portfolio p

$\omega^{\tau}\Omega\omega$ = variance of the portfolio return

2.6 Jensen's Alpha Asset Performance

(Jensen, 1967)Relies on the capital asset pricing model, Jensen's alpha focuses on measuring asset performance. Actually, Jensen was using the method to evaluation portfolio performance as the assets were mutual funds. In term of this study, the assets that will be used are the stocks. The Jensen's alpha itself is expressed as the equation bellow:

$$\mu_i = R_f \beta \left[\mu_m - R_f\right] + \alpha \quad (1)$$

Where:

α = alpha coefficient, third random independent term

μ*i* = average return of asset *i*

μ*m* = average market return

R*f* = risk free rate

B = beta coefficient

The term R*f* can be subtracted from both sides of eq. (1) and since its coefficient is unity the result is

$$\mu_i - R_f = \beta \left[\mu_m - R_f\right] + \alpha$$

2.7 Beta

Related to Jensen's alpha, the formula needs the measure of risk (also called systematic risk) which the asset pricing model implies is crucial in determining the prices of risky assets as the measure is beta. Beta coefficient, *β,* is relative measure of non-diversifiable risk. It is an index of degree of movement of an asset's return in response to a change in the market return. The historical return of the asset is used in finding the asset's beta. The market return is the return on the market portfolio of all traded securities. The composite of JKSE is used as the market return in this study.

2.8 Risk Free Asset

Risk free assets may refer to the asset with the level of risk equal to zero. This condition occurs because the return of the asset is fixed in the given period. So the variability of the return will close to zero. (Gitman & Chad, 2012) Risk free asset, in the U.S, is the treasury bills, which the return of the asset is fixed in a given period. In Indonesia, BI rate represents the risk-free asset. BI rate is an interest rate that's published by Bank Indonesia as the state of monetary policy.

2.9 Investor Risk Tolerance Asset Allocation

The asset allocation strategy that applied for this research only use three of five Merrill Lynch asset allocations model for aggressive , which are Long Term Growth for aggressive profiled investors, Income & Growth for moderate profiled investors, and Current Income for conservative profiled investors, as Table 2.1.

Table 2.1 Asset Allocation Based Risk Profile

Proportions of asset allocation strategy

Types of Investor	Stock (%)	Bond and Equivalent (%)	Cash and Equivalent (%)
Aggressive	60 - 70	25 - 30	5 - 10
Moderate	40 - 45	45 - 50	10
Conservative	30	60	10

Methodology

In order to conduct the research systematically, this research is following the order pattern of research. The stages of this research are expressed as seven steps, as expressed in Figure 3.1.

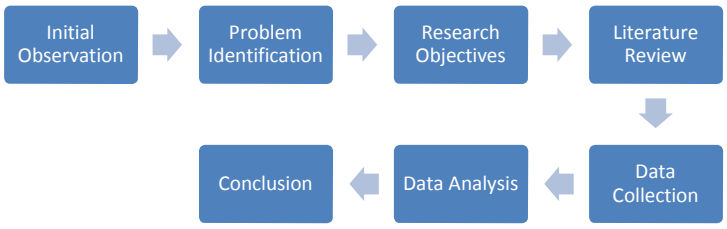

Figure 3.1 Methodology Framework

Data Analysis

In conducting the data analysis, there will be stock selections according to the IPO date and trading value, then there will also be two section portfolio measurements. The first portfolio measurement will be conducted in order to confirm the performance of the portfolio model in this study. The data that will be used in the first section are stocks which at least have been listed in 2009 with horizon 2009 to 2012. Then this section will has in result of the portfolio for the next three years from 2012 to 2015. The result of the first section portfolio measurement then will be compared to the composite index of JKSE. After the first section portfolio measurement is done then the research will be continued to the next portfolio measurement for another three years lifetime portfolio 2015 to 2018. The data that will be used for this second portfolio are the stocks which have been listed at least in 2012 as this section requires data from 2012 to 2015. In each portfolio measurement, the asset allocation consists of stocks and bond in order to construct the optimum portfolio with diversified risk, while the asset allocation are generated by using data solver in Microsoft Office Excel.

4.1 Portfolio Projection for 2012 to 2015

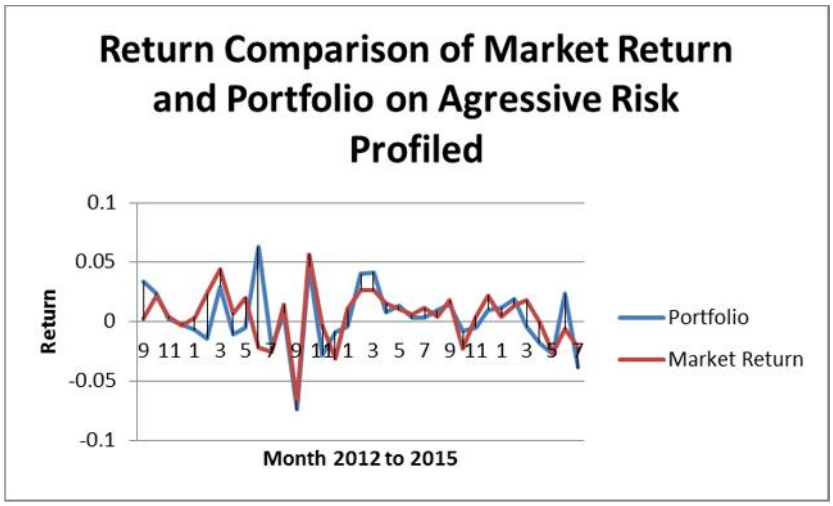

Figure 4.3 Return Comparison of Market Return and Aggressive Portfolio

The portfolio return be compared to the market return. Refers to the Figure 4.3, the portfolio return with the blue line are relatively less volatile aligned to the market return. This condition indicates the aggressive portfolio is relatively riskless than market return.

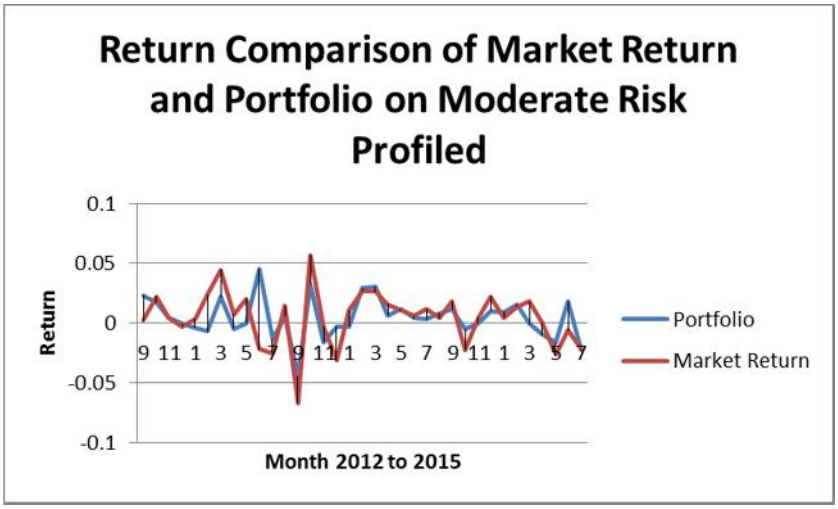

Figure 4.4 Return Comparison of Market Return and Moderate Portfolio

The portfolio return also be compared to JKSE as the market return. Refers to the Figure 4.4, the portfolio return relatively are less volatile than market return. This condition indicates the moderate portfolio is relatively less risky than market return.

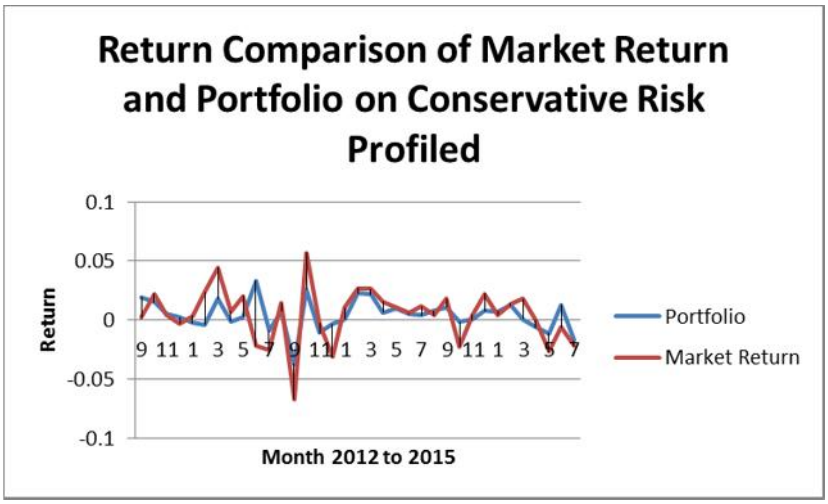

Figure 4.5 Return Comparison of Market Return and Conservative Portfolio

The portfolio return also will be compared to JKSE as the market return. Refers to the Figure 4.5, the portfolio return relatively are less volatile than JKSE return. It indicates that the conservative portfolio is successfully diversifies the deviation of the means return.

4.2 Portfolio Projection for 2015 to 2018

Table 4.14 Aggressive Portfolio Asset Allocation

Asset	Return Asset i	Weight	Return Portfolio	Portfolio Risk σ	Coefficient of Variation
BBLD	4.24%	1.31%	1.14%	0.37%	32.24%
BFIN	1.01%	3.17%			
BISI	1.57%	1.95%			
BMSR	2.32%	2.80%			
BNBA	0.16%	2.66%			
BPFI	2.97%	7.03%			
JAWA	0.12%	8.20%			
LPIN	3.08%	2.57%			
MAYA	2.01%	2.35%			
RAJA	2.84%	2.08%			
SDMU	1.01%	3.88%			
SMSM	3.29%	5.33%			
STAR	1.42%	5.38%			
TOWR	2.64%	3.45%			
UNVR	1.90%	2.83%			
YPAS	0.85%	5.00%			
ORI012	0.25%	30.00%			
Cash	0.00%	10.00%			

The Table 4.14 shows the result of portfolio construction for aggressive risk profiled investor with 30% portion of ORI 012 and 10% portion of cash allocated. As mentioned in the table above, the aggressive

portfolio has in result of monthly 1.14% expected return respected with monthly portfolio risk 0.37%. The coefficient of variation is generated to be 32.24% -less than 1 which indicates the return portfolio relatively less volatile than the market return. So investors, even aggressive risk profiled, pleasure the portfolio return with low level possibility of risk.

Table 4.15 Moderate Portfolio Asset Allocation

Asset	Return Asset i	Weight	Return Portfolio	Portfolio Risk σ	Coefficient of Variation
BFIN	1.01%	3.45%	0.97%	0.28%	29.13%
BISI	1.57%	0.82%			
BMSR	2.32%	1.33%			
BPFI	2.97%	6.05%			
BRNA	1.69%	1.25%			
JAWA	0.12%	3.83%			
MAYA	2.01%	2.21%			
RBMS	0.75%	0.75%			
SDMU	1.01%	2.36%			
SMRU	4.29%	1.06%			
SMSM	3.29%	4.16%			
STAR	1.42%	5.20%			
TMPI	1.72%	1.36%			
TOWR	2.64%	4.05%			
UNVR	1.90%	4.95%			
YPAS	0.85%	2.16%			
ORI012	0.25%	45.00%			
Cash	0.00%	10.00%			

The Table 4.15 shows the result of portfolio construction for moderate risk profiled investor with 45% portion of ORI 012 and 10% portion of cash allocated. As mentioned in the table above, the moderate portfolio has in result of monthly 0.97% expected return respected with monthly 0.28% risk. The coefficient of variation is generated to be 29.13% -less than 1 that indicates the return portfolio relatively less volatile than the market return. Compared to the aggressive portfolio, moderate portfolio has lower coefficient of variation. This condition occurs as the impact of change in asset weight as the moderate portfolio requires more portion of fixed income asset.

Table 4.16 Conservative Portfolio Asset Allocation

Asset	Return Asset i	Weight	Return Portfolio	Portfolio Risk σ	Coefficient of Variation
BBLD	4.24%	0.66%	0.69%	0.12%	17.99%
BFIN	1.01%	1.67%			
BISI	1.57%	0.73%			
BMSR	2.32%	0.61%			
BNBA	0.16%	1.17%			
BPFI	2.97%	3.47%			
JAWA	0.12%	4.04%			
JPRT	2.23%	0.58%			
LPIN	3.08%	1.27%			
MAYA	2.01%	1.18%			
RAJA	2.84%	1.05%			
SDMU	1.01%	1.92%			
SMSM	3.29%	2.67%			
STAR	1.42%	2.70%			
TMPI	1.72%	0.60%			
TOWR	2.64%	1.69%			
UNVR	1.90%	1.51%			
YPAS	0.85%	2.47%			
Cash	0.00%	10.00%			
ORI012	0.25%	60.00%			

The Table 4.16 shows the result of portfolio construction for conservative risk profiled investor with 60% portion of ORI 012 and 10% portion of cash allocated. As mentioned in the table above, the conservative portfolio has in result of monthly 0.69% expected return respected with 0.12% monthly risk. The coefficient of variation is generated to be 17.99% -less than 1 that indicates the return portfolio relatively less volatile than the market return. Compared to the aggressive and moderate portfolio, conservative portfolio has the lower expected return and the lower risk. This condition occurs as the impact of change in asset weight as the conservative portfolio requires mostly portion of fixed income asset.

Conclusion and Recommendation

Portfolio is a tool to arrange the investment strategy. As commonly accepted, we cannot put all our eggs in one basket. In case that the basket fall to the ground then all of our eggs will be broken. This logic also accepted to the investment activities, we cannot put all of our money in a single asset if we aim to avoid the risk that asset will fall and reduce our wealth.

Before conducting the investment, investors need to examine each risk profile as it will be very essential in making investment decision. Then investors can use the portfolio strategies that are matched with their risk profile as been conducted in this study for the following 2015 to 2018 portfolio investments. And so, investors are recommended to evaluate their portfolio periodically for the best result.
The risk of portfolio can be manipulated by some actions. One of them is that we can reduce the risk by involving the fixed income to our portfolio. The role of fixed income is effective to reduce risk as it can anchor the volatility of the portfolio. Then the other action is adding more assets in the asset composition of portfolio. This action is the same principal as we set more baskets to put our eggs in each basket, so when one basket is fallen apart then we are still having the other basket. The more assets we add to the asset composition of portfolio effective to diversify the available risk.

Constructing portfolio strategies can be recognized as the technical analysis. However, the investment analysis is not only laid on the technical analysis. Technical analysis is simply a collection of tools that allow an investor or trader to time his decisions based on how the fundamentals are affecting prices. The fundamental analysis also helps the investor to avoid the psychological distraction that's affecting the

previous investment decision. Paired with fundamental measures of value, it can maximize investment and trading returns.

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