CHAPTER II

LITERATURE REVIEW

2.1 Theoretical Review

2.1.1 Modern Portfolio Theory

Markowitz (1952) stated two significant thoughts regarding Modern Portfolio Theory. Firstly, he realized that the mathematics could not pick out a single optimal portfolio but rather could only identify a set of efficient portfolios. Secondly, he recognized that the appropriate risk facing an investor was portfolio risk which leads to a fundamental point that the riskiness of a stock should not be measured just by the variance of the stock but also by their covariance (Abidin et al, 2004).

Markowitz (1959) recognized that the covariance determines the risk of portfolio and not the variance of individual assets in portfolio. A superior portfolio should consist of assets with a perfect negative correlation. Nevertheless, the advantages of diversification do not need to be negatively correlated. As a matter of fact, as far as the correlation coefficient between two assets is less than 1.0, there will be risk reduction by combining both assets in a portfolio. Markowitz suggested that investors should choose portfolio that offers highest expected return for a given level of variance. He named this rule the E-V maxim.

In 1956, the efficient frontier of the rate of return, variance and covariance was introduced by Markowitz on his paper a ‘critical line algorithm’ which is to have existed number of securities with certain constraints. In measuring efficient frontier, there are two
constraints involved. First, the proportion of each asset that represents a portfolio should be balanced. Second, each asset must have a minimal proportion of positive or zero in the portfolio. The rate of return is varied between a portfolio that minimizes risk and maximizes the portfolio rate of return (Markowitz, 1959, as cited in Hasman, 2009).

The formula of `critical line algorithm ' to find the efficient frontier; is in the following:

Minimize:

\[ \text{Minimize:} \]

With restrictions:

\[ \sum_{i=1}^{n} x_i = 1 \]

\[ R_p = \sum_{i=1}^{n} x_i R_i \]

\[ x_i \geq 0, i = 1, \ldots, N \]

Where:

\[ R_p = \text{total return of the portfolio}, \]

\[ x_i = \text{the proportion of the portfolio of assets represented by I} \]
Ri = rate of return on asset i, i = 1, ..., N,

σ2 i = variance for asset I

σij = covariance of i and j, i = 1, ..., N, j = 1, ..., N, i ≠ j.

Modern Portfolio Theory, by Markowitz stock portfolio model, is optimized by minimizing the risk of the portfolio as measured by the variance of stock prices, subject to a given portfolio return. In short, Modern Portfolio Theory is a way to determine just how many eggs to put in each of several specified baskets (Abidin et al. 2004).

2.1.2 Portfolio Construction

Portfolio construction is one of critical issues for practitioners and academicians in quantitative finance field. It is a disciplined, personalized process. In constructing a portfolio, the individual risk and return characteristics of the underlying investments must be considered along with your unique needs, goals and risk considerations.

The evolution of portfolio construction began in 1952 when Harry Markowitz published a thesis named *Portfolio Selection*. Numbers of empirical studies regarding portfolio construction occurred years later. Sharpe (1964) afterwards expanded on Markowitz’s work with the Capital Asset Pricing Model, which introduced alpha, the excess return of the asset relative to the return of the benchmark index, and beta, the risk of the asset relative to the market.
In the 1980s, two significant changes occurred. First, A.G. Becker introduced the concept of investment style. Gary Brinson, L. Randolph Hood and Gilbert Beebower published a paper in 1986, *Determinants of Portfolio Performance*, concluded that asset allocation is the primary determinant of variation in returns (Stanley, 2010).

Portfolio construction has been used as tools for academician for different purpose than to maximizing the potential returns. Levy and Sarnat, Lessard, Solnik (as cited in Stanley, 2010), managed to construct *ex post* efficient portfolios in order to investigate the benefits of internationally diversified portfolios rest on the idea of low co-movements between different national markets. While some more recent studies, Jorion, Eun and Resnick, Levy and Lim, Liljeblum, Loflund, and Krokrors and Zimmermann (as cited in Stanley, 2010) investigated international portfolio strategies under more realistic conditions by using *ex ante* or out-of-the-sample back testing framework.

### 2.1.3 International Diversification

The benefits of international diversification in U.S. in term of international mutual funds are huge, under the leadership of the most respected groups of Wall Street, rather than adventurer of dubious honesty (Solnik, 1974).

However, in contrast, internationally diversified portfolio did not give the best return and risk compared to invest in diversified portfolio in emerging equity market from Indonesian perspective. Hasman (2009, pp. 56-57) conveyed, that domestic portfolio gave the best result compared to internationally diversified portfolio. While developing counties portfolio was more superior to International portfolio and developed countries portfolio.
2.1.4 International Diversification and Currency Risk

Volatility of currency rates is mostly to mitigate the potential gains from international investment in foreign securities and making them more risky instead. Eun and Resnick (1988) managed several \textit{ex ante} efficient portfolio selections to realize potential gains from international diversification under uncertainty of currency rates. Portfolio containing multicurrency diversification is largely a non-diversifiable factor that unfortunately affecting the international portfolio performance.

Bugar and Maurer (2002) concluded that participates into the international flow of capital by international portfolio can be beneficial for risk reduction even for emerging capital market. They found that international diversification portfolios from Hungarian and German perspectives are more superior to domestically diversified portfolio.

2.1.5 International Diversification and Hedging Policy

Hedging the foreign underlying assets can be a way to mitigate exchange risk from international portfolio investment. Investors would likely be able to remove exchange risk by offsetting the risks through some currency hedging methods. This gives a protection to their international portfolios. In other hand, an international portfolio with no protection from exchange risk happens to be speculating on currencies fluctuation (Solnik, 1974).

There are several methods for investors to hedge against exchange risk. Investors would be able to use some methods such as forward exchange rates or future exchange rates. Forward exchange rate contracts are private agreements between two parties and are
not as rigid in their stated terms and conditions. Forward contract is frequently used by international trade activities of Multinational Companies to offset the currency rates volatility that are particularly exposed to exchange rates fluctuation. Therefore international investors use this facility to protect their underlying assets. Forward contract involves future purchase of currency contract at predetermined currency rate rather than spot rate at the time of transaction. The term forward contract itself is set by forward markets that vary with expectations of currency movements and the demand and supply of the currency transaction requests. Maturation time can be decided by buyer of forward contract and the future contract can be exercise or not. Forward contracts are usually quoted for period 30, 90, and 180 days. A contract for any intermediate date can be obtained, usually with the payment of small premium. Forward contracts for periods longer than 180 days can be obtain by special negotiations with banks. It is private transaction or an over-the-counter agreement between two parties that usually involved bank. Meaning that there is default risk inside forward contracts (Berisha, Asllanaj, & Shala, 2014).

Meanwhile futures contracts are different from forward contract in several ways. First, they are usually traded on central exchange rather than over-the-counter markets, leading to more efficient and accurate price determination. Secondly, the establishment of a clearinghouse means sellers and buyers no longer face each other; instead, as in the options market, the clearinghouse act as a seller to all buyers and a buyer to all sellers. Thirdly, futures contracts are standardized instruments. This is in contrast with forward contract that requires mutual agreement. Fourthly, gains and losses are marked to market daily.
A standard approach to hedge the exchange risk is by using forward contracts. Eun and Resnick (1988, 1994) convinced that fully hedging policy effectively reduces the volatility of returns without significant reduction in returns. However, Black (1995), with some empirical evidences, showed that under additional IAPM assumptions of Solnik (1974b). It conveyed that investors should never fully hedge their foreign currency exposures. The alternative way to the (fixed) fully hedging policy is optimal hedging policy, Glen and Jarion (1993), and Bugar and Maurer (2002) established researches that the currencies themselves can be treated as assets and the positions in them simultaneously optimized with portfolio weight.

Bruno H. Solnik (1995) illustrated the risk that bears into hedged and unhedged international portfolio.
Figure 2.1 International diversification with and without exchange risk (Solnik, 1995, p. 93)
2.2 Conceptual Framework

The conceptual framework of this study can be depicted in the figure below:

*Figure 2.2 International diversification in Southeast Asia with and without hedging policy against domestic performance*

2.3 Hypotheses Development

In the previous sections, the researcher has discussed theoretical backgrounds underpinning this research study. This section will discuss about formulation of hypothesis
based on prior findings and theories. The main objectives of this study are finding potential returns and risk in equity markets of international portfolio with hedging strategy and without hedging strategy compared to domestic as benchmark.

If the hypothesis of diversifying internationally is a benefit in reduced risk and increased portfolio returns, then it is very likely also beneficial for countries that are still developing (emerging/less developed markets) (Hasman, 2009).

Institutional portfolio managers in developed countries gained assurance for International investment because of enhanced portfolio returns and reduced risk from global diversification. Nonetheless, the enhanced return appears to be negated with currency exchange rate volatility and have caused currency risk to be considered most common risk of overseas investment (Abidin et al, 2004).

Ha1 : Return of international Southeast Asia portfolio with hedging strategy is significantly higher than return of domestic portfolio

Hb1 : Return of international Southeast Asia portfolio without hedging strategy is significantly higher than return of domestic portfolio

Hc1 : Return of international Southeast Asia Portfolio with hedging strategy is significantly higher than return of international Southeast Asia portfolio without hedging strategy

Ha2 : Risk of international Southeast Asia portfolio with hedging strategy is significantly lower than risk of domestic portfolio
Hb2 : Risk of international Southeast Asia portfolio without hedging strategy is significantly lower than risk of domestic portfolio

Hc2 : Risk of international Southeast Asia hedged Portfolio with hedging strategy is significantly lower than risk of international Southeast Asia portfolio without hedging strategy.